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ORGANIZATIONAL STORYTELLING: CONCEPTS, CHARACTERISTICS AND ADVANTAGES

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ABSTRACT

Just as every person has a story to tell, so do organizations. Organizations are made up of many stories and competing story interpretations. An organization story is a narrative tool that tells the tale of a company's strategy in action. The story evokes a common vision of the future, sketches the journey to achieve that vision, identifies critical milestones along the way, creates a clear path for employees to follow and defines success in observable terms. Many organizations are turning to storytelling. Storytelling is becoming better understood as a device for informing employees about their organizational cultures. Stories provide a wealth of wisdom and a powerful toolbox for communication, problem solving, innovation and much more. The aim of this paper is developing literature on story and organizational storytelling .In this paper, we explain the concept of stories in organizations. Then we discuss the Characteristics and Advantages of storytelling in organizations. We also discuss how to create stories in organization and give an example of how a story works.

KEYWORDS
Narrative, Storytelling, Organizational Story.

INTRODUCTION

The organization is a mythical entity with no tangible existence within reality. Each organization develops a cultural base that is a reflection of its history, leadership, membership and its storied journey over time. Organizations like other social constructions strengthen their positions through the narrative and mythical reinforcement of their heroes, successes, achievements and goals (Keogh, 2003).

Organizations are made up of many stories and competing story interpretations. The stories of an organization allow researchers and practitioners a way to understand and try to bring about change in an organization's culture (Boyce, 1996). It is not surprising that much of the storytelling work in organizational studies has direct links to the organizational culture literature (Martin, 2002). Specific applications of organizational storytelling that have been outlined in the literature include, among others, confirming shared experiences, generating commitment, renewing a sense of purpose, co-creating a vision for the organization, engaging emotions, driving strategic change, and facilitating sense-making. Others have considered the extent to which stories are embedded in daily conversations regarding ethical conduct (Driscoll and Margaret, 2007).

Stories told in organizations consist of the narrative itself as well as the morals to the story, and they reflect deeply held assumptions (Martin, 2002). The images and metaphors that are used in organizational storytelling influence our individual worldview and redefine organizational values. Stories can be used to construct a new organizational sense (Fleming, 2001). Stories act as both mirrors and windows on the human experience, showing people either how to look at reality in a different way or suggesting alternative realities. Stories appeal to both the heart and the mind. They help us to define who we are, why we are here, and what we should value. They are used to make sense of ambiguity and uncertainty. Storytelling has an important role in most spiritual traditions, religions, and cultures. For example, most indigenous peoples of the world use oral storytelling (Driscoll and Margaret, 2007).

STORIES IN ORGANIZATIONS

A story is a structured narrative related in a particular way, that is, the sequence of the events may not be perfectly chronological, the recounting may use non-verbal signs, descriptions of place, actors, or reactions may use a variety of tropes, and the voice of the narrator may well be a participant or observer of the fabula or simply a conveyor of the story itself. Te purpose of a good story is to make the common themes new and fresh by using a range of poetic techniques (Poulton, 2005). A story is a narrative that conveys a thought, a moral or virtue, a consequence in a way that forces us to look at a common message in a new way, allowing us the opportunity of not being repetitive or mundane conversationalists, that is, story-tellers tell particular stories in order to illustrate general truths which they expect their recipients to infer; story-tellers prefer to imply rather than baldly state the general truth they are illustrating (Nair, 2002).

An organizational story is defined as a connected discourse about a unified sequence of events that appear to be drawn from an oral history of an organization's past (MacLeod and Davidson, 2007). Story as a particular kind of narrative has a beginning, protagonists and a culminating event (Alvarez and Urla, 2002).

Storytelling is a powerful tool in organizational learning as well in that they communicate implicit organizational values, relate events or actions of individuals, control the behavior of others in an organization by the use of stories themselves or the words used to tell the tale, play a significant role in organizational change and are basic to the process of organizational socialization and change and are in integral to the storage and retrieval of organizational memory (Poulton, 2005).

Stories are a fundamental way through which we understand the world. By understanding the stories of organizations, we can claim partial understanding of the reasons behind visible behavior (Berry, 2001). As such the exchange of stories, rather than merely routines, allows participants to develop a new collective story through which they can become a social learning system. Stories are thus an important part of organizational learning, and balancing the past, present, and future through storytelling is an essential skill for strategic leaders who hope to promote it. Routines and rules capture only a limited part of explicit knowledge. They do not capture the past and the historical journey of an organization. They don't capture tacit knowledge or the emotional component of knowledge. It is in the creating, telling, and retelling of stories that the systems and processes of perspective making, perspective taking, and perspective shaping take on tangible form. It is in the creating, telling, and retelling of key stories that the past, the present, and the future of the organization are connected (Boal and Schultz, 2007). What are the characteristics of stories that have powerful impact and are remembered? The four key characteristics are (Morgan and Dennehy, 1995): First, the organizational stories must be concrete and tell about real people, describe real events and actions, be set in a time and place which the listener can recognize and with which he can identify, and must be connected to the organization's philosophy and/or culture. Second, stories must also be common knowledge in the organization or unit. To be effective in conveying culture, people must not only know the story, but know that others know it as well and follow its guidance. Third, the story must be believed by the listeners. To have impact and make its point, a story must be believed to be true of the organization. The powerful organizational story describes a social contract, how things are done or not done in the organization. Stories allow the listener to learn about organization norms, rewards, and punishments without trial-and-error experience. Fourth, a good story must also be unique and demonstrate that the institution is unlike any other. Objectively, this is rarely true, but stories have the most power when organizational members feel their experience is unique.

THE ENEMIES OF STORYTELLING

Although the benefits of storytelling are impressive and widespread, they were not more widely recognized. One reason was that for the last couple of thousand years, storytelling has been under a cloud of disapproval. Understanding the source of the disapproval is a key to recovering the power and benefits of this incredibly powerful technology (Brown et al., 2005).

Plato: It is hard not to credit Plato with much of the disfavor in which storytelling has fallen, since a literal reading of his masterpiece, The Republic, shows that about half of it is devoted to arguing that storytellers (and poets) be censored or banned from the cerebral republic he was describing. But as Plato himself was one of the master storytellers of all time. Plato's arguments in The Republic made sense in the context of ancient Athens, when the main emphasis was on storytelling and there was little hard-headed analysis. But the modern world has gone too far in the opposite direction, with an exclusive focus on analysis and a dismissal of narrative. There has been an unfortunate tendency for Plato's followers to adopt what can be construed as arguing in The Republic, rather than what he himself practiced in the Symposium.

Aristotle: Aristotle helped implement much of the intellectual agenda of The Republic, by placing a huge emphasis on the taxonomy and classification of what we know. He created a model for science that left storytelling in a peripheral role of illustrating abstract propositions. Abstract knowledge moved to center of the intellectual stage, where it has remained ever since.

Descartes: The separation of the self from the world meant the supposed abolition of feeling and emotions from rational discourse. Descartes laid the foundation for the concept of a mechanistic world free of mind and spirit. Scientists, feeding on their success through experiment, began to claim that their experimental method was the sole guide to discovering the truth. Scientism emerged—the view that only knowledge generated by science is genuine knowledge. The antagonism toward storytelling may have reached a peak in the 20th century with the determined effort to reduce all knowledge to analytic propositions, and ultimately physics or mathematics. In academia, abstract knowledge is still dominant and scientism is often the underlying assumption. To escape from the intellectual blinders of scientism, we must unlearn some of the most fundamental knowledge that we have been taught:

- We have to unlearn what we have been taught about the unimportance of narrative and storytelling
- We have to unlearn the machine model of the universe in general and of the organization in particular.

WHY NARRATIVE PERVADES ORGANIZATIONS

Some of the characteristics of narrative and storytelling that account for their pervasiveness in organizations and elsewhere are listed below (Brown et al., 2005; Driscoll and McKee, 2007):

- Stories have salience to the lives of people in organizations: Wit, succinctness, and emotional power contribute to it.
- Stories help us make sense of organizations: Stories and narratives reflect our efforts to understand the often baffling context of the modern organization as it goes through transformational change.
- Storytelling is quick and powerful: Purposeful storytelling can reach large numbers of people, amazingly rapidly. People get the idea, but not slowly and painfully by the accumulation of evidence and meticulous elaboration of multiple dimensions. Stories have magically rapid trajectories through the social fabric of organizations. Storytelling communicates ideas holistically. As a result, listeners can get complicated ideas not laboriously, dimension by dimension, but all at once with a new gestalt, which is transferred with a snap.
- Storytelling is free: Storytelling doesn't require expensive investments in hardware or software. It doesn't involve recruiting expensive experts. Storytelling is the ultimate low-cost, high return technology.
- Storytelling skills are easily upgradable: Everyone can become a better storyteller: Though we all tell stories all the time, we are often unaware of it. Once we realize what we are doing, we can all learn not only to become better storytellers but also to use storytelling to get business results. Experience shows that skills in storytelling can be quickly improved even with people with little apparent aptitude.
- Narratives communicate naturally: Storytelling is our native language. To use it is refreshing and energizing. Abstract language by contrast is something that we learn at the age of 8 or later and becomes a kind of foreign language that we rarely feel as comfortable in as our native language, storytelling
- Storytelling communicates collaboratively: In abstract discussions, ideas come at us like missiles, invading our space and directing us to adopt a mental framework established by another being, and our options boil down to accepting or rejecting it, with all the baggage of yes-no winner-loser confrontations. Narrative by contrast comes at us collaboratively inviting us gently to follow the story arm-in-arm with the listener. It is more like a dance than a battle.
- Storytelling communicates persuasively: When the listener follows a story, there is the possibility of getting the listener to invent a parallel story in the listener's own environment. The story so co-created becomes the listener's own, and something the listener loves and is prepared to fight for. Storytelling can thus galvanize action.
- Stories can communicate holistically: Stories can communicate deep holistic truths, whereas abstract language tends to slice off fragments of reality. Storytelling draws on our vast deep of the imagination to convey the connections that are missing in abstract thought. At the same time, we must be wary of the unreliable story and the unreliable narrator and subject all stories to analysis.
- Storytelling communicates context: Before the advent of instant global communications, there was less need to be aware of the context in which knowledge arises. When communications were among people from the same village or district or city, one could often assume that the context was the same. With global communications, the assumption of similar context becomes obviously and frequently just plain wrong. Storytelling provides the context in which knowledge arises and hence becomes the normal vehicle for accurate knowledge transfer.
- Storytelling communicates intuitively: We know more than we realize. The role of tacit knowledge has become a major preoccupation because it is often the tacit knowledge that is most valuable. Yet if we do not know what we know, how can we communicate it? Storytelling provides an answer, since by telling a story with feeling, we are able to communicate more than we explicitly know. Our body takes over and does it for us, without consciousness. Thus, although we know more than we can tell, we can, through storytelling, tell more than we consciously know.

- Storytelling communicates entertainingly: Abstract communications are dull and dry because they are not populated with people but with lifeless things. As living beings we are attracted to what is living and tend to be repelled by inert things such as concepts. Stories enliven and entertain.
- Storytelling communicates movingly so as to get action: Storytelling doesn't just close the knowing-doing gap. It eliminates the gap by stimulating the listener to co-create the idea. In the process of co-creation, the listener starts the process of implementation in such a way that there is no gap.

CREATING STORIES

The most valuable stories told in organizations are created from personal experience in the past, from ideas and questions concerning the present and from a personal vision about the future. Here are some tips for creating a repertoire of stories (Kaye and Jacobson, 1999).

- Look for patterns: Examine the plots and themes of your life. The values, priorities, concerns, interests and experiences together create patterns. Some may relate to advice for dealing with adversity, obtaining scarce resources or overcoming challenges. When we see the multiple incidents of our lives as essential parts of a pattern, we find value in the stories that created the pattern.
- Look for consequences: Determine the cause and effect of your choices. If we look back on our lives chronologically, we see that one thing happened and then another thing happened. The events might not be interesting and not worth a story. But if we search for the consequences of our choices as leading to the next event or action, the narrative becomes more interesting and sometimes highly instructional.
- Look for lessons: When we think back on events or our actions as they unfolded, we can find stories in the answers to the questions: What did I learn from that? What did I discover about myself and others that has changed me in some way?
- Look for utility: Recall your successes. They are fertile ground for organizational narratives. When we reflect on the kinds of successes that might make good stories, we need to dig for hidden principles. They are what make a story transferable to other situations and possibly applicable to someone elsės successes.
- Look for vulnerability: Identify your imperfections, mistakes, failures and even derailments make wonderful stories_ probably the best. Such narratives have powerful qualities: They invoke peoplės intellect by motivating them to probe for causes and better approaches to problems, and they evoke peoplės emotions by giving them a feel for the pain and frustration of negative results. Such stories are usually the most interesting and memorable.
- Look for future experience: We learn well from experiences we have not had, by imagining how we might behave. Observing what is happening around us can help us create our own scripts for how we would handle similar situations. We learn from imaginations as well as from an actual experience. When we turn the scripts into creative stories other people can also learn. When a script is enlarged into a vision, it becomes a scenario for success.
- Look for recollections: Go over the meanings and memories of your past. Let the stories of the literature guide you. A story that is worth sharing is already within you and another one is in the making. But for now, It may exist only as an untapped experience, idea or value until you reflect and imagine the possibilities.

THE ADVANTAGES OF STORYTELLING

Stories provide many advantages including the following (Steen, 1999; Mclellan, 2006; Marzec, 2007*)*:

- Stories show us patterns and they help us to make connections
- They are tools for empowerment
- Stories originate in problematic situations and show the way out of these situations
- Great Stories provide us with a road map which outlines all of the actions and tasks we have to accomplish in order to complete the journey successfully
- Stories also provide a toolkit for solving all of the problems that have to be dealt with along the way
- Stories eliminate suspect
- Good stories make you feel you have been through a satisfying, complete experience
- Stories are a form of expert system for remembering and integrating what we learn
- Stories help us to identify and understand the forces impacting upon us
- Stories are thought machines by which we test out our ideas and feelings about something and try to learn more about it

FIVE SIDES TO EVERY STORY

Silverman revealed five practices surrounding the use of stories that influence results: How to find stories, How to dig into them to uncover hidden patterns and themes, How to select those stories that need to be reinforced, How to craft memorable stories and How to embody stories to positively affect attitudes, thoughts and behaviors. These five aspects are described below (Silverman, 2007):

- Finding stories: there is an implicit assumption behind finding stories that stories already exist in abundance within organization and we must bring them to the surface.
- Digging into stories: every story provides both surface content and deeper meaning. Hidden below the surface narrative of stories are the assumptions, models, expectations and beliefs that guide peoplės decisions and behaviors. These elements do not reveal themselves on surveys, and rarely do they come out in response to specific questions.
- Selecting the stories: some of the criteria used to determine what stories to reinforce inside and outside the organizations are:

1. Stories must support the vision, mission, strategy and goals.
2. Stories must define and demonstrate the core values of the organization.
3. Stories communicate our successes and our failures
4. Stories must connect us to our history and our legacy
5. Stories highlight both good and bad customer feedback

- Crafting stories: stories have a pattern. They have a beginning that establishes the context and hooks the listener, a middle that showcases the conflict, and an ending that brings resolution and provides a lesson_ a moral or key point.
- Embodying the stories: Telling a story in person is one way of embodying it. It is in fact preferable to video, audio and print due to the power of nonverbal communication and the interaction between the speaker and the listener. But these are not the only means of sharing stories.

How can organizations link together various facets of the five sides of story and integrate them into a larger initiative? Here is an example that embraces several of these approaches.

In 2003, Maj. Mark Tribus, an officer in the Personnel Management System Task Force of the U.S. Army Human Resources Command, was the brigade personnel officer for 4000 soldiers to be deployed to Afghanistan. Tribus teamed up with colleagues from companycommand.com, a forum that facilitates an ongoing professional conversation among past, current and future commanders about leading soldiers and building combat-ready units. They constructed a leadership development program that used stories to help prepare 70 of the brigadės key leaders and their troops for the situations they would face.

First, Tribus had the key leaders read the book "Taliban: Militant Islam, Oil and Fundamentalism in Central Asia", to give them some context about where they were going and to instill awareness of the culture. Then, Tribus and his colleagues asked the group to submit questions they had about their upcoming deployment.

They sent the questions to 100 company commanders who had served in Afghanistan; about half the responses included short stories. The team extracted overarching themes from these stories and then compiled them into a book that was given to the 70 leaders.

To reinforce the information from the book, Tribus and his team brought in six of the company commanders who had provided stories. After a day of practicing their stories orally, the commanders presented them to the group of 70 leaders, making sure to include accounts of the effects that the experience had on soldiers. A day later, the commanders visited with individual units to answer questions about what they had presented. Following this, each taught workshops in their area of expertise.

By evoking stories from experienced commanders, selecting those that where the most meaningful, digging into them for themes, and embodying different types of stories in interesting ways, Tribus augmented what the new leaders already knew about the situation on the ground in Afghanistan in a memorable and meaningful fashion.

CONCLUSION

Stories emanate naturally from our social dimension and seem to exist everywhere. They surround our very existence and ebb and flow through the times and pores of our lives. They are used for cultural identification and reinforcement and support purposes and are critical to a meaningful understanding of our place in the universe. Relevant stories exist close to the surface and are packed within our everyday thoughts, conversations and understandings. They are critical to organizational bonding and understanding. Such stories are used to inspire, imprint, teach, control and to explain the changes necessary to maintain competitive viability. The use of stories is key to the communications and understanding process and provides a broad opportunity to build the relationships which drive organizational commitment. The importance of stories is critical to the efficient management of the organizational system. Through the process of storytelling, Managers achieve innovation and change by demonstrating its legitimacy and consistency with the past. Storytelling can:

- Communicate a manager's vision of the future and envoke others commitment.
- Create a collective sense of shared purpose and meaning that can enhance cohesion around an organizations culture.
- Build leadership through wisdom stored forward, by capturing and disseminating learning to the next generation of leaders.
- Enable people to find patterns in their lives, enhancing self-knowledge and a productive interpretation of experiences.
- Inspire alignment in support of a change initiative.

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EXAMINING THE EFFECT OF COMPANY'S SIZE AND RESOURCES ON THE RELATIONSHIP BETWEEN STAKEHOLDERS' PRESSURE AND ENVIRONMENTAL STRATEGIES IN THE MALAYSIAN PALM OIL INDUSTRY

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MALAYSIA

ABSTRACT

Palm oil is one of the most important commodity exports for Malaysia, contributing billions of ringgit to the country. In terms on number of employment half a million people involved in the industry. Over the last four decades more and more plantation areas have been developed in the country. However, the disproportionate expansion of oil palms contributes to environmental degradations. The excessive usage of insecticides and pesticides, soil erosion, air and water pollution and depletion of flora and fauna are closely related with this industry. As a result, various stakeholders including department of environment, environmental non-governmental organizations, medias and the public have exerted influenced on the industry to be environmentally responsible. Coping with these pressures, players the industry could not help but be environmentally responsible in their activities. In other words environmental strategies of players in the industry are determined by magnitude of pressures from their stakeholders. While it is well established in the literature that the extent of pressure would determine a business environmental strategies, but not many researchers measure the impact of company's size and resources on the relationship between these two variables. This study seeks to examine the effect of a company's size on the relationship between stakeholders' pressure and environmental strategy in the industry. The results of the study clearly show a company's size and resources influence the relationship of stakeholders' pressure and environmental strategy.

KEYWORDS

Company's size, resources, stakeholders pressure and environmental strategies.

INTRODUCTION

Over the last four decades palm oil has been one of the most important commodities for Malaysia. This industry contributes billions of ringgit to the country. In 2003 its earnings from foreign exchange contributed more than RM20 Billion (US$5 Billion), amounting for 45.9 percent of the export earnings from commodities and 6.5 percent of the whole country's total export earnings (http://www.miccos.com.my). In terms on number of employment the industry provides employment to about 567,4000 workers in private plantations, government schemes and independent smallholdings; taken together with those who are linked to the palm oil industry in both the upstream and downstream sectors, approximately 1 million out of the total 10 million Malaysian workforce are engaged in the palm oil industry (Chandran, 2005).

However, disproportionate expansion of this monoculture crops contributes to environmental degradations in the country. In Malaysia, the palm oil industry together with forestry, rubber, tin and chemical-based agriculture are considered environmentally damaging activities (Wong, 1998 p.2). In planting, environmental impacts are deforestation, depletion of flora and fauna, soil erosion and sedimentation. In addition, air pollution occurs when operators use fire for land clearing. On plantations, various pesticides and artificial fertilizers are continuously applied for the 'health' of the oil palms. Additionally, processing of fresh fruit bunches (FFB) at palm oil mills uses a large amount of fresh water, since for every tonne of FFB one tonne of water is required (Chuan, 1982 p.10). Untreated POME often pollutes rivers near to the mills. Moreover, palm oil mills emit black smoke when empty fruit bunches (EFB) are burnt for manure and to produce steam to sterilize FFB to facilitate the extraction of the palm oil. Due to these reasons the industry is one of the most highly regulated industries in Malaysia.

Various stakeholders including department of environment (DOE), environmental non-governmental organizations (ENGOs), medias and the public have exerted influenced on the industry to be environmentally responsible. Coping with these pressures, players the industry could not help but be environmentally responsible in their activities. In other words environmental strategies of players in the industry are determined by magnitude of pressures from their stakeholders. While it is well established in the literature that the extent of pressure would determine a business environmental strategies, but not many researchers measure the impact of companies size and resources on the relationship between these two variables. Hence, this study seeks to examine the effect of a company's size on the relationship between stakeholders' pressure and environmental strategy in the Malaysian Palm Oil industry.

LITERATURE REVIEW

STAKEHOLDERS ENVIRONMENTAL PRESSURE

The Stakeholder Theory emerged in the mid 1980s. One focal point in the movement was the publication of Edward Freeman's book, *Strategic Management: A stakeholder approach,* in 1984 (Freeman & McVea, 2001 p.189). The central task in a strategic management process is to manage and integrate the relationships and interests of shareholders, employees, customers, communities and other groups in a way that ensures the long-term success of the firm (Freeman & McVea, 2001 p.192).

Freeman (1984 p.46) defines stakeholder as 'any group or individual who can affect or is affected by the achievement of the organization's objectives.' Another researcher Caroll (1996 p.60) defines a stakeholder as 'any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organization'. Meanwhile, Buchholz (1993 p.347) defines stakeholder as '[A]n individual or group that has some kind of stake in what business does and may also affect the organisation in some fashion'. Among various definitions of stakeholders, Freeman's definition is the most widely quoted and used in environmental management literature (Banerjee, Iyer, & Kashyap, 2003 p.107; Sternberg, 1997 p.4; Moir, 2001 p.19).

A manager needs to understand the concerns of stakeholders in order to develop objectives that stakeholders would support for his or her organisation's long-term success. The number of stakeholders and variety of their interests can be quite large; thus, a company's decisions can become very complex (Henriques & Sadorsky, 1996 p.383; Post, Lawrence, & Weber, 1999 p.7). But in practice, it is difficult and costly to identify and meet all the stakeholders' demands. Consequently, it is crucial for the manager to identify and analyse the meaning and significance of each individual group and to determine their respective power to be prepared for the conflict that may follow from the prioritizing of competing groups of stakeholders (Madsen & Ulhoi, 2001 p.79).

Traditionally the main focus of stakeholder interest has been upon the financial performance of a company. Increasingly, however, stakeholder pressure is concentrating on the environmental performance of the company (Welford & Gouldson, 1993 p.7). Environmental pressure against palm oil companies may come from various stakeholders including environmental regulators such as DOE, customers, suppliers and distributors, trade associations such as Malaysian Palm Oil Association, employees, shareholders, financial institutions, Malaysian Environmental Non Governmental Organisations (MENGOs) and Media.

ENVIRONMENTAL STRATEGIES

In strategic management, business strategy is defined as 'the direction and scope of organisation over the long term which achieves advantage for organisation through its arrangement of resources within a changing environment and fulfils stakeholder expectation' (Johnson & Scholes, 2002 p.10). An environmental strategy is 'a plan which aims to mitigate the environmental effects of the firm's operations and products' (Bansal, 1997 p.174). According to Sharma (2000

p.683) environmental strategy refers to 'outcomes in the form of actions firms take for regulatory compliance and to those they take voluntarily to further reduce the environmental impacts of operations.' Moreover, Banerjee, Iyer and Kashyap (2003 p.106) define environmental strategy as 'the extent to which environmental issues are integrated with a firm's strategic plans.' In corporate environmental management literature, other similar themes on environmental strategy that discuss how organisations react to environmental pressure: 'corporate environmental responsiveness' (Shrivastava & Scott, 1992; Souitaris & Pujari, 1998); 'corporate environmental approach' (Vastag, Kerekes, & Rondinelli, 1996); 'corporate environmentalism' (Banerjee, 1998, 1999); and 'corporate greening' (Preuss, 2005).

COMPANY SIZE AND RESOURCES, AND ENVIRONMENTAL STRATEGY

Apart from stakeholders' pressure, a firm's size and its resources are seen as important factors that could determine companies' environmental strategies. There are several arguments why the size of the business will be a determinant of environmental strategies. First, large companies are likely to have more resources, and that increases a company's ability to better access environmental information, which in turn provides the business more competitive advantage (Russo & Fouts, 1997; Sharma, 2000). Second, firm size has been related to the existence of economy of scale which is inherent in environmentally oriented investments (Chapple, Morrison, & Harris, 2005). Third, firm size is related to visibility to the public; where large businesses are more visible, this visibility might make them more sensitive to public opinion and in turn make them more likely to invest in environmental innovation and be perceived as an industry leader (Henriques & Sadorsky, 1996; Rothenberg & Zyglidopoulos, 2007). Fourth, larger companies have more power to influence regulatory authorities to set tighter standards for the industry (Epstein & Roy, 2000). Lastly, strategic management in small and medium-sized businesses focuses on short-term profitability, while on the contrary big businesses have a long-term vision; this puts big companies in a conducive situation to evaluate environmental investment (Epstein & Roy, 2000).

Although many authors believed that there was an impact of size on environmental strategy proactiveness, findings of empirical studies showed mixed results. On the positive side, a study by Elsayed (2006) of various businesses in the UK demonstrated that company size explained the different in environmental strategy. Likewise, Rothenberg and Zyglidopoulos (2007), in their recent study on the adoption of environmental innovations in the US printing industry, also found a strong correlation between size and environmental innovations. In a further study by Sharma (2000) on the 99 petroleum and gas businesses in Canada, he found company size (average annual sales for the last three years) had a positive effect on environmental strategy. In study of 197 companies of various industries in Belgium, Buysse and Verbeke (2003) found size (annual sales) moderate the relationship between environmental strategy and stakeholder orientation. In addition, a study of 750 large companies in Canada by Henriques and Sadorsky (1999) also found size (sales per assets) moderates the relationship between both regulatory stakeholders and community stakeholders on environmental strategy.

While the above-mentioned studies showed positive correlation between size of a company and its environmental strategy, other studies presented opposing findings. Using the survey data collected from a wide variety of firms and industries based in the US, Judge and Douglas (1998) examined the effect on size on environmental strategy of those companies, and found no significant correlation between size and environmental strategy. A further example is a study by Waddock and Graves (1997) who found no significant relationship - using three proxies for the firm size (i.e. total assets, total sales and total number of employees). Likewise, Toms's study (2002) of 260 British companies found no significant correlation between company's size (sales turnover) with either environmental reputation or environmental corporate disclosure.

The proponents of Resource-based View of the Firm (RBVF) have argued strongly that the greater resources that are available to a firm, the greater the proactiveness of their environmental strategy (Hart, 1995; Russo & Fouts, 1997; Sharma, 2000). The availability of resources gives companies advantages to choose a proactive strategy. Unfortunately, empirical studies have yield mixed results. Findings of study by Judge and Douglas (1998) supported the hypothesis that the availability of resources correlated with the integration of environmental issues into the strategic planning process. In a similar vein, Stanwick and Stanwick (1998) in their study concluded that environmentally responsible companies were likely to have more resources.

On the other hand, the recent study by Elsayed (2006) did not find any significant impact of the availability of resources on a company's environmental orientation. This is further supported by study by Henriques and Sadorsky (1996) of various industries in Canada. In their study they found the level of environmental strategy proactiveness was not influenced by the resources owned by these companies. Similarly, a study by Toms (2002) in the UK found no support for the availability of resources influencing environmental strategy.

Due to inconclusive results regarding the effect of both size and resources of companies on their environmental strategies, more research is needed to investigate the relationship between both size and resources on environmental strategy proactiveness.

RESEARCH METHOD

The list of palm oil companies on the Kuala Lumpur Stock Exchange (KLSE) was used as sampling frame of this study. Altogether 37 palm oil companies are listed on the stock exchange. There are two categories of palm oil companies; first - plantation companies whose main revenue comes from the palm oil industry; and second - diversified companies in which palm oil revenues are only part of their businesses activities. These companies not only have their own plantations (more than 10, 000 hectares to close 150,000 hectares) but also have their own palm oil mills. Only a handful of them have their own refineries. Some that are considered as main players in the MPOI have diversified into the downstream sector of the industry and have their own oleo chemicals plants. Many have expanded their business outside Malaysia, and are involved in plantation activities in Indonesia, Papua New Guinea and Solomon Islands. Others smaller companies only operate their businesses in Malaysia.

Out of 37 palm oil companies nine companies agreed to participate in the study, representing 25% of the total number of plantation companies on the KLSE. In each, four management personnel from various departments were approached. Altogether 36 surveys were completed.

Quantitative data analysis supports the central aim of the research model, which is to establish whether a relationship exists between selected independent variables and dependent variables. Based on the literature review on corporate environmental management, as well as the background information of the MPOI, two testable hypotheses have been developed for the study. Both a null hypothesis (H_a) and its alternative (H_b) have been developed for each:

HYPOTHESIS 1

H1a Company's size does not affect the correlation between stakeholders' pressure and environmental strategies adopts by surveyed companies

H2b Company's size affects the correlation between stakeholders' pressure and environmental strategies adopts by surveyed companies

HYPOTHESIS 2

H2a Company's resource availability does not affect the correlation between stakeholders' pressure and environmental strategies adopted by surveyed companies

H2b Company's resource availability affects the correlation between stakeholders' pressure and environmental strategies adopted by surveyed companies

Statistical tests aim to establish the probability of a specific event occurring from a set of possible events, expressed as proportion. If the probability distribution of p-value of a test is small, less than the significant level at 0.05, this would be used as evidence against H_a (null hypothesis). Rejection of H_a means accepting the alternative hypothesis (H_b). On the contrary, if the p-value is larger than the significant levels of 0.05, H_0 fails to be rejected, on the basis that insufficient evidence has been recorded to justify the claim of significance (Hinton, 1995).

The Statistical Package for Social Science (SPSS), Version 14, was used to conduct all data analysis as well as hypothesis testing. Various statistical tests were performed on the data. Statistical techniques involved in this study were: data descriptives - mean, mode, median and standard deviation; a test of normality; reliability testing (Cronbach's Alpha). Meanwhile, the two hypotheses of the study were tested using partial correlation analysis

In the demographic section of the questionnaire asked for general information about the firm and participant profile. In the former, among questions were: number of employees, years of establishment, total area of oil palms, number of palm oil mills, refineries and oleo chemical plants. Second section related to the company's resources. A seven-point scale (ranging from 1 = scarce to 7 = abundant) was used to measure company's situation in terms of:: (i) financial resources, (ii) physical resources (e.g. equipment), (iii) human resources, (iv) organisational resources (e.g. having well-established quality control systems and cash management systems), (v) technological resources (e.g. unique technologies to produce quality products), and (vi) company's reputation. These six major categories of resources were adopted based on a study by Grant (1991) on companies' resources. The third section measured the managers' perception of the

pressure of stakeholders on their companies to improve their environmental performance. Using a scale of '1 = no pressure at all to 7 = a great deal of pressure' respondents were asked to measure to what extent 14 identified stakeholders within the industry exerted influence on, or exercised power over, their organisations to be more environmentally responsible. Various stakeholders in this subscale were: shareholders, financial institutions, insurance companies, regulators, local communities, employees, media, customers, competitors, suppliers, distributors, ENGOs, and the MPOA and MPOB. The following section of the questionnaire, measured the company's environmental strategies. This section was divided into three subscales: operational level, tactical level, and strategic level. Items in this section were adapted from those used in the studies examined in the extensive literature (Banerjee, 2001; Petulla 1987; Hunt and Auster 1990; Roome, 1992; Byrne and Kavanagh 1996; Hart 1997; Tilley 1999; Henriques and Sadorky, 1999) on corporate environmental strategies.

BACKGROUND OF PARTICIPATED PALM OIL COMPANIES

Altogether nine palm oil companies listed in the KLSE were involved in this survey. All companies were GLCs that were linked either to the federal or state governments of Malaysia. In order to disguise the surveyed companies they were given alphabetical designations - A to I. Table 1 shows details of the surveyed companies' backgrounds.

TABLE 1: PARTICIPANT COMPANIES' BACKGROUNDS

Company	Year Establish	% contribution of Palm oil activities to total revenue	No. of wokers	Employees in palm oil business (Malaysia)	Total Planted Area in Malaysia (ha)	No. of Mills	Location of Oil palm plantation operation
A	1990s	95	640	610	25,000	1	Malaysia
B	1840s	80	25,335	23,611	147,369	24	Malaysia and Indonesia
C	1960s	70	3,600	3,270	35,000	2	Malaysia
D	1930s	65	4,597	3,774	64,512	7	Malaysia and PNG
E	1820s	40	12,000	9,969	85,000	10	Malaysia and Indonesia
F	1820s	73	18,543	10,567	100,098	14	Malaysia and Indonesia
G	1970s	95	2,500	2,400	15,471	3	Malaysia and Indonesia
H	1970s	55	10,676	7,666	75,355	4	Malaysia and Indonesia
I	1970s	90	3112	2856	25,191	2	Malaysia

Source: Based on the sample survey (2006)

RESPONDENTS' PROFILES

Altogether thirty six participants from the palm oil companies were involved in the survey; each company was represented by 4 individuals who held various management positions. Obtaining multiple responses from both higher and middle management levels, and from various job categories, provided perspectives of corporate environmentalism from different levels and functional areas within a company. Table 2 shows respondents' position, educational background, years in current position, and years working for their companies.

TABLE 2: PROFILES OF RESPONDENTS FROM STUDIED COMPANIES

Company	Participant	Current Position	Educational Background	Years in Current Position	Years in Company
A	1	Estate Manager	Degree	6	14
	2	Estate Manager	Degree	6	6
	3	Mill Manager	Degree	2	5
	4	General Manager	Degree	5	14
B	1	Plantations Director	Diploma	4	28
	2	Senior Estate Manager	Degree	1	21
	3	Mill Manager	Degree	10	16
	4	General Manager	Diploma	1	32
C	1	Estate Manager	Certificate	17	26
	2	Mill Manager	Degree	5	5
	3	Estate Manager	Diploma	12	16
	4	Assistant Mill Manager	Degree	3	3
D	1	General Manager	Degree	10	26
	2	Manager (Corporate)	Degree	2	11
	3	Environmental Officer	Master	1	1
	4	Estate Manager	Certificate	7	15
E	1	Visiting Agent *	Master	13	26
	2	Deputy Group Engineer	Certificate	10	25
	3	Mill Manager	Diploma	3	3
	4	Estate Manager	Degree	6	6
F	1	Mill Manager	Degree	4	11
	2	General Manager (Mills)	Degree	2	17
	3	General Manager (Mill operations)	Degree	10	15
	4	General Manager (controller)	Degree	12	22
G	1	Planting Advisor *	Diploma	10	25
	2	Senior General Manager	Degree	10	20
	3	Group Engineer	Degree	10	21
	4	Estate Manager	Master	4	23
H	1	Plantations Director	Degree	5	23
	2	Estate Manager	Diploma	2	15
	3	Estate Manager	Diploma	4	20
	4	Assistant Mill Manager	Degree	6	11
I	1	Process Engineer	Degree	5	14
	2	Senior Estate Manager	Master	1	12
	3	Regional Manager*	Degree	1	25
	4	Estate Manager	Degree	6	16

* Because of the same nature of the job, this position is categorised as general manager in SPSS analysis.

Source: Based on the sample survey (2006)

COMPANY'S RESOURCES

Altogether, there were six items under the variable of company's resources. Descriptive statistics of the company resources variable are shown in Table 3. All respondents (N=36) answered the items in the variable. In the scale 1 (scarce) to 7 (abundant), overwhelmingly, all respondents seemed to rate towards the high

scale in regard to their company's possession of resources. The highest mean and mode were for company's reputation item - 6.28 and 7 respectively. Meanwhile, means of other resources were close to 6, except for technological resources, with its mean at 5.36. Among these resources, the two highest standard deviations were observed for financial resources (0.81) and technological resources (0.80) of which showed more deviation among respondents than other items. In contrast, organisational resources showed the lowest standard deviation, 0.62, indicates less deviation among respondents in their responses to the question. In general the differences among participants in this variable can be considered small, judging from variation being less than 1 in the 1 to 7 scale.

TABLE 3: DESCRIPTIVE STATISTICS OF COMPANY'S RESOURCES

	Descriptive statistics							
Resources	N	Mean	Median	Mode	Min.	Max.	Std.Dev.	Skewness	Kurtosis
Company's reputation	36	6.28	6.0	7	5	7	0.74	-0.51	-0.98
Organisational resources	36	5.81	6.0	6	4	7	0.62	-0.59	1.22
Financial resources	36	5.58	6.0	6	4	7	0.81	-0.11	-0.309
Physical resources	36	5.58	6.0	6	4	7	0.60	-0.34	-0.07
Human resources	36	5.56	6.0	6	4	7	0.69	-0.21	-0.01
Technological resources	36	5.36	5.5	6	4	7	0.80	-0.41	0.70

Source: Based on the sample survey (2006)

Among these resources, the two highest standard deviations were observed for financial resources (0.81) and technological resources (0.80) - showed more deviation among respondents than other items. In contrast, organisational resources showed the lowest standard deviation, 0.62, which indicates less deviation among respondents in their responses to the question. In general the differences among participants in this variable can be considered small, judging from variation being less than 1 in the 1 to 7 scale. Negative skewness of all resources items showed that participants seemed to choose the high end scale of the items. This was shown by skewness, where the highest skew and lowest skew related to the organisational resources item (-0.59) and the financial resources item (-0.11) respectively. In addition, negative and positive kurtosis showed two types of variation of the items. Negative kurtosis items such as financial resources and company's reputation showed their distributions were widely spread. Positive kurtosis of organisational resources and company's reputation items indicated most answers from participants were closely clustered around the mode.

Overall, judging from all negative skewness values, and both positive and negative kurtosis, items under this variable, company's resources were considered as *not normally distributed*.

ENVIRONMENTAL STRATEGIES

Overall environmental strategy level is also showed in table 4. Company F had the highest level of overall environmental strategies (m=5.84); this was closely followed by company B (m=5.72). For the other three companies, D, E, H their means were closely grouped at 5.18, 5.06 and 5.14 respectively. Two companies had their mean between 4 and 5 - company C (m=4.25) and company I (m=4.07). Companies A and G had the lowest means - 3.62 and 3.73 respectively.

TABLE 4: LEVELS OF COMPANIES' ENVIRONMENTAL STRATEGIES

	Company								
Strategy	A	B	C	D	E	F	G	H	I
Operational	4.89	5.50	5.45	5.29	4.89	5.42	4.95	5.84	5.05
Tactical	2.60	5.60	3.20	4.70	4.90	5.50	3.40	3.93	3.70
Strategic	3.36	6.05	4.09	5.55	5.41	6.61	2.85	5.64	3.45
Overall	3.62	5.72	4.25	5.18	5.06	5.84	3.73	5.14	4.07

Source: Based on the sample survey (2006)

HYPOTHESIS TESTING

In the test, the effects of control variables (plantation area and resources availability of companies) on the correlation between stakeholders' pressure and environmental strategy can be observed by comparing zero-order correlations (without any control variable) with partial correlations (with control variable). Additionally, in the zero-order correlations, the correlation between the control variables (plantation area and resources availability) and stakeholders' pressure and environmental strategies can also be observed, to see if there is any significant correlation between them.

HYPOTHESIS 1

To evaluate the effect of the control variables for company's size (that is, plantation size and number of employees of company) on the relationship between stakeholder pressure (average stakeholder pressure) and environmental strategies (average environmental strategy) the researcher performed a partial correlation (Pearson correlation). In this partial correlation the researcher used zero order correlations as basis of comparison.

The correlation table (Table 5) shows both the zero-order correlations (correlation without any control variables) of all three variables, and partial correlation controlling for the effects of plantation area on the correlations. It is observed from the results that zero order correlation between stakeholder pressure and environmental strategies is fairly high 0.77 and statistically significant at 0.05 level.

TABLE 5: ZERO ORDER CORRELATION AND PARTIAL CORRELATION BETWEEN STAKEHOLDERS' PRESSURES AND ENVIRONMENTAL STRATEGIES USING TOTAL PLANTED AREA AS CONTROL VARIABLE

Control Variables			Stakeholders' pressure	Strategy	Area
None	Stakeholders' pressure	Correlation	1.00	0.77	0.78
		Sign. (1-tailed)	.	0.01**	0.01**
		df	0	7	7
	Strategy	Correlation		1.00	0.92
		Sign. (1-tailed)		.	0.01**
		Df		0	7
	Area	Correlation			1.00
		Sign. (1-tailed)			.
		df			0
Area	Stakeholders' pressure	Correlation	1.00	0.23	
		Sign. (1-tailed)	.	0.29	
		df	0	6	
	Strategy	Correlation		1.00	
		Sign. (1-tailed)		.	
		df		0	

**Correlation is significant at the 0.01 level (1-tailed).

Source: Based on the sample survey (2006)

On the other hand, the partial (Pearson) correlation control for company size (total planted area) is very low (0.23) and not statistically significant at 0.05 level. Based on this finding it is clear that plantation area of the company does influence the relationship between stakeholder pressure and environmental strategy. This is supported by the observation in the zero-order correlations, where both stakeholder pressure and environmental strategies are significantly correlated with the control variable (i.e. total planted area of oil palms) at a 0.01 significance level.

In terms of the second variable of company's size, the correlation table (Table 6) shows both the zero-order correlations of all three variables, and partial correlation controlling for the effects of number of employees on the correlations. The partial (Pearson) correlation control for company size (number of employees) is very low (0.47) and not statistically significant at 0.05 level. This is in contrast with the zero order correlation between stakeholder pressure and environmental strategies where the correlation is fairly high 0.77, and statistically significant at 0.05 level. Based on this finding it is clear that the number of employees does influence the relationship between stakeholder pressure and environmental strategy. This is further supported by the observation in the zero-order correlations, where both stakeholder pressure (r=0.74, p=0.01) and environmental strategies (r=0.77, p=0.01) are significantly correlated with control variable - number of employees in the company - at 0.01 significance level.

TABLE 6: ZERO ORDER CORRELATION AND PARTIAL CORRELATION BETWEEN STAKEHOLDERS' PRESSURES AND ENVIRONMENTAL STRATEGIES USING NUMBER OF EMPLOYEES AS CONTROL VARIABLE

Control Variables			Stakeholders' pressure	Strategy	Employees
None	Stakeholders' pressure	Correlation	1.00	0.77	0.74
		Sign. (1-tailed)	.	0.01**	0.01**
		df	0	7	7
	Strategy	Correlation		1.00	0.77
		Sign. (1-tailed)		.	0.01**
		df		0	7
	Employees	Correlation			1.00
		Sign. (1-tailed)			.
		df			0
Employees	Stakeholders' pressure	Correlation	1.00	0.47	
		Sign.	.	0.18	
		df	0	6	
	Strategy	Correlation		1.00	
		Sign.		.	
		df		0	

**Correlation is significant at the 0.01 level.

Source: Based on the sample survey (2006)

So based on these two tests, the null hypothesis is rejected and the alternative hypothesis is accepted.

HYPOTHESIS 2

The same statistical hypothesis testing was also used to determine the effect of another control variable, that is company's resources (average resources), on the correlation between stakeholder pressure and environmental strategy.

Table 7 shows both the zero-order correlations (correlation without any control variables) of all three variables and partial (Pearson) correlation controlling for the effects of resources on the correlations between stakeholder pressure and environmental strategy. Zero order correlation between stakeholder pressure and environmental strategies which is fairly high 0.77 and statistically significant at 0.01 level is compared with the partial correlation. The partial correlation control for company's resources is still quite high (0.76) and statistically significant at the same level, 0.01.

TABLE 7: ZERO ORDER CORRELATION AND PARTIAL CORRELATION BETWEEN STAKEHOLDERS' PRESSURES AND ENVIRONMENTAL STRATEGIES USING COMPANY RESOURCES AS CONTROL VARIABLE

Control Variables			Stakeholders' pressure	Strategy	Resources
None	Stakeholders' pressure	Correlation	1.00	0.77	0.34
		Sign. (1-tailed)	.	0.01**	0.19
		Df	0	7	7
	Strategy	Correlation		1.00	0.23
		Sign. (1-tailed)		.	0.28
		Df		0	7
	Resources	Correlation			1.00
		Sign. (1-tailed)			.
		df			0
Resources	Stakeholders' pressure	Correlation	1.00	0.76	
		Sign. (1-tailed)	.	0.01**	
		df	0	6	
	Strategy	Correlation		1.00	
		Sign. (1-tailed)		.	
		df		0	

** Correlation is significant at the 0.01 level.

Source: Based on the sample survey (2006)

Based on this finding it is clear that company's resources does not influence the relationship between stakeholder pressure and environmental strategy This is supported by zero-order correlations, where both stakeholder pressure (r=0.34, p=0.19) and environmental strategies (r=0.23. p=0.28) are not significantly correlated with the control variable-of company's resources. Therefore, this test shows that the null hypothesis fails to be rejected.

The impact of company's size (number of employees and plantation area) was observable in the relationship between stakeholder's pressure and environmental strategy; but there was no observable impact from company's resources.

DISCUSSION AND CONCLUSION

In terms of the impact of a company's size, and its resources, on the level of environmental strategies, the results from quantitative analysis will be used to answer these questions. In this study two proxies of size – plantation area, and number of employees engaged in the palm oil sector of each palm oil company- were used to represent a company's size. The effects of plantation area and number of employees were then tested against the relationship between stakeholders' pressure and environmental strategy of the nine palm oil companies participating in the study. The results of the analysis showed both proxies of

size affect the relationship between stakeholders' pressure and environmental strategies. These results indicate that a company's size is a moderator that affects the relationship between environmental stakeholders' pressure and environmental strategy. This finding matches the study by Buysse and Verbeke's (2003) in various industries in Belgium, and Henriques and Sadorsky's study (1999) on 750 large companies in Canada, which established that the size of a company moderates the relationship between stakeholders' pressure and a company's environmental strategy.

The results of this study also showed a significant positive relationship between size (i.e. plantation area and number of employees) and both stakeholders' pressure and environmental strategy. This tends to imply that the larger the size of palm oil companies, the more likely that they will get pressure from stakeholders, and the more likely that they exercise a proactive strategy, and vice versa. This finding of a strong correlation between size and environmental proactiveness supports studies elsewhere by Elsayed (2006), Rothenberg and Zyglidopoulous (2007) and Sharma (2000). Hence is clear that the area of palm oil plantations related to stakeholders pressure. The respondents of the big companies admitted that due to their plantation area they are more vulnerable, as they are more visible to the public. This makes them more sensitive to public opinion, in turn makes them more likely to invest in environmental innovation to avoid negative publicity. For example, the expansion of the oil palm plantations is always associated with deforestation and depletion of flora and fauna. The big plantation companies who are involved in massive deforestation will be easily vulnerable to such kind of an accusation. Hence, to anticipate and manage stakeholders' pressure, especially from ENGOs and the public, big companies exercise a proactive strategy. At the same time, they believe by doing so they could project their images to gain a better corporate reputation.

The average from responses of the four managers of each palm oil company in the study was used to represent a company's resources - financial resources, physical equipment, human resources, management systems, technology, and reputation. The results of quantitative analysis showed that resources did not affect the relationship between stakeholder's pressure and environmental strategy. This finding seems to support previous studies undertaken elsewhere by Elsayed (2006), Henriques and Sadorsky (1996) and Toms (2002). Nonetheless, these findings need to be treated with caution. Arguably, as explained in the previous chapter, the researcher suspects that respondents were more likely to exaggerate their companies' resources in the survey. This is evident as, whatever the size of their company, respondents rated all resources variables at the high end of the scale. As a result, large companies and medium size companies in the study showed no difference.To validate this argument, the researcher compared the resources of one company, a medium size and newly listed company under the KLSE, with a number of multinational companies. Surprisingly it was rated as having higher resources than the multinational companies in the study. Perhaps, a more accurate alternative for measuring resources would be based on financial ratios from annual reports, rather than the multi-scale items measure as used in the study. Nevertheless, financial ratio statistics only provide information on financial resources of a company. Financial resources alone are not enough to explain other resources, such as physical resources, human resources, control systems, technological resources, and company reputation. All of this information is not usually available in a company annual report.

In conclusion the study demonstrated that the size of palm oil companies moderated the relationship between stakeholder's pressure and environmental strategies. This implies that the greater the size of companies the more likely that they will exercise proactive strategies. But, this relationship was not observed for company's resources. Arguably, this is due to exaggeration of the companies' resources by respondents in the study.

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CORPORATE GOVERNANCE AND FINANCIAL REPORTING QUALITY: A STUDY OF NIGERIAN MONEY DEPOSIT BANKS

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ABSTRACT

The proliferation of accounting scandals has prompted the need to improve the relevance of financial reporting by setting up good governance structures. The relationship between corporate governance and information quality has been strongly debated in the context of developed countries. It is only recently that attention turned to the study of governance and financial information quality in developing countries. This paper examines the effect of corporate governance mechanisms on the financial reporting quality of Nigerian banks. Multiple regression is used as a tool of analysis for the data collected from all the quoted banks on the Nigerian stock exchange as at 31st December, 2010. The results reveal that governance mechanisms have affected positively and strongly the financial information quality of the Nigerian banks. What therefore left to be done is for CBN to ensure that the Nigerian banks are structured with good governance to improve their financial information quality.

KEYWORDS

Financial Reproting, Accounting scandals, Corporate governance, Nigeria, Bank.

INTRODUCTION

The concern for how banks should be governed lies precisely with the increasing impact of private corporate behaviour on the collective welfare of the economy. The importance of banks to national economies is underscored by the fact that banking is, almost universally, a regulated industry and that they have access to government safety nets. Also, the business of banking has a number of intrinsic risks that could jeopardize the entire financial system of an economy. Some of the intrinsic risks include operating with high leverage which can make the banks vulnerable to losses, dependence on the confidence of depositors and the financial markets for securing necessary funds, general opaqueness of the business of banking. It is therefore of crucial importance that banks having strong corporate governance. Corporate governance aims to protect the interests of all stakeholders and to minimize asymmetric information between bank's managers, its owners as well as customers. The banks' corporate governance focus is also different due to the source of their financing. Banks typically receive a greater percentage of their financing through debt, which tends to be in the form of deposits from multiple unsophisticated debt-holders of non-financial businesses. Banks are also different due to deposit insurance which exists in some jurisdictions and which largely removes the incentive for depositors (the debt-holders of the bank) to monitor their activities and which can also lead to risky behaviour on the part of bank management (Hanc, 1999). In addition, banking businesses are generally more opaque than non-financial firms' businesses. Although information asymmetries plague all sectors, evidence suggest that these information asymmetries are large with banks (Furtine, 2001). Banks can alter the risk composition of their assets more quickly than most non-financial firms, and can readily hide problems by extending loans to clients that cannot service debt obligations. These traits have some implications for the corporate governance of banks.

The wave of accounting scandals occurred recently in the international financial community has raised many criticisms about the financial reporting quality (Agrawal and Chadha, 2005; Brown et *al*., 2010). Several prominent banks were involved in accounting frauds, such as Oceanic bank, Intercontinental bank and Unity bank etc, which has weakened the investor confidence toward the management team and the financial reports. The widespread failure in the financial disclosure has created the need to improve the financial information quality and to strengthen the control of managers by setting up good governance structures (Karamaou and Vafeas, 2005; Beekes and Brown, 2006; Brown and Caylor, 2006; Firth et *al.*, 2007; Petra, 2007). Indeed, the financial information serves as a basis for investment decisions of the capital market participants. It is useful for owners, creditors, firm partners and regulators, since it helps to determine the firm's past performance, predict its future profitability and monitor the managers' actions (Bushman and Smith, 2001; 2003).

According to Bushman and Smith (2001), publicly reported accounting information can be used as important input information in various corporate governance mechanisms. A vast body of literature acknowledged the importance of corporate governance mechanisms to improve financial information reporting quality and past literature has demonstrated that good governance reduces the risk of financial reporting problems. Good governance goes in-hand with reduced risk of financial reporting problems and other bad accounting outcomes Hermanson (2003).

The link between corporate governance and financial information quality has been strongly discussed in the developed countries. Emphasis was placed on specific governance mechanisms such as board independence and size (Beekes et *al*., 2004; Bradbury et *al*., 2006; Petra, 2007 Beasley, 1996; Dechow et. al., 1996; Peasnell et al., 2000; Klein; 2002, Davidson et al., 2005), institutional shareholding Ballesta and Meca, 2007 Beatty and Harris (1998), Kim and Yi (2006), Richardson (2000) and audit committee (Agrawal and Chadha, 2005 Anderson et al., 2004; DeZoort and Salterio, 2001, Klein, 2002; Bedard et al., 2004, Menon and Williams, 1994; Beasley et al., 2000). Recently, attention turned to the study of corporate governance and financial reporting in the emerging economies which are rapidly growing and have distinctive features about corporate control, capital allocation and regulations (Bradbury et *al*., 2006; Firth et *al*., 2007; Dimitropoulos and Asteriou, 2010).

However, advocates of agency theory believe that board composition of a bank comprising majority of outside directors reduce agency conflicts as they provide effective monitoring tool to the board (Fama and Jensen, 1983). They argue that the inclusion of outside directors increases the boards' ability to be more efficient in monitoring the top management and to ensure absent of collusion with top managers to expropriate stockholder wealth as they have incentives to develop their reputations as experts in decision control. Normally, the outside directors are expert managers from other large organizations and with their expertise, independence, objectivity and legal power, outside directors become potentially powerful governance mechanisms to mitigate agency costs and protect shareholders wealth (Li, 1994).

Accounting-based numbers are a persistent and traditional standard that creditors use to assess firm health and viability. Smith and Warner (1979) note for instance, that such criteria have been used in lending agreements and debt covenants for hundreds of years. Firms violating these accounting-based standards allow debt holders, as senior claimants, to liquidate projects or renegotiate lending contracts (DeFond and Jiambalvo, 1994). Managers as such, may have incentives to issue misleading financial statements to conceal negative information and thereby provide private personal benefits or potential shareholder benefits (Dechow et al., 1996). The importance creditors place on accounting numbers and the countervailing managerial incentives to manipulate these reports suggests that bondholders potentially exhibit great concern over factors influencing the reliability and validity of the financial accounting process (Smith, 1993 and Leftwich, 1983).

From a creditor's perspective, perhaps one of the most important factors influencing the integrity of the financial accounting process involves the board of directors. Boards of directors, among other tasks, are charged with monitoring and disciplining senior management, and lending agreements typically require that boards supply audited financial statements to the firm's creditors (Daley and Vigeland, 1983; DeFond and Jiambalvo, 1994; and Dichev and Skinner, 2002).

Klein (2002a), Carcello and Neal (2000), Beasley (1996), and Dechow et al. (1996) examine the importance of directors monitoring the financial accounting process and document a relation between board characteristics and manipulation of accounting information. Board attributes that influence the validity of accounting statements may thus be of great importance to creditors. Smith and Warner (1979) suggest that creditors price the firm's debt to reflect the difficulties in ensuring the validity of the lending agreement, indicating that if board structure is an important oversight element in the financial accounting process, debt prices may be sensitive to board of director characteristics.

Smith and Warner (1979) and Kalay (1982) observe that bondholders' concerns lie with protecting their investment. One of the more important elements in bondholders' ability to protect their investments is the firm's financial accounting numbers. Creditors use accounting numbers to judge compliance with debt covenants and to administer lending agreements (DeFond and Jiambalvo (1994) and Daley and Vigeland, 1983). Boards of directors have a primary responsibility of overseeing the firm's financial reporting process. Boards meet routinely with the firm's accounting staff and external auditors to review financial statements, audit procedures, and internal control mechanisms (Klein, 2002a). As such, bondholder's potentially view boards of directors and, in particular, board composition as critical elements in delivering credible and relevant financial statements.

The corporate governance culture in Nigeria has consistently failed to be responsible to the stakeholders, accountable to the shareholders and has no deep-rooted mechanism to maintain a balance among the major players (board of directors, shareholders, and management) in corporate governance which resulted into poor financial reporting quality. The challenges and failure of corporate governance in Nigeria stems from the culture of corruption and lack of institutional capacity to implement the codes of conduct governing corporate governance. Company executives enjoy an atmosphere of lack of check and balances in the system to engage in gross misconducts since investors are not included in the governing structure. Policy and procedures required to ensure efficient internal controls are disregarded, and total lack of thorough selection process of CEO, board members and audit committees – round pegs in square holes remain a challenge in Nigeria.

This paper therefore examines the effects of corporate governance mechanisms on the quality of Nigerian banks' financial information. It is therefore hypothesized that corporate governance mechanisms have no significant effect on the financial information quality of Nigerian banks. This question is relevant to be examined because the Nigerian market is more and more expanding. It adopted several reforms to modernize the financial market, promote the foreign investment, privatize the public firms and liberalize the trade. Although the concept of corporate governance is still at an embryonic stage, the Nigerian regulators emphasized the necessity of disclosing relevant and reliable information by the banks.

Hence, we posit in our study that the governance mechanisms do not affect the quality of financial information of the Nigerian banks. Our research contributes to the extant literature in three ways. First, we investigate the relationship between corporate governance and financial information quality in a developing economy which is Nigeria. Second, we identify the control mechanisms which are specific to the financial information of Nigerian banks i.e. Board, Independence, size, audit committee and institutional shareholding. Principally, we focus on the directors and shareholders to identify the principal governance mechanisms. Third, we assess the quality of financial information by combining an accounting and a market based measures into one factor, in order to have a relevant measure of financial information quality for the Nigerian banks. In addition, there is extensive literature that discusses corporate governance around the world (Schleifer and Vishny, 1997; La Porta et al. 1999), there is scarce evidence from prior literature that empirically examine the relationship between corporate governance mechanism and financial reporting outcomes. Exception of prior studies that examine the relationship between corporate governance and performance (Bathala and Rao, 1995; Mitton, 2002; Vethanayagam et al., 2006), little is known in terms of the relationship between corporate governance and financial reporting quality especially on the earnings quality issues in a developing economy like Nigeria. To the best of our knowledge, the identity of the directors or the shareholders and its effect on the financial reporting quality were not heavily discussed by prior research especially in the developing economies (Dimitropoulos and Astenou, 2010). This constitutes principally the contribution of this paper compared to prior studies.

The discussion in this paper is organized as follows. In the second section, literature will be reviewed covering the link between corporate governance and financial information quality. In the third section, the methodological approach is displayed and in the forth section, the results of our empirical investigation is presented and discussed. Finally, conclusion and recommendation are provided.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

A survey of the theoretical and empirical literature concerning corporate governance and financial information quality are reviewed. The emphasis is placed on the board composition, size and independence of the board of directors, audit committee as well as institutional shareholding all as relate to financial information quality. Researchers have found evidence on the association between poor governance and poor quality of financial reporting including earnings manipulation, financial restatements and frauds (Beasley, 1996; Dechow et al., 1996; Peasnell et al., 2000; Klein, 2002b; Kao and Chen, 2004; Davidson et al., 2005). Previous studies bring evidence that corporate governance influences the monitoring mechanism a company uses including the monitoring of earnings management activities. Wang (2006) states that corporate governance has important effects on reported earnings. However, the influence of directors' independence, institutional investors and audit committee on the ability of managers to manipulate earnings remains a controversial issue.

BOARD COMPOSITION AND INFORMATION QUALITY

Board composition is the combination of both executives and non-executives directors as members of the board. The code of corporate governance for Nigerian banks provided that at least two (2) non-executive board members should be independent directors who do not represent any particular shareholder interest and hold no special business interest with the bank. He must also be appointed by the bank on merit. In addition, the number of non-executive directors should not be more than that of executive directors subject to a maximum board size of twenty (20) directors. The independent directors must be solely outside directors who have no other relationship with the companies except being on the board of directors.

However, efficient monitoring from non-executive directors that free from managerial influence is capable to improve the quality of financial information conveyed to the user of financial statement (Higgs Report, 2003). A number of studies in developed countries have reported a positive role of having higher proportion of independence non-executive directors sit on the board and financial reporting quality (Beasley, 1996; Dechow et. al., 1996; Peasnell et al., 2000; Klein; 2002a, Davidson et al., 2005). As outside members do not play a direct role in the management of the company, their existence may provide an effective monitoring tool to the board and thus produce higher quality financial reports (Peasnell et al., 2000). However, evidence from countries with highly concentrated Corporate governance is inconclusive. Kao and Chen (2004) and Jaggi et al. (2007) find significant negative evidence between earnings management and the presences of higher proportion of outside directors in Taiwan and Hong Kong sample which suggest that the inclusion of larger proportion of outside members on the board of directors provides better oversight of management to mitigate earnings management activity. Park and Shin (2004) however, fail to find empirical support on the association between earnings management and board independence for their Canadian sample where the Corporate governance is highly concentrated and a large block holder controls the public traded firms in Canada. Additionally, study by Abdullah and Mohammed (2004) and Abdulrahman and Ali (2006) also fail to find any significant evidence between independence of boards and earnings management in the Malaysian firms. This may be a result of non – inclusion of financial firms in their sample. Furthermore, study by Jaggi et al. (2007) provides evidence of insignificant relationship between proportions of non-executive directors and accrual quality in high family-ownership samples of Hong Kong listed companies which suggest that the monitoring effectiveness of independent directors is reduced in family controlled firms. The result may be different if the study include other firms not only family controlled firms.

Beasley (1996) argued that the probability of detecting financial statement fraud in the American firms decreases with the percentage of outside directors. Peasnell et *al.* (2000) and Klein (2002)b revealed that the independent board mitigates earnings management. In the same line, Bushman et *al.* (2004), Vafeas (2005) and Karamanou and Vafeas (2005) advanced that the information quality increases with the percentage of outside directors. Similarly, Beekes et *al.* (2004) noticed that the board independence allows disclosing information of good quality by the firms in the United Kingdom. In other contexts, Firth et *al.* (2007) indicated that the presence of independent directors improves the earnings quality of Chinese firms. Dimitropoulos and Asteriou (2010) confirmed this finding for a sample of Greek firms. In contrast, other studies suggested that the independent directors are not enough elements to control the managers and

their presence in the board has no effect on the reporting quality of information, (Petra (2007) for American firms, Bradbury et *al.* (2006) for Singapore and Malaysian firms and Ahmed et *al.* (2006) for New Zealand firms.

Prior literature generally posits that board of director independence from senior management provides, among other things, the most effective monitoring and control of firm activities. Beasley (1996) and Dechow et al. (1996) find that the proportion of independent directors on the board (board independence) is inversely related to the likelihood of financial statement fraud. If independent boards provide superior oversight of the financial accounting process, then we expect bondholders to directly benefit through greater transparency and validity in accounting reports.

BOARD SIZE AND INFORMATION QUALITY

The size of the board of directors is the other factor popularly used by researchers to proxy the strength of corporate governance Denis (2001) and Wilkinson and Clements (2006). Many studies argue that the notion that larger board size represents strong governance may be misplaced. On one hand, the costs of coordination and free riding are less for smaller boards. Many studies also indicate lower earnings management as board size decreases. On the other hand, many studies argue for larger size boards in firms. For example, Adams and Mehran (2005) documents that banking firms with larger boards do not underperform their peers in terms of Tobin's Q. Consequently, given good performance, the comparison of weak and strong governance could be affected by classification errors.

Previous studies indicate that board size play an important role in directors' ability to monitor and control managers. Lipton and Lorsch (1992) and Jensen (1993) for instance, argue that because of difficulties in organizing and coordinating large groups of directors, board size is positively related to the board's ability to advise and engage in long-term strategic planning. In contrast, Adams and Mehran (2002) and Yermack (1996) suggest that some firms require larger boards for effective monitoring. Chaganti et al. (1985) posit that large boards are valuable for the breadth of their services. Klein (2002b) for instance, finds that board committee assignments are influenced by board size since large boards have more directors to spread around. As such, she suggests that board monitoring is increasing in board size due to the ability to distribute the work load over a greater number of observers. Monks and Minow (1995) and Lipton and Lorsch (1992) extend this argument by suggesting that larger (smaller) boards are able to commit more (less) time and effort to overseeing management. If large boards are more effective monitors of the financial accounting process, then bondholders should benefit through improved financial transparency and reliability.

Empirical studies are inclusive. Beasley (1996) reports that board size is positively associated with the likelihood of financial statement fraud; however, Uzun *et al*. (2004), Carcello and Nagy (2004a) and Farber (2005) do not confirm Beasley's US results, nor do Smaili and Labelle (2007) in Canada, Sharma (2004) in Australia or Chen *et al*. (2006) in China. Similarly, Abbott *et al.* (2004) find a positive association between the probability of earnings restatement and board size. However, Dechow *et al*. (1996) report that the average board size of firms subject to SEC enforcement actions for alleged accounting violations is virtually the same as the average board size of control firms (viz., about nine directors). Studies suggest that board size is not significantly associated with the probability of having financial information quality Peasnell *et al*., (2001), Song and Windram, (2004) or the extent of earnings management Peasnell *et al*., (2005). However, board size is negatively associated with short-term earnings management, proxy by abnormal working capital accruals, both in the US (Xie *et al*., 2003) and in Singapore-Malaysia Bradbury *et al*., (2004). The findings are inconsistent with the proposition that large boards are poor monitors of financial information quality. However, two studies using earnings returns associations suggest that small boards are associated with higher financial information quality than large boards: one in the US by Vafeas (2000), the other in New-Zealand by Ahmed *et al*. (2006). Therefore, the concluding remark is the results are mixed; determining the right size depends on the size of the firms in question.

AUDIT COMMITTEE AND INFORMATION QUALITY

Audit committees have been long seen as a vital institution in assisting the board of directors in enhancing the transparency and integrity of financial information reporting Dan (2007). The code provided that the audit committee will be responsible for the review of the integrity of the banks' financial reporting system and oversee the independence and objectivity of the external auditors. Specifically, effective audit committees are expected to enhance financial reporting quality by fulfilling its numerous responsibilities including, commenting on and approving accounting policies, reviewing the financial statements, and maintaining and reviewing the adequacy of internal controls. Moreover, audit committees are also expected to play an important role in enhancing the effectiveness of external auditors over financial reporting quality by, assuming responsibilities for the appointment and remuneration of external auditors, and discussing the scope of and reviewing the auditors work.

However, prior research indicates that the construct of audit committee effectiveness over financial reporting is multidimensional and is affected by variety of audit committee characteristics such as committee size (Anderson et al., 2004; DeZoort and Salterio, 2001), committee independence (Klein, 2002; Bedard et al., 2004) and committee number of meetings (Menon and Williams, 1994; Beasley et al., 2000). Audit committee member financial expertise is another important dimension of audit committee effectiveness that has gained the attention of regulators and academics (Treadway Commission, 1987; GAO, 1991; POB, 1993; Kalbers and Fogarty, 1993; DeZoort, 1997, 1998; BRC, 1999; SOX, 2002). Advocates propose that the presence of financial experts in audit committees do assist the committee in, critically analyzing accounting policies and financial statements, identifying potential problems, and solving them. Carcello and Neal (2000) provide support for this argument by documenting a relation between greater audit committee independence and the quality of financial reporting.

However, accounting expertise may be more important for audit committee members than any other expertise, since banks code of best practices (2006) suggest that audit committee members are responsible for tasks that require high degrees of accounting sophistication. Prior studies argue that financial reporting issues involve the highest level of technical detail among audit committee effective areas (Kalbers and Fogarty, 1993; Green, 1994), and ideal audit committee members should have knowledge of accounting concepts and the auditing process to enhance their understanding of the financial reporting process, recognize problems, ask probing questions of the management and auditor and make leadership contributions to audit committees (McDaniel et al., 2002; Libby and Luft, 1993; Bull and Sharp, 1989; Lipman, 2004; Scarpati, 2003). Archival evidence suggests that audit committee accounting expertise is negatively associated with SEC enforcements and restatements (McMullen and Raghunandan, 1996; Agrawal and Chadha, 2005) and suspicious auditor switches (Archambeault and DeZoort, 2001), and positively associated with firm credit ratings (Ashbaugh-Skaife et al., 2006) and the likelihood of supporting auditors in financial reporting disputes with management (DeZoort and Salterio, 2001).

DeFond et al. (2005) document positive market reactions to the appointment of new audit committee members with accounting expertise, but no reactions to the appointment of audit committee members with non-accounting expertise. It is therefore likely that accounting expertise, relative to other expertise, can contribute more to the effectiveness of audit committees which in turn improve the quality of financial information.

INSTITUTIONAL SHAREHOLDING AND INFORMATION QUALITY

Considering the influence of shareholder activism in governance reforms is important to obtain insight into governance practices (Daily et al., 2003). Institutional investors' participation has emerged as important force in corporate monitoring to serve as mechanisms to protect minority shareholder's interest. The significant increase in the institutional investors' shareholdings especially in banks has led to the formation of a large and powerful constituency to play a significant role in corporate governance. To mitigate the problems associated with conflict between controlling owners and minority shareholders in Asian firms, the involvement of institutional investors' equity participation may improve corporate governance practices (Claessen and Fan, 2002). Concentrated shareholdings by institutions provide an incentive for diligent monitoring as they have the resources, expertise and stronger incentives to actively monitor the actions of management and prevent managers' opportunistic behaviour (Wan Hussin and Ibrahim, 2003). Given they own substantial shareholdings that make it difficult to sell shares immediately at prevailing price, the institutional investors have greater incentives to closely monitor companies with high free cash flow (Chung et al., 2005). Extending prior research that look into the role of internal governance mechanisms and earnings management, Mitra and Cready (2005) provide evidence that active monitoring from the institutional investors also help to prevent managerial opportunistic reporting behaviour and improve the quality of governance in the financial reporting process. They find that institutional shareholders intervene and mitigate the self-serving behaviour of corporate managers in financial reporting based on a sample of 136 companies belong to the S&P 500 group and 237 belong to non- S&P 500 category for eight years period (1991-1998). The result may be different if the study could have been conducted recently.

Chung et al. (2005) find evidence that institutional shareholders moderate the discretionary accrual and surplus free cash flow relationship when the surplus free cash flow is high. The presence of institutional investors with substantial shareholdings restrain managers from engaging in income increasing discretionary accruals when companies have high free cash flow, however, when there is no free cash flow agency problems, the institutional investors do not effectively constrain the management's use of income increasing discretionary accrual.

In this paper, we draw on agency theory to develop an empirical framework for examining the link between corporate governance and financial reporting behavior of Nigerian banks. We use this framework to formulate and test specific hypothesis on the association between measures of earnings quality and corporate governance.

Agency theory provides a natural backdrop for our analysis because financial reporting concerns arise when there is a conflict of interests between managers and owners (shareholders) coupled with information asymmetries Beatty and Harris (1998), Kim and Yi (2006), and Richardson (2000). Without this agency problem, reporting quality is a non-issue because managers do not have any incentive to misreport or hide information (keeping aside reporting incentives that might arise from strategic product market considerations). The purpose of corporate governance in its various forms is to reduce this agency problem, suggesting a natural link between corporate governance and financial reporting. All else equal, effective corporate governance should result in high reporting/earnings quality. Indeed, Chtourou, Bédard, and Courteau (2001) provide evidence that effective boards and audit committees constrain earnings management activities.

METHODOLOGY, MODEL SPECIFICATION AND ROBUSTNESS TESTS

The paper focuses on corporate governance mechanisms and banks' financial information quality. The population of the study is 21 banks that are quoted on the Nigerian Stock Exchange as at 31st December, 2010 and all of them are studied making 100% sample using census sampling technique. Multiple regression is used as a tool of analysis and the secondary data is collected from the financial statements of the banks for 3 years (2007 – 2009). Further, we check if there is a multicollinearity problem among the explanatory variables of our model. According to the VIF test (variance inflation factors), it is concluded that this problem does not arise all factors are below 1 and the tolerance values are less than 10 Gujarat (2005). The result not shown for brevity.

Firstly, we measure the financial information quality using the Dechow and Dichev (2002) which considers the standard deviation of the residuals as a measure of financial information quality. Large values of the model residuals mean a considerable level of discretionary accruals and so a poor quality of the financial information vice virsa. Our selection of the model is informed by the study of Keith, Gopal and Kevin (2007) who evaluated the ability of ten measures derived from the extant discretionary accruals models to detect the very existence of fraudulent events in financial statements, the extent of fraudulent earnings, and voluntarily earnings restatements including a total of 35 accruals, a low-cost alternative to discretionary accruals. They found that while total accruals are associated with a fraudulent event, many commonly used measures, such as discretionary accruals derived from the Jones model, the modified Jones model, and performance-matched models are not associated with fraud. The following three measures have explanatory power for detecting fraud beyond total accruals: accrual estimation errors estimated from cross-sectional models of working capital changes on past, present, and future cash flows (Dechow and Dichev 2002), McNichols (2002) and the Beneish (1999) probability of earnings manipulation. They also recommended that future research could develop better measures by including corporate governance and other characteristics which happens to be the focus of this paper.

Dechow and Dichev (2002) suggested a new approach and became widely accepted to assessing accrual and earnings quality as a proxy of financial information quality in this paper, which examines estimation errors related to the mapping of accruals with cash flows. Specifically, they model changes in working capital accruals as follows: $\boldsymbol{\Delta WCit = \beta_0 + \beta_1 CFOit_{-1} + \beta_2 CFOit + \beta_3 CFOit_{+1} \varepsilon\ it}$

Where $\Delta WCit$ is computed as the change in accounts receivable plus the change in inventory minus the change in accounts payable and taxes payable plus the change in other assets (net); and *CFO* represents cash flow from operations. The model is estimated using firm-specific regressions, where the residual determines the accrual quality.—the larger the standard deviation of the residuals, the lower the quality of accruals. They also point out; *CFO* is actually comprised of three components: current-period net cash flows plus net cash flows related to the previous period's income plus net cash flows related to next period's income

Secondly, we identify the corporate governance mechanisms of the Nigerian banks that are related to the board of directors (Composition, Size, Audit Committee and Institutional Shareholding).

Board Composition (BC) is measured by the proportion of independent non-executive directors on the board, expressed in percentage Che Haat (2006).

Board Size (BS) is measured by the total number of directors on the board.

Institutional Shareholding (IS) is measured using proportion of shares owned by institutional investors to total number of shares issued, expressed in percentage (Abdul Wahab et al., 2007).

Audit Committee (AC) is measured using audit committee governance score (*AC GOV SCORE*) that captures the overall strength of the audit committee. Specifically, *AC GOV SCORE* is derived from three commonly used audit committee characteristics: audit committee size (*ACS*), audit committee independence (*ACI*), and audit committee meetings (*ACM*). To develop the summary measure, we create dichotomous measures of the three audit committee governance characteristics for each sample bank, with a value of 1 representing strong governance and a value of 0 representing weak governance:

1) Audit committee size (*ACS*)—Banks with larger audit committees devote more resources to oversee the financial reporting and internal control systems (Anderson et al., 2004) and facilitate quality discussions among audit committee members (DeZoort and Salterio, 2001). Since the code requires a bank to have at least three directors in the audit committee, we code sample banks 1 if they have above three members on their audit committee in each year during the sample period and 0 otherwise.

2) Audit committee independence (*ACI*)—there is considerable evidence depicting a positive relationship between audit committee independence and financial reporting integrity (Klein, 2002; Bédard et al., 2004). We code sample banks 1 if their audit committees are entirely composed of independent members in each year during the sample period and 0 otherwise.

3) Audit committee meetings (*ACM*)—Menon and Williams (1994) argue that audit committees that do not meet or meet only once are unlikely to be effective monitors while audit committees that meet several times exert more serious efforts in monitoring management. We code sample banks 1 if the audit committee met at least four times in each year during the sample period and 0 otherwise.

The three dichotomous variables are then summed up to obtain the summary governance measure (*AC GOV SCORE*). An overall measure of audit committee strength (*ACGOV*) is then constructed by coding it 1 if a sample bank's *AC GOV SCORE* is greater than or equal to two (strong audit committee governance), and 0 otherwise.

Thirdly, we introduce D_1 as control variable 1 to control bank size which is measured as natural logarithm of total assets.

Fourthly, we introduce D_2 as control variable 2 to control bank generation which is measured as natural logarithm of total deposit.

The overall regression model that captures the hypothesis of the study is presented below:

$FRQ = \beta_0+\beta_1X_1+ \beta_2X_2+ \beta_3X_3 + \beta_4X_4 + D_1 + D_2 +e$

Where:

FRQ = S.D. of the residuals of ($\Delta WCit = \beta_0 + \beta_1 CFOit_{-1} + \beta_2 CFOit + \beta_3 CFOit_{+1} \varepsilon\ it$)

β_0 = Intercept

β_{1-4} = Coefficient of the independent variables

X_1 = Board Composition

X_2 = Board Size

X_3 = Audit Committee

X_4 = Institutional shareholding

D_1 = Control Variable 1
D_2 = Control Variable 2
e = Residual or error term

RESULT AND DISCUSSION

The analysis begins with a range of descriptive statistics on dependent variable and independent variables with mean, standard deviation, minimum and maximum presented below:

TABLE 1: SUMMARY OF DESCRIPTIVE STATISTICS

	BC	BS	AC	IS	D_1	D_2
Mean	0.204907	6.034606	0.600013	0.260900	2.614560	1.822277
Std. Dev.	0.131880	5.571870	0.590011	0.216501	1.961204	1.237002
Minimum	0.150638	5.357671	0.000000	0.186190	1.412321	1.033994
Maximum	0.352090	12.15121	1.000000	0.392601	12.91358	3.508349
Observation	63	63	63	63	63	63

Source: Output of data analysis using E-view

From the above table, the average independent directors in the board composition of the Nigerian banks is 20%, board size accounted for about 6 directors, audit committee is 60% indicating most of the Nigerian banks have a strong audit committee governance, institutional shareholding averaging 26% of the shares issued by the banks. The control variables 1 and 2 are accounting for 2.6 and 1.8 billion naira respectively. The standard deviations of all the variables are not far away from their respective means values. This indicates that the data is not skewed and good to produce a reliable result. The minimum number of independent directors of the banks is 15% and the maximum is 35%, while that of the total number of both executives and non-executives directors are 5 and 12 respectively. In addition, only few banks have less strong audit committee governance with a minimum and maximum of institutional shareholding of 18% and 39% respectively. The total assets and deposits of the banks range from 1.4 to 12.9 and 1 to 3.5 billion naira during the period of the study.

TABLE 2: CORRELATION MATRIX

	FIQ	BC	BS	AC	IS	D1	D2
FIQ	1						
BC	0.61	1					
BS	0.76	-0.069	1				
AC	0.72	-0.276	-0.675	1			
IS	0.63	-0.405	-0.323	-0.115	1		
DI	0.69	0.0147	-0.034	0.030	-0.402	1	
D2	0.09	-0.0547	-0.101	-0.210	-0.012	0.21	1

Source: Output of data analysis using E-view

The correlation results presented in table 2 above shows that all the explanatory variables are positively and strongly correlated with the explained variable. Thus, there is a strong relationship between corporate governance and financial information quality in the Nigerian money deposit banks. On the other hand, all the independent variables are negatively correlated between themselves except two and control 1 that are negligibly insignificant. This indicates an absence of multicollinearity between the explanatory variables of the study.
The following section presents and discusses the regression results.

TABLE 3: SUMMARY OF REGRESSION RESULT

Variable	Coefficient	Standard Error	t. test	Probability
Intercept	0.721671	0.065633	4.611386	0.0011*
BC	0.530721	0.058783	4.255308	0.0064*
BS	0.712355	0.161117	3.232486	0.0010*
IS	0.013020	0.100341	2.016052	0.0430**
D_1	0.015341	0.021515	3.088364	0.0144*
D_2	0.002420	0.112245	3.468224	0.2051
R-squared		0.670816		
Adjusted R-squared		0.520434		
Durbin-Watson stat		2.203214		
F-statistic		7.510430		
Prob(F-statistic)		0.000211*		

Source: Output of data analysis using E-view

Table 3 above shows the summary of the estimated regression model:
$FIQ = 0.7217 + 0.5307BC + 0.7123BS + 0.0130IS + 0.0153D_1 + 0.0024D_2$
The results show that the estimated model of the study is fit because all the explanatory variables are significant in determining the dependent variable except control 2 variable controlling bank generation. It can also be observed that the coefficients of all the explanatory variables are positive showing all none of the variables in inversely related with financial information quality of Nigerian banks. Thus, board composition, board size and control 1 are all significant at 1%, whereas, institutional shareholding is significant at 5% level of significant and control 1 is not significant at all.
The findings related to board composition or independence above supported that of Fama and Jensen (1983) that outside directors are argued to have incentives to carry out their monitoring tasks more effectively, not collude with top managers in expropriating shareholder wealth, and objectively question and evaluate management performance (Carcello and Neal, 2003). Also, Rosenstein and Wyatt, 1990; Dechow et al., 1996; Beasley, 1996; Core et al., 1999 empirically indicated that independent directors are associated with stronger corporate governance and financial reporting integrity which is in line with the finding of this study. Therefore, the policy implication is for Nigerian banks to have atleast 15% and not more than 35% independent directors out of the total number of directors.
Further, for board size our finding supported that of Jensen (1993) and Lipton and Lorsch (1992) who suggest that large boards are less effective monitors and are easier for CEOs to influence. Yermack (1996), Eisenberg et al. (1998), and Loderer and Peyer (2002) find a significant negative relationship between large board size and financial reporting quality. Our result reveals that Nigerian banks should have a minimum of 5 and maximum of 12 executive and non-executive directors for their reported financial information to be of quality.
The result also reveals that the audit committee size, independent and frequent meetings determines it strength and quality of financial information in Nigerian banks. The findings is in support of Anderson et al., (2004) that firms with larger audit committees devote more resources to oversee the financial reporting, internal control systems and facilitate quality discussions among audit committee members and DeZoort and Salterio (2001) who provide evidence that firms

with larger audit committees are less likely to make suspicious auditor switches. However, for the committee independence it tallies with the findings of Klein, (2002); Bédard et al., (2004) and Anderson et al. (2004) depicting a positive relationship between audit committee independence and financial reporting integrity. Finally, Menon and Williams (1994) argue that audit committees that do not meet or meet only once are unlikely to be effective monitors while audit committees that meet several times exert more serious efforts in monitoring management therefore protecting earnings manipulation which improves the quality of financial information to be reported. Other supporting evidence indicates that firms whose audit committees meet less often are more likely to engage in fraudulent behavior (Beasley et al., 2000), face reporting problems (McMullen and Raghunandan, 1996), and make suspicious auditor switches (Archambeault and DeZoort, 2001). The evidence that firms with more members in the audit committee are more likely to have good quality financial reporting is in contrast with the evidence from previous studies such as Felo et al. (2003), Abbott et al. (2004) and Bedard et al. (2004), but consistent with Lin et al. (2006). This suggests that larger audit committees are more likely to be able to devote adequate time and effort to ensure that the information disclosed in the financial statements is accurate and timely and hence increase the quality of financial reporting.

Overall, the findings can provide guidance to users of accounting information such as investors and regulators. For users, our findings serve as a reminder that audit committees may appear to comply with regulatory requirements on independence, financial expertise and minimum number of meetings, yet in actuality they only play a ritualistic role with no substantive monitoring in the financial reporting process, in tandem with the institutional theory prediction (Cohen, Krishnamoorthy, & Wright, 2008). To help users make an informed decision on the quality of audit committee and to facilitate a sound assessment of "independence in substance", more qualitative disclosure is required on the activities of audit committees and the extent to which they have fulfilled their responsibilities. For the regulators, the efficacy of prescribing certain best practices for the audit committee remains an open question.

Moreover, for institutional share holder the result reveals that Nigerian banks have minimum of 19% and Maximum of 39% institutional shares holding with most of them having 26% out of the total issued shares and became significant on the quality of their financial information. This implies that banks should ensure that the institutional holding should not be above 39% of the total holdings so that the quality of the accounting figure may be maintained. In fact it should be noted that the higher the institutional holding the more block holding in a firm since must if the institutional holdings are bulk shares purchase.

Looking at the relation between institutional ownership and discretionary accruals, a positive relation emerged and supported statistically. This significant association indicates that institutional investors are a major consideration in managers' aggressive earnings management strategy. This result is not surprising. As a result, institutional investors in Nigerian banks are effective in constraining managerial behaviour of earnings management. Consistent with the argument that institutional investors in Nigeria create incentives for managers of their portfolio firms to manage earnings aggressively, these institutional investors focus excessively on current earnings performance (Koh, 2003). The result of influential effect of institutional investors on earnings management found in this study is consistent with what Velury and Jenkins (2006) found in a sample of US based firms. However, similar evidence is found by Siregar and Utama (2008) for Indonesian firms.

Regarding the other variables, included as control variables (D_1 and D_2), we found that banks' size significantly affecting the quality of accounting information while their generation is not. Size appears to affect earnings management significantly indicating that banks with larger assets have high earnings quality since they engage more in earnings management but bank generation (new or old) has nothing to do with their earnings quality.

Finally, the cumulative influence of all the explanatory variables put together is able to explain the dependent variable up to 72 as indicated by the adjusted R^2 and remaining 28% is controlled by other factors. Similarly, the result of the F- statistic value of 7.5 implies that the model is well fitted and significant at 1% considering the rule of thumb of 2. This provides evidence of rejecting the null hypothesis that corporate governance mechanisms have no significant effect on the quality of financial information of Nigerian banks. The Durbin- Watson of 2.20 reveals a complete absence of serial correlation within the 3 years of the study.

CONCLUSION AND RECOMMENDATION

Boards of directors, audit committees and institutional holdings are responsible for monitoring, evaluating, and disciplining banks' management. Perhaps one of the most important responsibilities of the board from a creditor's perspective is oversight of financial reporting. Because debt holders rely on accounting based covenants in lending agreements, creditors may have concerns with board and audit committee monitoring of the financial accounting process. Consistent with this idea, we find that board and audit committee independence are positively associated with significantly quality of financial information. In line with this, is it therefore concluded that corporate governance has significant effect in influencing the quality of financial information in banks. Overall, our study supports the argument that the corporate governance affects the accounting quality in the Nigerian money deposit banks. What left to be done is for the shareholders of Nigerian money deposit banks to ensure the inclusion of outside directors one of who must be financial expert in their audit committee and the committee to meet atleast 4 times annually in order to improve the quality of financial information reporting.

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AN EMPIRICAL STUDY ON TAX PAYER'S ATTITUDE TOWARDS E- RETURN FILING IN INDIA

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ABSTRACT

Information-communication technology is being integrated to deliver better and convenient public services by government in various ways under the e-governance program around the world. Filing income tax return online is one such ambitious initiative under e-governance. The purpose of this paper is to understand tax payer's attitude towards this new information system. The paper is based on the conceptual framework of TAM which has been extended systematically to accommodate some more determinants to analyze tax payer's attitude.The survey is administered over one hundred eight respondents through a close ended structured questionnaire. The study employed factor analysis and multiple regression analysis to understand tax payer's attitude towards e-return filing. The study found that perceived ease of use, perceived usefulness, perceived credibility, and computer awareness significantly influence the customer's acceptance of e-filing. The empirical findings of the study are useful for governments, tax policy makers, tax authorities, software developers and tax payers.

KEYWORDS

E-return filing, Factor analysis, Perceived usefulness, Perceived ease of use.

INTRODUCTION

Information communication technology is regarded as one of the most remarkable scientific and technological development during last couple of decades which has impacted the life of human being so deeply. Governments around the world are increasingly integrating this technological development to reinvent public service and dissemination of information for better public administration under various e-governance initiatives. The basic objective of all e-governance projects is promotion of administrative efficiency through innovative executive practices directed to make citizen services more convenient, efficient and customized. A successful implementation of any e-governance initiative is a step towards citizen-directed smart government. The success of any e-governance initiatives, however, depends upon the importance that people place on particular project in terms of its usability.

One of the prominent e-governance initiatives which have been launched by a number of governments is in the form of online return filing. The rapid development of internet technology, information transmission through internet and improved safety mechanism has made e-return filing a more convenient method of using service in many countries (Lu et al., 2010). The electronic filing has various advantages over traditional methods of filing return. It is convenient, saves time by avoiding queue in the tax department and can be completed in just 20-30 minutes time. For tax payers who have digital signature, they can download their tax statement and finish tax declaration within 5-10 minutes. Furthermore, electronic tax filing offers many benefits to service providers also. It substantially minimize their workload and operational cost due to submission of tax return in a paperless environment resulting reduced cost of processing, storing, handling of tax returns and conservation of environment (Azmi et al., 2010).

For better tax administration and good governance practices, Indian Tax Department launched e-return filing, TRPs and a Saral form (for individual tax payers) in new avatar in 2007.The Tax Department made huge investment in terms of system development, safety and security of submitted information and sensitizing tax payers about the benefits of e-return filing using mass-media campaign. The campaign was targeted over the facility of anywhere/anytime filing, fast processing and automatic tax calculations with full safety and security of the information submitted.

Despite all the efforts on part of the Tax Department, the tax payer's perception about this new information technology oriented system is a cause of worry. Since the public don't directly communicate with tax personnel, see or touch the tax forms as the service is provided online, the e-return filing system may provide little psychological satisfaction. Other problems may lies in reluctance of learning new system, time involvement, stability and reliability of system during e-return filing process, confidentiality and privacy issues may also create challenges in acceptance of electronic return filing (Azmi et al., 2010). Due to all these issues the acceptance of e-return filing as a method of tax filing has not gained good acceptance among the various categories of tax payers in India. (table1).It is therefore, important for the government to identify the reasons for the slow acceptance of this system by the individual tax payers.

TABLE 1: STATE-WISE DISTRIBUTION OF E-RETURNS FILED FOR AY 2009-10

S.no.	State	Type of Form	
		ITR1*	ITR2**
1.	Maharashtra	146,329	232,011
2.	Delhi	88,131	102,661
3.	Gujrat	36,073	88,531
4.	Karnataka	128,638	108,094
5.	Tamil Nadu	77,343	71,634
6.	West Bengal	29,768	84,218
7.	Uttar Pradesh	40,347	61,943
8.	Punjab	19,010	46,440
9.	Madhya Pradesh	15,809	43,236
10.	Rajesthan	12,461	36,450
11.	Haryana	24,866	21,044
12.	Kerala	20,660	12,031
13.	Bihar	3,200	3,903
14.	Jammu & Kashmir	1,532	905
15.	Himachal Pradesh	1,653	1,038
All India		7,13,753	9,89,484

* ITR1 for Individuals having Income from Salary/ Pension/ family pension & Interest
** ITR2 for Individuals and HUFs not having Income from Business or Profession

The basic objective of this paper is to understand the attitude towards e-return filing so that some strategic measures can be taken for successful implementation of the e-filing among Indian tax payers. The study investigates the factors that impact tax payer's behavioral intentions to use an e-return filing in light of certain existing conceptual framework which have been duly modified according to the need of Indian tax payer's attitude and perception. The paper has been organized in the following parts. The first part provides a review of the existing literature on the subject. The second part focuses on the research methodology, hypothesis and conceptual framework of the proposed model. Finally, the results, managerial implication and suggestion for future research are presented.

LITERATURE REVIEW AND BASIC FRAMEWORK OF STUDY

Several models have been developed so far to decode the customer's behavioral intentions of using new information system. Notable among them are Technology Acceptance Model-TAM (Davis, 1989), Theory of Reasoned Action-TRA (Fishbein et al, 1980) and Theory of Planned Behaviour-TPB (Ajzen, 1985). A number of research studies, however consider the TAM's ability to explain and understand customer attitude towards an information system better than similar other models (Klopping et al., 2004). The present study found that TAM measure requires an extension to accommodate some more constructs according to the need of specific buying behavior (Nadeem et al.2007, Pikkareinen et al.2008, Legris et al.2003).

This research study used the conceptual framework of the TAM by accommodating measures like Perceived Usefulness (PE) and Perceived Ease Of Use (PEOU). TAM is one of the conceptual models which have been widely used by a large number of researchers to understand the adoption process of new information system. It is constructed on two basic proposition of perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree of belief that using a new technology and information system will improve his/her job performance. Perceived ease of use indicates how easily individual learn to operate new technology or information system. The model place more emphasis on perceived ease of use that positively affects the perceived usefulness also (Lu at el., 2010).

The original TAM model has been modified and extended by various researchers according to the particular consumer behavior characteristics of the area under study. Since e-return filing is one of the recent means of disseminating personal information on a government server, the issue of security and privacy becomes important. Collectively, these two factors have been systematically merged under perceived credibility. Users tend to recognize a system that securely conclude their transaction, maintain personal privacy and personal information (Wang et al., 2003).Customers are highly concerned about the growing cases of plagiarism while using internet and other means of electronic formats which inhibits the acceptance of particular information system (Suh et al., 2002).The role of credibility becomes more decisive when services are delivered to the customer at arms length. Research studies have indicated that customer get more psychological satisfaction when they make personal visit to their respective service provider, shake hand with the personnel and observe proximity and other body signal of the staff during that service encounter.

Some research studies confirms that perceived social pressure plays significant role in determining the acceptance and usage behavior of adaptors of new information system (Venkatesh et al., 2000).The tax payers may have a favorable or unfavorable opinion towards e-return filing because of the perception of a colleague, family member or acquaintances. In some situations, people might use a technology to comply with other's mandate rather than their own feeling and belief (Somali et al., 2009).

According to behavior decision theory, the cost benefit pattern (perceived cost) is another significant measure that influences the adoption process of new information system. This proposition is quite important in view of the 'price consciousness' nature of Indian customer. The rational economic man not only considers the prices paid in terms of charges, but also consider expenses incurred in searching for, purchasing and using the service (Lovelock et al., 2003). A rational customer calculates opportunity cost, physical cost (e.g. fatigue or discomfort), psychologist costs (e.g. mental effort, cognitive dissonance) and sensory cost (e.g. unpleasant sensation, smell, excessive heat or cold).

Several studies have also found the evidence of perceived risk in adoption or rejection of a new information system (Azmi et al., 2010). The performance and psychological risk are found to be more dominant in new information system adoption. Performance risk measures the risk that users are exposed to if the e-return filing system malfunction which is quite common during last minute rush of return submission deadline in India. Psychological risk measures the degree of anxiety and state of frustration that tax payers may get during filing return electronically. Computer awareness or self efficacy is another important which has been identified as a critical antecedent in the adoption of new information system (Wang et al., 2003).It is defined as an individual's self-confidence in his or her ability to perform task across multiple computer application domain (Somali et al., 2009).

OBJECTIVES OF STUDY

- To understand the relationship among various factors that affects the acceptance of e-return filing
- To analyze relationship between demographic and socio-economic variables in acceptance of e-return filing
- To develop some workable empirical propositions to make e-return filing more acceptable and popular

RESEARCH METHODOLOGY

The study used basic principles of cross-sectional descriptive research design. The survey was administered over 108 individual tax payers who may not necessarily filing their return online. A non random convenience sampling method was used to collect the primary data through a close-ended structured questionnaire. A pilot study was conducted over 14 tax professionals, chartered accountants and tax payers to test the efficiency of the research instruments. Accordingly, the survey instrument was re-adjusted and modified. The questionnaire was divided into two parts. Part first of the questionnaire dealt with the survey items which have been designed to understand respondent's attitude towards e-return filing. It was given in the beginning to minimize the 'fatigue influence' in the process of filling questionnaire. Part two of the questionnaire contained questions on socio-demographic nature.

The dependent and independent variables were measured on a 7-point Likert type scale, ranging from 1(strongly disagree) to 7 (strongly agree). The respondent's attitude towards e-return filing was measured using Perceived Usefulness, Perceived ease of Use, Perceived Credibility, Perceived Social Pressure, Perceived Cost, Perceived Risk and Computer Awareness. Since it is practical to use existing, well developed questionnaire that have been tested for their validity and reliability, the current study also utilized some of them. However, due modifications have been made in some of the survey items to respect Indian customer behavior.

Data was factor analyzed and correlation and regression analysis was performed to test the stated hypothesis and to see the relationships among variables under study. The data was collected in the month of Jan-Feb, 2010 and analyzed using SPSS 17.0 and Excel.

HYPOTHESIS

The study set following hypothesis to understand the tax payer's opinion regarding e-return filing:

TABLE 2: HYPOTHESIS OF THE STUDY

Hypothesis No.	Description	Source
H1	Respondent's perceived usefulness has a positive impact on his/her e-return filing	Davis(2000), Somali(2010)
H2	Respondent's perceived ease of use has a positive impact on his/her e-return filing	Davis(2000), Vankatesh(2003)
H3	Respondent's perceived credibility has a positive impact on his/her e-return filing	Azleen(2009), Hanudin92008)
H4	Respondent's perceived social pressure has a positive impact on his/her e-return filing	Kurnia(2003), Hanudin(2008)
H5	Respondent's perceived cost has a positive impact on his/her e-return filing	Sharma(2010)
H6	Respondent's perceived risk has a positive impact on his/her e-return filing	Kurnia(2003),Ambali(2009)
H7	Respondent's computer awareness has a positive impact on his/her e-return filing	Wang(2003),Davis(1989)

PROFILE OF SURVEY RESPONDENTS

One hundred eight questionnaires were found usable for analysis. Three questionnaires were deleted from the study due to incomplete/contradictory information. The percentage of male respondent to female respondent differs significantly. About 84.25 percent of respondents are male while 15.75 per cent are female.

TABLE3: SELECTED DEMOGRAPHIC PROFILE OF RESPONDENTS

Variables	Characteristics	N (108)	Percentage
Gender	Male	91	84.25
	Female	17	15.75
Age	18-25	15	13.88
	26-35	41	37.96
	36-45	30	27.77
	Above 46	22	20.37
Marital Status	Married	83	76.85
	Unmarried	25	23.14
Education	High School	04	3.70
	Graduation	27	25.0
	Post graduation	22	20.37
	Professionals i.e. CA,B-Tech,LLB etc:;	39	36.11
	Others	06	5.55
Monthly household income (INR)	Below 25,000	13	12.03
	25,001-50,000	28	25.92
	50,001-100,000	56	51.85
	Above-100,000	11	10.18
Profession	Pvt. Sector	48	44.44
	Govt. Sector	32	29.62
	Traders/Businessman	09	8.33
	Self-Employed Prof.	11	10.18
	Retired/Pensioner	01	0.92
	Other	07	6.48

A little more than 76 percent of them are married. More than half of the respondents selected in the study were professionals and graduates. Approximate 38 per cent of the respondents aged 26-35, while little more than per cent were above 46 years of age. Collectively, more than 72 per cent respondents are below 45 years. Almost 45 per cent of the respondents are professionals. Approximate 35 per cent are reported graduation degree as their qualification. The' private and government sector employees' leads the occupation cohort with 44.44 and 29.62 per cent share respectively. The retired/pensioner category constitutes the lowest. Almost half of the respondents reported their monthly family income between INR 50,001-100,000 while a little more than 10 per cent earns more than 100,001 monthly.

VALIDITY AND RELIABILITY OF DATA

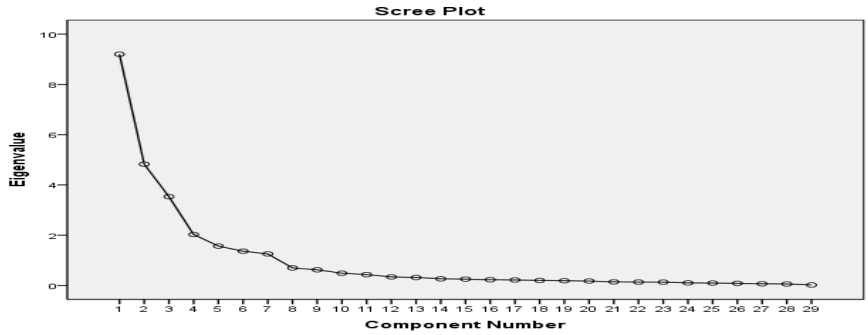
The goodness of the data is measured to test the consistency of the constructs taken to analyze the customer's opinion regarding e-return filing. Consistency indicates the degree to which a set of constructs collectively measures what it intends to measure. The reliability of each construct was first measured with Cronbach's alpha. It is computed in terms of the average inter-correlations among the items measuring the concept. A construct is considered reliable if the value of alpha ranges from 0.5-0.95 (Peterson, 1994). For various sets of important constructs used in the survey instrument, values of Cronbach's alpha were obtained

TABLE 4: RELIABILITY STATISTICS

Constructs	Factor Code	Factors Loading	Measures	Cronbach Alpha
Perceived Usefulness	PU1	0.789	Online tax filing enables me to utilize tax filing services more quickly	0.884
	PU2	0.777	Online tax filing improves my performance of utilizing tax filing system	
	PU3	0.667	Online tax filing increases my productivity	
	PU4	0.818	Online tax filing system is more interactive	
	PU5	0.731	Using online tax filing enhance my effectiveness in tax filing	
Perceived Ease of Use	PEOU1	0.717	Learning online tax filing is easy	0.885
	PEOU2	0.756	It is easy to organize information needed in online tax filing	
	PEOU3	0.739	Online tax filing is more flexible	
	PEOU4	0.722	Online tax filing makes me more skillful while using	
	PEOU5	0.795	Overall, I find online tax filing system easy than other methods	
Perceived Credibility	PCr1	0.696	I trust on the technology used in online tax filing	0.901
	PCr2	0.831	I trust in the ability of tax authorities to protect submitted information	
	PCr3	0.752	I believe that submitted information is not subject to alteration/loss	
	PCr4	0.758	I believe that online tax filing system is well tested and documented	
Perceived Social Pressure	PSP1	0.890	My social circle motivate me to file tax online	.927
	PSP2	0.909	Celebrities and other promotional stimuli influence my decision to file tax online	
	PSP3	0.895	People who are my ideal/ important influence my decision of online tax filing	
Perceived Cost	PC1	0.876	Filing tax online saves my physical effort cost	0.932
	PC2	0.941	Online tax filing provides better opportunity cost	
	PC3	0.896	Online tax filing saves my sensory cost	
	PC4	0.912	Overall, I find online tax filing more economic	
Perceived Risk	PR1	0.946	Online tax filing is more prone to psychological risk	0.955
	PR2	0.973	Online tax filing is vulnerable to my privacy	
	PR3	0.939	Online tax filing is subject to performance risk	
	PR4	0.935	Online tax filing don't provide leverage to change income records subsequently	
	PR5	0.926	Case of plagiarism have no influence on my opinion about online tax filing	
Computer Awareness	CA1	0.852	I can file e-return simply going through user manuals	0.942
	CA2	0.872	I can file e-return more comfortably if anybody demonstrate it	
	CA3	0.890	Tax authorities should provide help in case I got stuck somewhere while filing e-return	

A factor analysis, which is confirmatory in nature, was performed on the different variables such as PU, PEOU, Perceived Credibility, Perceived social pressure, Perceived Cost, Perceived risk and computer awareness. The factor analysis was conducted using principal axis factoring with varimax rotation as an extraction method (see for details, e.g. Nummenmaa et al., 1996, p. 244; Aczel, 1999, pp. 814-18; Hair et al., 1998, pp. 87-120). The identified seven factors were selected whose Eigen values are greater than 1.0 from the graph of scree plot.

DIAGRAM 1: ON SCREE PLOT



These variables within factors are correlated, is confirmed by the Bartlett's test of sphericity. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indicated a practical level of common variance (KMO = 0.833), which implies that the results obtained from factor analysis are appropriate. The first factor, PU, consists of five variables (alpha = 0.884). Peterson (1994) points that acceptable value of Cronbach's alpha can vary between 0.5 and 0.95 depending on the type of research. For basic research Cronbach's alpha should be greater than 0.6. The second factor, PEOU, was loaded with five variables (alpha = 0.885). The third factor, Perceived Credibility, contained four variables (alpha =0.901). The fourth factor exhibits loadings for three variables referring to perceived social pressure on e-filing (alpha = 0.927). The fifth factor, Perceived cost, was loaded with four variables (alpha = 0.932). The sixth factor, Perceived risk exhibits loadings of five variables (alpha = 0.955). The seventh factor, computer awareness, was loaded with three variables (alpha = 0.942). The overall reliability of the factor analysis was 0.911. The regression analysis was conducted to reveal how different factors affect the acceptance of e-tax filling.

TABLE 5: CORRELATION STATISTICS

Constructs	Acceptance Rating of e-filing		
	Pearson Correlation	Sig. (2-tailed)	N
Perceived Usefulness	0.831**	.000	108
Perceived Ease of Use	0.865**	.000	
Perceived Credibility	0.815**	.000	
Perceived Social Pressure	0.231*	.016	
Perceived Cost	-0.062	.527	
Perceived Risk	0.154	.111	
Computer Awareness	0.804**	.000	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The factors Perceived usefulness, perceived ease of use, perceived credibility and computer awareness have strong positive correlations with the acceptance of e-filing and other two factors such as perceived social pressure and perceived risk are positively correlated with the acceptance of e-filing but it is substantially weak. There is no correlation between perceived cost and acceptance of e-filing. Now we run multiple regressions to further test the significance effect of independent variables on dependent variable.

TABLE 6: REGRESSION MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.934[a]	.872	.863	.319

a. Predictors: (Constant), Computer Awareness, Perceived Risk, Perceived Cost, Perceived Social Pressure, Perceived Credibility, Perceived Usefulness, Perceived Ease of Use

A regression analysis was also conducted to identify how different factors affect the acceptance of e-filing. The value of standard error in our proposed model is 0.319 which is substantially less than the standard deviation (i.e. 0.861) of the dependent variable. Thus, the use of proposed model is appropriate.

TABLE 7: ANOVA

Mean Square	F	Sig.
9.874	97.325	.000[a]
.101		

a. Predictors: (Constant), Computer Awareness, Perceived Risk, Perceived Cost, Perceived Social Pressure, Perceived Credibility, Perceived Usefulness, Perceived Ease of Use

b. Dependent Variable: Acceptance Rating of e-filing

The AVOVA table reports a significant F statistic, which further justifies the appropriateness of the proposed model. As the value of R square is 0.872 which means that the proposed model explains approximately 87.2% of the total variance in the acceptance of e-filing.

TABLE 8: STANDARDIZED REGRESSION COEFFICIENT STATISTICS (COEFFICIENTS[A])

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	-.227	.235		-.966	.336
Perceived Usefulness	.290	.064	.278	4.490	.000
Perceived Ease of Use	.330	.062	.347	5.326	.000
Perceived Credibility	.249	.060	.246	4.120	.000
Perceived Social Pressure	.018	.018	.038	.989	.325
Perceived Cost	.033	.023	.052	1.426	.157
Perceived Risk	.018	.023	.031	.784	.435
Computer Awareness	.145	.058	.161	2.489	.014

a. Dependent Variable: Acceptance Rating of e-filing

According to the standardized regression coefficients, the relative order of preference of the predictive factors over the acceptance of e-filling can be summarized as follows: Perceived ease of use (B=0.347), Perceived usefulness (B= 0.278), Perceived credibility (B = 0.246) and Computer awareness (B= 0.161). When t - test results pertaining to the significance of regression coefficients was analyzed, it is observed that the explanatory variables and their coefficients, PEOU (t = 5.326, p <0.05), PU (t = 4.490, p <0.05), Perceived Credibility (t = 4.120, p <0.05) and Computer awareness (t = 2.489, p <0.05), are statistically significant. Hence, it is proved that Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Credibility (PC) and Computer Awareness (CA) significantly affect the acceptance of e-return filing thereby accepting the null hypothesis (H1, H2, H3 and H7). The other factor perceived cost (PC), Perceived Social pressure (PSP) and Perceived risk (PR) don't significantly affect the acceptance of e-return filing. Hence, the null hypothesis (H4, H5, and H6) are rejected at the 5% level of significance.

CONCLUSION AND MANAGERIAL IMPLICATIONS

The basic objective of this research study was to analyze various factors that affect the acceptance of new information system in light of the some previous tested model like TAM. The study deliberately extended the original postulates of TAM to include some new factors which have been derived from the available literature and content analysis study conducted in the first phase of the research. Therefore, some new conceptual foundation is proposed in this study that systematically explores the critical success factors in acceptance of e-return filing in India. The study is unique because it investigated the customer acceptance of e-return filing from the perspective of some established research and its empirical generalization in developing economies like India. It validates the applicability of TAM in understanding the acceptance of e-return filing. The study posits that acceptance of e-return filing can be improved by focusing perceived ease of use, perceived usefulness, perceived credibility and computer awareness. The study reveals the importance of focusing on enhancing a positive attitude of how easy e-return filing is to use and the degree it is useful to the focused group. In this parlance, the tax authorities should keep the ease of use and perceived usefulness in their priority. When designing the software for e-return filing, the ease of use and personalization should be kept in mind. This move will motivate customers in developing beliefs around the e-return filing services and in turn will lead to customers accepting of e-return filing. The decision makers need to understand that the familiarity with new information system varies from person to person so they are required to develop mechanism to familiarize customers with the procedure of their services. Tax authorities can provide a manual reference or video presentations at the various points to explain ease of use. The study also reveals that perceived credibility also plays a substantial role in the customer acceptance of e-return filing. The study founds the role of perceived cost, perceived social pressure and perceived risk statistically insignificant in relation to other factors.

Furthermore, this study suffers from three major limitations. The first limitation is related to the sample size which is relatively small in comparison to similar other studies. The second limitation is related with the scope to analyze acceptance of e-return filing comprehensively by including additional independent variables like trust in its domain. The third limitation which is prominent in nature is that the present study is tested using correlation and regression analysis among variables. However, this technique can only examine a single relationship at a time (Hair, at el, 1998). An area of upcoming research is to test the proposed model using Structural Equation Modeling (SEM). SEM is a multivariate statistical technique used to estimate a number of interrelated dependence relationship simultaneously.

Finally, in this information communication technology era, every government is required to develop a reliable, fast and customized channel for service delivery under various e-governance initiatives. The present study is a systematic attempt in this direction to explore customer acceptance of one such input in the form of e-return filing. Future studies may be conducted to validate the findings of this study.

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SPATIAL ANALYSIS OF LAND USE IN MYSORE CITY

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ABSTRACT

The urban land use is an outcome of geographical and socio economic factors by man over the decades. Hence spatial information on land use and possibilities for optional use is essential for the selection, planning and implementation to meet the increasing the demands for human needs and welfare of the urban area. This information assists in monitoring the land use resulting out of charging demands of increasing urban population over the decades. So in this article a detailed work on urban land use pattern in Mysore city is analyzed. An attempt has bee made to study the status of urban land use of Mysore city during 1995 to 2011 with a view to detect the changes on land utilization rate that has taken place in this status particularly in the built-up land. The set of measures taken by the city corporation to contain problem is highlighted on extremely bothering the existing land use in Mysore city.

KEYWORDS
Predominantly, Designated, Conspicuously, Barrier, Tenure.

INTRODUCTION

The land use pattern of a region is an outcome of natural and socio-economic factors and their utilization by man in time space over the decades in the urban area of Mysore. The land is becoming a scarce resource due to immense agricultural demographic pressure and human activities. Hence, information on land use and possibilities for their optimal use is essential for the selection, planning and implementation of land use schemes to meet the increasing demands for basic human needs and welfare of the urban people. This information assists in monitoring the dynamics of land use resulting out of changing demands of increasing population over the decades in Mysore city.

The may be classified into natural and manmade. This natural environment is such as, forest, hills, slope, soil, and mountain, water etc., but the man made environment such as housing, roads for transportation, industrial, public and semi public, agricultural land etc. By this we can calculate the area on percentage based on usage of earth cover on the surface of their classification and land use.

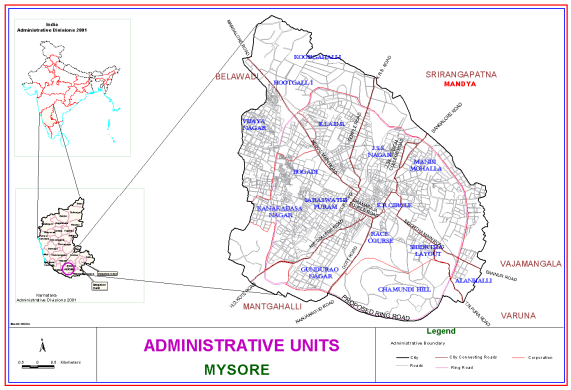
OBJECTIVES

1. To know the existing land use in Mysore city.
2. To know the future land use pattern of Mysore city

STUDY AREA

The city Mysore is Saucer in a secular shaped basin with chamundi hills as a majestic backdrop. The city is spread over an area of 962.61 kms with a total population of 7,85,800 peprsons as per 2001 census in the city area. It occupies an important location in the larger regional context and only 140 km away from Bangalore, the Capital of the Karnataka State.The latitudinal and longitudinal co-ordinates of location area 12 18' N and 76 42' E. The purpose of the chapter is to provide a profile land use in Mysore city.

MAP 1: STUDY AREA



LAND USES OF MYSORE CITY

All land uses, irrespective of their type generate traffic and by doing so stimulate transport development. The purpose here I how the land uses relate to transport and traffic development.

The general land use pattern of Mysore city owes its origin to its past when its importance was overstressed as the city of the Maharaja and the cultural centre of the erstwhile princely state. The existing land use characteristics in the city exhibit two distinctive patterns.

a) specific or land uses;
b) Mixed land uses.

The defined or specific land use in the outcome of post city planning exercise which confines to newly developed areas. The old city at the central part of the built up area has missed land uses. The newly developing areas are to the north, along with the Mysore – Bangalore road, Hunsur road and K.R.S road and to the south along the Nanjanagud road. Although mixed developments have occurred throughout the city, some predominate land use patterns can be effortlessly identified.

The old city is predominantly the Central business district, which scattered around the palace and it is also the heart of the city. This area has an acute concentration of retail and wholesale trade, officers, hosiery industries, show rooms, electronic items and commercial entertainments. These activities are spared over long the entire length of the Sayyaji Rao road, Deveraj Urs road and Ashoka, Danavantri and K.T.Street. The concentration of commercial an activity is found at V.V. Mohalla, N.R.Mohalla, K.R.Mohalla and Chamaraj Mohalla.

The north and southwestern part of the city abetting the Shivamoga, Mangalore and Bangalore road and Nanjanagud-Bangalore railway line is predominantly developed for industrial concentration. Though the residential areas are dispersed all over the city, in Devaraja, Krishnaraja, Chamaraja and Chamundeswari Mohallas on the western part of city, another concentration of residential activities can be observed in Lashkar Mohalla, Nazarbad, Fort Mohalla and Kille Mohalla.

Urban development to the southeast of the city is conspicuously restricted by the Chamundi Hills which acts as a physical barrier and a smaller part has been developed after 2000.Some of the new layouts have established the existing land uses analysis in the development of Mysore City (2001).

TABLE 1: LAND USES OF THE CITY

Category	1995		2001		2011	
	Area in Hectares	Percentage	Area in Hectares	Percentage	Area in Hectares (proposed)	Percentage (proposed)
Residential	3057.30	40.4	284991	39.9	6097.87	43.45
Commercial	182.23	2.41	215.95	3.02	344.07	2.45
Industrial	1021.01	13.4	962.61	13.48	1855.05	13.22
Park and Open Spaces	415.77	5.49	981.07	13.74	1055.05	7.52
Public and semipublic	856.45	11.32	639.69	8.96	1180.78	8.41
Transport and communication	1530.73	20.22	1150.27	16.1	2380.56	16.96
Public utility	37.26	0.49	36.48	0.51	43.35	0.37
Water sheet	182.68	2.41	143.99	2.02	178.95	1.27
Agriculture	285.34	3.73	162.33	2.27	8989\.99	6.47
Nehry Loka	-	-	2078.14	-	1634.82	-
Total	**7568.77**	**100**	**9221.07**	**100**	**15669.49**	**100**

RESIDENTIAL LAND USES

One of the most important space consuming uses of the city area is the residential use. The various factors that influence the development of land for urban purposes can be identified as follows. The land value is the first major factor. The second factor is to cope up to the additional population either in the existing areas or in the new residential developments. Thirdly, the accessibility or inaccessibility of an area would either favorably or adversely affect the land use. Fourthly, the amenity factors involving which sewage facilities or potable water can be brought to an area will decide whether or not an area will become residential area. Fifthly, the topographic characteristics of the area will determine the cost involved in making an area in habitable. Finally, the historical factor starts the nucleus of a settlement and direct growth. Thus, the elements on which greater focus will be laid on the urban spaces and the people live in it.

A residential land begins as a low density residential land but with the passage of time the density increasing to a certain extent. It is postulated that, when the density reaches a critical point, the population begins migrate to suburban area place. Or when a city becomes spatially to a certain size, new nuclei begin springing up in the form of satellite towns and other developments.

The residential area was 40 percent in the year 1995 (3057.30 ha).Some of the residential areas came up during this time. The Mysore Urban Development Authority had allotted sites for the citizens. Even some of the private land developers had developed agricultural land into residential area. Nearly 168 Co-operative societies developed agricultural land to residential land. This is a boon time for the real estate business, some I.T. industries were established in Mysore such as INFOSYS and WIPRO, SPI and COMAT.

COMMERCIAL LAND USES

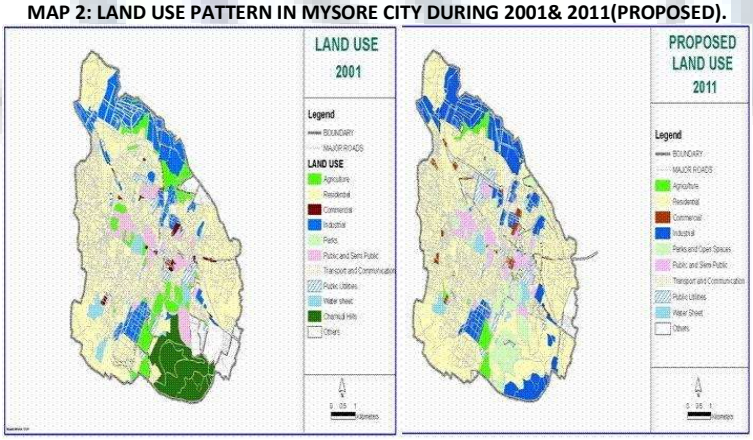
Another important aspect of land use is the study of commercial land which acts as the verve centre of an urban area. As the population of an urban centre increases, there would be a corresponding increase if the land devoted to commercial purpose. This will be done either by an increase if the net area devoted for commercial purpose or by intensifying the use in the existing area.

As pointed out earlier, in the Indian urban context, there is no purely commercial area as understood in the Western countries. Indeed, it is debatable whether anything such as the Central Business District exists in the medium-sized cities of India. Structures are devoted to commercial land and it varies greatly but a maximum of 75 percent is reached in about a block of 16 hectares. This is found mostly in the central part of the Central Business District (CBD). Adjacent to this, 50 percent commercial land and 25 per cent residential areas exist. Most often there is no discrete commercial block but a zone transition occurs in residential areas along with the main roads.

Since population is a necessary prerequisite, the size of the commercial area depends on the population and secondarily the area occupied the residential users. Fiver per cent of the residential area is usually devoted for commercial purposes and about 3.0 per cent for the city as a whole. In India, however, retail shops (disregarding the quality) can be regarded as ubiquitous because of the minimum requirement of facilities and ease of improvement of any small structure into a retail commercial establishment. This ubiquitous distribution on many occasions masks their presence and they do not appear prominently.

The central parts of Mysore have the present form due to the growth in years prior to 1990 and during 1990-2000. With an addition of 200,000 population in ten years, the central city has not been able to accommodate this growth and demand for space, mainly because only two sides of one street and one side of another street were designated as business precincts. Spaces in between the streets were essentially residential structures with tiled roofs and not in very good structural condition. The commercial land was 182.23 ha (2.4 per cent) in 1995 which increased to 215.95 ha and to 3.02 per cent in 2001. These have been represented by map no.2.

MAP 2: LAND USE PATTERN IN MYSORE CITY DURING 2001& 2011(PROPOSED).



In this period, the residential main road was converted into commercial around the city. Some of them are Chamraja Double Road and Applow Hospital Road, Vontikoppalu Main Road, Terission college main road. For the next decade, the proposed land use will be 2.45 per cent 344.07 ha there will be slight decrease in the commercial lands, because all the main roads will be converted into commercial activities, but due to increase in the residential land use all the main roads cannot be converted into residential, so only few commercial activities are found in new residential layouts.

Concurrently, there was another move on land use in the northern part of the city. While in Ashoka, Santhepet, Devaraj Urs and Sayyaji Rao roads were used for both retail as well as wholesale markets of all sorts and began to develop certain specialized due to the migration of retail trade to another parallel road and migration of wholesale grains to an area near the railway station. This road retained whole of this area started general trade area.

Thus it is concluded that the expansion of the commercial area is due to the increase of population and also due to the expansion of the residential area whereas the slight shift is a function of altered population distribution.

Thus the study of commercial structure over a period of time shows that the spatial distribution is a function of total accessibilities population density, characteristics of population, the availability of space and government regulations.

INDUSTRIAL LAND USES

As mentioned earlier, most industries in the city of Mysore owed their existence to the rule supplying them a good part of their products and services. This naturally ruled out a balanced industrial development needed for a medium sized city and led to the dependence of the industries on the continued royal and court patronage. These industries which were geared to supply a limited clientele provided a relatively stable economic base until the time of drastic political changes that took place during the late 1940s.

These industries were in existence in the year 1941. The subsequent urban development has changed the spatial relationships of the industrial land both inside and outside the city. Firstly, as these industries developed, they provided more employment and residential colonies for the labor began to spring up adjacent to the factories in the vacant lands either by design or due to convenience. The railway workshop provides residential quarters for about 50 per cent of workers and the sandalwood oil factory has also its own workers colony.

The expansion has been discontinuous both in terms of space and time. After initial industrial development prior to 1941, there was a long break and the second phase of development started only 1961.

During the 1980s only a few industries were started such as the Vikrant Tyres, Lac and paints and Chamundi Machine Tools. During 1995, about 1021 ha of land (13.4 per cent) was given to the industries at the Hebbal industrial area and industrial suburbs near J.P. Nagar, Later in 2001, industrial tenure has increased to 13.48 per cent (1962.61) from 13.4 per cent in 1991 due to the establishment of major industries such as the TVS, Mafatlal and some of the major industries of information technologies were given importance by the liberalization of government policies and the expansion of the Vikrant Tyres and the BEML.

In 2011, the proposed land for the major IT industries will have come into existence and the land tenure will come to 13.48 percent (1855.05ha). But at this time only information technology industries will needs few land parcels and may indeed make use of all the land.

What is transparent in the proposed land use is that there will decrease in industrial land because of the conversation of industrial lands to residential and information technology corridors outside the city area. The industrial land will decrease to 13.72 per cent from 13.48 per cent.

PUBLIC UTILITY

Mysore city has a number of palaces owned by the royal family members. Among the four bigger palaces, the main one where the former Maharaja family lives is in the centre, which is indeed the world famous Mysore palace. This is the palace illuminated during the Dasara season. This is located in the peripheral areas on higher elevation than the rest of the city providing commonly a scenic vies. The palaces have extensive gardens and vacant lands amounting to 50 ha surrounding each of the palaces. After 1950, a part of the palace land has been converted into the bus stand in the 1960s and another part of the palace land has been given to government for the department of Horticulture.

During the 1970s, the land was 0.49 percent 93726 ha) but some of the palace lands were utilized for temples and a small place alone left for the public utility. Later in 2001, the palace and surrounding land increased to 0.51 percent or 36.48 ha of land has from 0.49 percent of land 937.26 ha). In a similar manner, there was decease of public land to 0.37 percent 943.35 ha). Some of those lands were converted into commercial buildings or sheds to attract tourists and a part has utilized for public temples and parking spaces.

WATER SHEET

Mysore city in considered as one of the rich hertage sites having religious, tourism and ecological importance. It has a catchment for Karanjikere, Dalvoykere, Goblikere, Uthanahallykere, Devikere, Kukkarhallikere, Hebbalkere and the Lingabudikere.

It has rich bio-diversity with 450 plant species of which about 50 are medical plants, 145 species of birds and 60 species of butterflies. The Karanjikere is the habitat of a large number of migratory and resident birds in addition to tourist destination.

Almost all the lakes in Mysore have 182.68 ha of land in 1991 which consists of 3.73 per cent of the land. But during 2001, it was reduced to 2.02 per cent because some of the lakes were desilted or reduced to 50 per cent of the existing land. The Kukkarahalli kere were reduced by 30 per cent by creating a walk way to people to walk along it, a part is also created as a park. The Karanjikere was reduced due to creation of the Butterfly Park and a garden to attract tourists and the small parties also utilized it for parking also. During 2011 the water bodies will be reduced further to 1.27 per cent (178.95 ha). The existing lakes will be converted as the tourist parks for entrainment. It will be further reduced in the future.

CHAMUNDI HILL

Chamundi hills are a unique landmark of Mysore city and also considered as one of the rich heritage sites, having religious tourism and ecological importance. It acts as the catchments for the more than ten lakes in the city area. Out of 20-78.14 ha of land about 613 ha is under the Forest Department **"Reserve Forest"** of 404 ha as private land and about 995 ha is termed as the public and other government lands. The proposed denotification of the Chamundi hills as Nehru Loka (National Park) should be shelved to continue it as green belt and for planned development of a tree park.

During the year 2001, they have demarcated 2078.14 ha but 1634.82 ha of land will be reduced to 9.68 per cent. Some of the lands have been occupied by the Adhichunchanagiri Mutt, Suttur Mutt, Ayappa Swamy Temple, crematorium, parking place for Lorries, SDM and the Government sUIVey training centre. But it will be further reduced by the encroachment of the land by the private people and the mutts of different communities for their own land some of the education institutions have come into existence.

PUBLIC AND SEMI-PUBLIC

The city of Mysore has an unusually high proportion of the land devoted to public and semi-public places. Several factors have contributed to this distinguishing feature, but the main ones among them are educational institutions, nursing, teacher training institutes, primary and high schools, Karnataka government officers, Central government offices, corporation, public sector insists of state and central.

These several types of institutions in the city and they can be arranged hierarchically with regard to their importance and their space requirements. During 1950-60, the Government institutions were established in Mysore such as the Maharaja Government College, JSS aided institutions, Marimallappa's College and also divisional offices of the State government were established. In 1995, the land use for public and semi-public was 856.45 ha (11.32 per cent). After 2001, so many educational institutions were established. The land used for this purpose was 639.69 has of about 8.96 per cent. Some of the institutions were the Vidyavardhaka Institute of Technology, Vidya Vikasa, Fooriqua Dental College, GSS Institute of Technology; the Government established three first grade

colleges, Maharaja Institute of Technology and Srimatha Polytechnic. Some of the educational training institutes are the Chayadevi Trust, Kaginele Trust, Mahajana Education Trust and Amruthamai Trust. The research institutions are Central Institute of Indian Languages, CFTRI, University of Mysore, Kamataka State Open University, Central Sericulture Board, Anthropological Survey of India and Reserve Bank of India. For the next decade 2001-2011, the public and semi-public land has slightly decreased to 8.41 per cent (1180.78 ha). It includes the space left for the Dasara activities such as the exhibition, flower show and torch light parade.

EDUCATIONAL LAND USES

The city of Mysore has an unusually high proportion of land devoted to the educational uses. In the days when college education was started in India by the British, attention was devoted to the British held cities and not to the cities that were controlled by the local Princes. As a consequence, the British-held cantonment part of Bangalore had a college; but the part which was under the rule of Maharaja of Mysore did not initially have any colleges.

The Maharaja of Mysore, however, wanted the City of Mysore to have a University in pursuance of his wish a University and colleges was established, this became the nucleus around which the higher education in the entire state was based. This governmental support for higher education created a base and the development of land for educational uses began. This has ushered in a period of development catering to the needs of educational institutions.

The spatial structure of land values induced the high schools to be located near the periphery. In contrast to the primary schools, the high schools are less in number but occupy extensive land in low-density areas of lower land value. Thus, the high schools are near the newly developing residential areas also. These peripheral high schools gradually become surrounded by the new residential and other uses and this process can be termed as *Process of envelopment* as pointed out earlier with regard to industrial uses. During subsequent time periods, more developments take place with new schools and educational institutions, technical, professional, medical, dental and law becoming established on the then-existing periphery and again the same process is repeated.

The conversion from residential use to educational use on a large scale is probably peculiar to Mysore City. But in a princely city with political changes, it is not entirely unpredictable because, if they had not been converted into museum or luxury hotels for tourists or government offices.

During the 1980s only a few institutions were existing. But due to increase in population and migration, the institutions increased in number over the years.

PARK AND OPEN SPACES

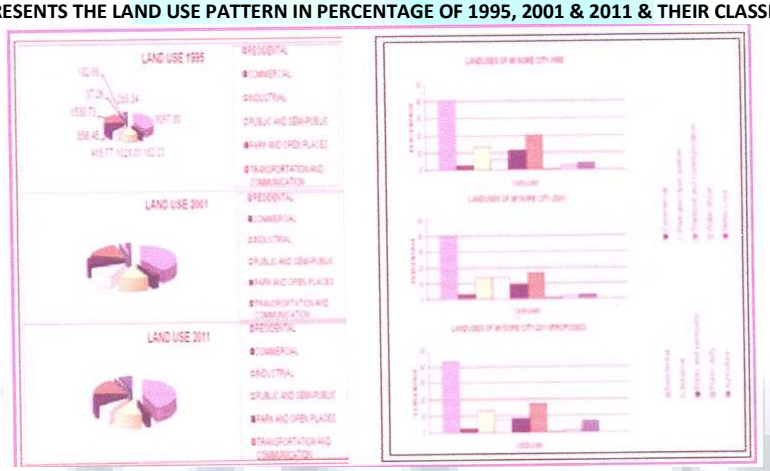
Mysore city is also known as the 'Garden city'. It has been observed that the succession of vegetation and plant species for the last 45 years and happy to note that there is a remarkable improvement in the growth of various plant species towards Mysore city. During 5.49 per cent (415-77 ha) of the land was demarcated for the parks and open spaces. Some of the parks are freedom fighters park in front of the Shanthala Theatre, Vishwamanava Park near JSS Administrative Office, People's Park near suburban bus stand, Vivekananda Park at Vontikoppal, Shivaji Park at N.R. Mohalla, Miland Park at Ashok Road, open spaces are the Doddakere Maidan in Nazarbad, Eidgh Maidan at Bamboo Bazar and open spaces after old Jawa Factory.

But during 2001, 13.75 per cent of land is utilized for this purpose (639.69 halo It has come down to 2.36 per cent because some of the open spaces were utilized for other purposes such as the private bus stand in old APMC market, parking and play ground of the Doddakere Maidan and swimming pool at the freedom fighters park near the Ursu boarding school.

The construction of the Hopcoms (Horticulture producer's co-operative marketing society) vegetable / fruits stalls at important parks in the residential area of the city. In a similar manner, some part of the parks is utilized for the public libraries.

During the time some of the parks were renovated by JNNURM projects, such as Vontikoppal park, Sanjivini Park near Kamakshi hospital parks on Vishwamanava double road Ambedkar Park at Ashokapuram. During this time, the agricultural land has become converted to residential lands by the Mysore Urban Development Authority (MUDA). The layouts are Vijayanagar which is the largest area in the city and it includes hundreds of park in the residential area; the Kanakadasa Nagar near Datgalli is also having huge space left for parks.

FIG L: REPRESENTS THE LAND USE PATTERN IN PERCENTAGE OF 1995, 2001 & 2011 & THEIR CLASSIFICATION.



The proposed land left for this purpose in 2011 has decreased to 7.52 per cent (1055. 05 halo There has been a decrease in 6.23 per cent of the open spaces, but when compared to 415.36 ha it is an increase of 74 ha. During this time the residential lands were given importance because some of the IT industries have entered Mysore, which created more demand for residential plots.

TRAFFIC AND TRANSPORTATION

In developing countries like India, traffic is unregulated and unplanned situation exists in Mysore for transportation. Therefore, there is need for developing traffic management, maintenance for the smooth flow of traffic.

The number of vehicles on the roads of Mysore city has increased to about 304,282 and there is a floating population of 7.6 per cent.The roads of Mysore city were planned for traffic in the earlier days during the Maharaja reign. Some of the roads which were planned are the Sayyaji Rao Road, Ashoka Road, Chamaraja Double Road, Madhava Rao Circle and K.R. Circle.

Later the roads were not properly planned for residential areas. In 1995, the land used for traffic and transportation was 20.22 per cent (1530.73 ha). During this period, some new residential layouts were allotted and there was an increase in the per cent of land under transport and some of the residential areas: Kuvempunagar, T.K. Layout, Bogadi, Alanahalli, Siddhiqui Mohalla, Shivarathrishwara Nagar and Vijayanagar. In these areas, one fifth of the land has been allotted to transportation. In 2001, the land use for transport has declined to 16.1 per cent (639.69 ha). There was a decline of about 2.82 per cent. The residential areas continue to increase when come to the prepared land use for 2011. It has further declined to 8.41 per cent (1180.78 ha) but it has increased by 349.95 ha. Due to the boom in the real estate, the city has established layouts by reducing some of the roads. But during this time the traffic and transportation will increase but the land for transport will decrease. For this period a new method of planning should be made such as multimode transport, flyover, and bye-

pass, straight roads which connect two different places Vasu Agarbatti Factory occupies a part of agricultural land and reduced the land area. This will lead to decrease in road lengths and traffic for the further decade.

AGRICULTURE

Only a small part of the land is left for agriculture in the city area. This is called the green belt area. These are found in a hotch-potch around the residential areas. Some of them are Jayanagar near crematorium, next to National Institute of Engineering, battle leaf plantation near Agrahara, a bit of land in Manasagangothri Gomala near Kesare and near Siddhiqi Nagar.

In 1995, the land under agriculture was 285.34 ha (3.73 per cent) but later in 2001 it was reduced to 2.27 per cent (143.99 ha).Some of these lands were converted into commercial as well as cultural features. Some of the converted lands of Jayanagar Swampy area converted to garage, opposite to National Institute of Engineering college lands were converted into paying guest hostels and preparation of concrete blocks, A part of agriculture land next to ashram of Sri Ganapathi Sachidananda has converted to small factory and go down by Vasu agarabathi factory. The agriculture land increased by urban forestry, while some of the government lands will be converted in to green land. By this, 1.27 per cent (898.99 ha) is used for agriculture and resorts. In the next generation the agriculture lands will be converted to resorts such as olive garden, roost and dabha.

FINDINGS

The land use of Mysore city is considered on the basis of the data adopted by the city corporation. It is based on report of 1995, 2001 and 2011 land uses. But for this I have not considered the land use of private land developers, tourism places, amusement parks, industrial estates/ parks created by the government from time to time.

By taking into consideration of these into account the urban land use, we can clearly notice that the residential layouts are increasing through the decades, while the water bodies, agricultural lands are reducing at a greater area. These lands are using for commercial purposes such as agricultural lands is converted to garages, restaurants etc. While parks in the urban area are used for constructing the temples, mosque, small choultaries, fruit stalls by (Hopcoms) and Nandini milk parlor etc in almost all the residential areas in the city. Some of the Government lands are used by the vegetable, fruit vendors such as Mahatma Gandhi road, opposite to police station in Sarswathipuram, constructed temporary shops along the Mysore-Bangalore highway etc.

The industrial area which is far away from the city is now converted into educational institutions such as the Geetha Shishana Samsthe, Maharaja Institute of technology etc is some of the examples.

The land used for transportation has also come down due to decrease in the land allotted for roads during this decade, while the density of vehicles has increased about 25 times. Apart from this the area left for roads has been acquired by the temples, street vendors, extended by the business people for display the materials, automobile show room, mobile urban kitchen etc in almost all the main roads of the city.

The Chamundi hill area which is situated in the Mysore is not free from these; the hill area of hundred acres is given to math such as Suthur Math, Adichunchanagiri Math etc. Even small temples, petrol bunk, small business, residential areas have acquired these areas of the Government land for their own uses which has made the changes in ecology of the forest area.

Once the city was having the commercial centre but nowadays each and every residential and industrial area has commercial activities. The commercial land use in the city has increased a lot due to economic development and IT. The business men and the traders has acquired the foot paths and neighboring places of the government

Such as the hoteliers used to occupy the foot path for serving, parking, business men for display the items etc. Vendors and street hawkers have acquired the city market and adjoining areas.

The educational institutions and hostels have also changed their attitude due to commercialization, the institutions have constructed the shops and arcade in their places. While some of them constructed the choultaries in their places. The Vidyavardhaka College in city, JSS College in Sarswathipuram, Basudev somani college, Kuvempunagar etc, is the best examples.

SUMMERY AND CONCLUSION

In this present paper, the land use was analyzed based on the pattern of 1995, 2001 and 2011 in Mysore city. Based on these records, we rmd that there is a decreasing trend in transport, industries, water sheet and Government land. But the city corporation is giving importance to residential activities rather than giving importance to the future plan by taking into consideration of private land developers and nearby towns. The land information in Mysore city appears to be inadequate and needs up gradation. Higher priority needs to be assigned to the management of land use in existing and the planning by the local authority. The local authority should appoint land use planners or specialized urban planners, transport planners, and needs for a development a proper coordination among the line departments for better planning and management. The planners in corporation and urban development authority officials have to look for better solution for providing sustainable urban development for the welfare of people in the city, which needs immediate attention from policy makers, planners, administrators and public for unless mitigation measures are adopted for the management of urban land use.

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DRIVERS OF NEW PRODUCT SUCCESS

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ABSTRACT

Launching new products is an exciting and daunting task. As new product success rate is only 60% to 70% across industries, to avoid possible losses and trauma of failure, one needs to take care to do thorough homework on operations and alternative contingency plans. More importantly the antecedents and predictors of new product success need to be identified and incorporated in the new product ideation-concept development-testing-screening-business analysis –physical product development and test – launch process. Twenty four factors that are drivers of new product success have been identified from past studies. These drivers of new product success are classified under product characteristics, process characteristics, strategy characteristics and market place characteristics. This paper will evaluate in the Indian context, and compare with other studies, of each of the 24 drivers or antecedents of new product success, and identify the dominant drivers. It also compares the results of FMCG and a consumer durable company.

KEYWORDS

New Product - New Product Success, Drivers, Predictors, Antecedents.

INTRODUCTION

Launching new products is an exciting and daunting task. As new product success rate is only 60% to 70% across industries, to avoid possible losses and trauma of failure, one needs to take care to do thorough homework on operations and alternative contingency plans. More importantly the antecedents and predictors of new product success need to be identified and incorporated in the new product ideation concept development testing-screening-business analysis–physical product development and test – launch process.

This paper will evaluate the correlation of each of the 24 drivers or antecedents of new product success and identify the dominant drivers in the Indian context.

OBJECTIVES

The following are the objectives of the study.

1) To identify factors those are antecedents and drivers of new product success.
2) To examine the differences between the Indian and American contexts.
3) To examine the success of products with reference to a FMCG and a consumer durable company.

WHAT IS A NEW PRODUCT?

A new product has a new FORM attained through TECHNOLOGY which is the power to do work, that delivers BENEFITS that the customer has a need or desire for. Further a new product essentially is of the right quality at the right time at the right cost. Crawford. C.M., (1987).

WHAT IS A PRODUCT?

By product we mean anything offered for sale.

A) THE NEWNESS OF THE PRODUCT CAN BE IN TERMS OF:

1. NEWNESS TO THE FIRM:

a. Improved versions
b. Line extensions or companion products
c. Brand extensions
d. Diversification

2. NEWNESS OF THE PRODUCT TO THE MARKET PLACE:

A. Similar to the products in the market
b. An improvement
c. New to the market/new to the world

3. NEWNESS OF PRODUCT AS PERCEIVED BY BUYERS / USERS:

Repackaging, price- change and new brand. Crawford. C.M., (1987).

B) NEW PRODUCT BY PRODUCT CHARACTERISTICS

1. Performing an entirely new function.
2. Offers improved performance of an existing function
3. A new application of an existing one
4. Offers additional functions
5. An existing product offered to a new market
6. A product which reaches more buyers through lower cost
7. An existing product integrated into another existing product
8. Marketing components/sub assemblies of a product offered separately
9. A restyled product, Marvin P., (1972).

SUCCESS / FAILURE RATE OF NEW PRODUCTS

Different studies have indicated a success rate between 60-70% and a failure rate of 30-40% which involves hundreds and thousands of crores of rupees of loss and trauma to the executives and firms that launched the products (that failed).

The new product success rate is 69% according to Dwyer and Mellor (1991), 65-70% according to Crawford (1977) and 80% according to Hopkins and Bailey (1971) The variation in new product success / failure rates depends on several factors such as the product characteristics, degree of product innovation and on how well the product met its goals (Crawford 1977). Further, the perception of success or failure depends on the performance criterion employed and the time horizon for judging performance (Urban and Hauser 1993). The new product success can be explained by the success or performance measures used by Cooper, (1993), Dwyer and Mellor (1991). According to them the following seven measures are used to measure the success or performance of new products:

THE MEASURES OF SUCCESS OF NEW PRODUCTS

1. Percentage of firms' sales made up by new products introduced over the past five years.
2. Percentage of new products that succeeded failed or was terminated prior to market launch.
3. The extent to which the new product program met its financial performance objectives over the past five years.
4. The importance of the program in generating sales and profits for the firm.
5. The extent to which the profits from the new products exceeded the program costs.
6. The successfulness of the program relative to the competitors
7. An overall success rating.

DRIVERS OF NEW PRODUCT SUCCESS

Out of the various possible predictors of new product success studied in over 60 studies, the following 24 variables classified into different categories or factors are found to be drivers more often than others. Therefore they have been selected as the drivers whose effect on product success has been examined in this study.

PRODUCT CHARACTERISTICS

1) Product advantage, superiority or differentiation over competitor's offerings.
2) The extent to which product is perceived to satisfy desires/needs of the customer
3) Perceived price – performance congruency or value
4) Perceived technological sophistication of the product
5) Product innovativeness is perceived newness/originality/uniqueness of the product.

FIRM STRATEGY CHARACTERISTICS

1) Marketing synergy is the match between the existing marketing skills of the firm and the marketing skills needed to make and market a new product successfully.
2) Technological synergy or the match between the existing technological skills of the firm and the technological skills needed to execute a new product initiative successfully.
3) Order of entry which is the timing of marketplace entry of a product.
4) Dedicated human resources in terms of focused commitment of personnel resources to the new product project.
5) Dedicated R & D resources.

FIRM PROCESS CHARACTERISTICS

1) Structured approach in terms of employment of formalized product development procedures.
2) Predevelopment task proficiency with which a firm executes the pre-launch activities of idea generation screening, market research and financial analysis.
3) Marketing task proficiency
4) Technological proficiency
5) Launch proficiency
6) Reduced cycle time or reduction in concept-to-introduction time (time to market)
7) Market orientation or the degree of firm's orientation to its internal, competitor, and customer environments.
8) Customer input: Incorporation of customer specifications into the new product initiative.
9) Cross functional integration or the degree of interdepartmental participation in the new product effort.
10) Cross functional communication: Level of communication among department in a new product effort.
11) Senior Management support to the new product initiative.

MARKET CHARACTERISTICS

1) Likelihood and degree of competitive response to a new product introduction.
2) Degree, intensity or level of competitive response to a new product introduction.
3) Market potential: Anticipated growth in customers/customer demand in the market place.

EMPIRICAL STUDIES ON CAUSES OF NEW PRODUCT PERFORMANCE

In the 60 empirical studies that document the statistical relationship between new product performance and the causal factors identified by. Henard, D.H., and Szymanski D.M., (2001), correlation was the main metric. These researchers emphasized models – level correlations (an averaging of reported correlations across all models and all studies to arrive at an estimate of the central tendency of the predictor – criterion relationship) rather than the study – level correlations (an initial averaging of the correlations reported within the study followed by a further averaging of the mean correlations across studies). A model-level analysis has been followed and advocated by Glass, McGraw and Smith (1981) as well as meta – analyses by Assmus, Farley and Lehman (1984) Churchill et al (1979), Sultan, Farley and Lehman (1990), Tellis (1988) as well as Henard, D.H., and Szymanski D.M., (2001) due to reasons including excessive heterogeneity in the values of the individual correlations.

DOMINANT DRIVERS OF NEW PRODUCT SUCCESS

In the research mentioned above it was found on the basis of 'r' value, the corrected mean correlation that 10 factors are dominant drivers of new product success (mean r>40), The dominant factors that emerged are; market potential (r = 0.54), dedicated human resources (r=0.52), marketing task proficiency (r=0.50), product meeting customer needs (r=0.50), product advantage (r=0.48), predevelopment task proficiency (r=0.46), dedicated research and development resources (r=0.45), technological proficiency (r=0.43), order of entry (r=0.41) and the technological sophistication of the product (r=0.41).

The new product success phenomenon is complex, yet more and more clear in terms of the causal factors.

The intricate and multifaceted nature of the new product performance phenomenon is seen from the fact that three predictors that are of product characteristics which are: products meeting customer needs, product advantage and product technological sophistication; two of strategy characteristics, (R & D and human resources); four of process characteristics, (marketing, predevelopment, technological and launch proficiencies) and one market place characteristic; (market potential). This study aims to assess in the Indian context, as well as to evaluate the most frequently modeled predictors; (n>40 modeled effects), marketing synergy (n=61), market orientation (n=60), cross functional communication (n=58), structured approach (n=53), product advantage (n=44), and marketing task proficiency (n=40).

Note: r = corrected mean correlations

n = number of times a predictor has been modeled.

The earlier studies were mode with reference to companies whereas in this study customers are included.

METHODOLOGY

DATA COLLECTION

In FMCG category Company A was selected as it is a company with successful new products; and company B was selected for examination as it was a consumer durables company with successful new products. The three products of each of the two companies were selected using the seven measures of new product success Cooper (1979), (Dwyer and Mellor (1991), mentioned earlier and with the type of product in mind.

A census survey of all managers in company A, and B, was made. In the consumers' survey 124 respondent consumers of company A, and 135 respondent consumers of company B were covered. Both internal data from managers and external data from consumers of both companies were collected. The managers' survey contained 24 variables. The consumers' survey contained 17 variables relevant to the consumers. A respondent had to be an user of all three products of the company examined.

Structured, tested questionnaires were employed in both the managers' and consumers' surveys.

DATA ANALYSIS

The data collected was codified, tabulated and analyzed. The t-test on Managers' survey data with the Independent Samples Test was carried out. The high and low classification of differences in the means of company A and B are presented in table No.1. The analysis of t-test of consumer survey data is presented in Table No.2.

MANAGERS SURVEY DATA – T-TEST

Company A is a Fast Moving Consumer Goods (FMCG) company and company B is a consumer durable product company.

Ho.: There is no difference between the means of an item (k) with respect to company A and B.

Level of significance is 5%

In the independent sample test using Levene's Test for equality of variances , there is difference in the means of 21 drivers relating to company A and B.

In the case of the following variables, there is no significant difference in the means between Company A and B:

- Technological Sophistication
- Separate Team working
- Cross functional Integration

On the basis of analysis, the null hypothesis is accepted for 3 drivers mentioned and rejected for the other 21 drivers.

The t-test results (mean differences) were classified into very low (below 0.5), low (above 0.5 but below 0.65), High (above 0.65) and very high (above 1.0)

In the analysis of t-test on manager's survey data (Table-1) low differences including very low are found between the means of the following 7 factors (29%) relating to company A and B.

- Technological Sophistication
- (Product) More Advantageous
- (Product) Meets Needs
- Cross Functional Integration
- Cross functional communication
- Senior Management Support
- Market Potential

It is found that there is high difference (including very high) between the means of the following factors:

- Marketing Synergy
- Suitable price
- Product Innovativeness
- Time of Introduction
- Separate Team working
- Market Proficiency
- Launch Proficiency
- Customer Oriented Product Development
- Structured Approach
- Technological Synergy
- Dedicated R&D
- Success of precious products
- Technological proficiency
- Market/Consumer Orientation
- Reduced Cycle time
- Likelihood of competitive response
- Competitive response intensity

Out of the 24 variables, in 17 variables the mean differences are above 0.63 (high and very high)

Thus it is found that in the case of the above 17 variables (71%) their influence on product success is different in the company A's products and B's products.

CONSUMERS SURVEY DATA – T.TEST

The significance of difference of means of each item with respect to Company A and Company B is given below:

Ho: There is no difference between the means of an Item (k) with respect to Company A and B.

Level of significance is 5%

It is found that there is no significant difference between the means of A and B with respect to the following items:

- Suitable Price
- Technological Sophistication
- Separate Team Working
- Dedicated R & D
- Success of Previous Products

- Market Potential
- Product Success

The null hypothesis is accepted for the above 7 drivers (24%) and rejected for the other 10 drivers (76%).
The difference in the means of the 18 variables were classified as Low and High.
It is found that in the case of 9 variables the differences in the means between Company A and Company B are low, while in the case of 9 other variables the difference in the means between the two companies is high, as in Table-2.

CONCLUSION

In Technological Sophistication and Separate Team working, belonging to firm strategy characteristics, no significant difference is found in the managers' responses as well as the consumers' responses.
In the consumer's responses, Suitable Price, a Product Characteristic and Separate Team Working, Dedicated R & D and Success of Previous Products (Firm Strategy Characteristics) are identified as factors where there is no significant difference between the means of companies A and B.
All other factors with significant difference between the means of company A and B can be classified as follows.
Product Characteristic: Product Innovativeness.
Firm Strategy Characteristics: Marketing Synergy, Technological Synergy, Time of Introduction.
Firm Process characteristics: Market Proficiency, Launch Proficiency, Customer oriented Product Development, Structured Approach, Technological Proficiency, Reduced Cycle Time.
Market Characteristics: Competitive Response Intensity, Likelihood of Competitive Response.
They exhibit high differences between the means of company A and B.
This could be attributed in some measure to the type of products (FMCG and Consumer Goods) and in some measure due to factors such as, differences in the products and markets.
The dominant drivers of new product success identified in this study were the following 10 variables: technological sophistication, dedicated R and D, launch proficiency, structured approach, cross functional communication, cross functional integration senior management support, likelihood of competitive response, competitive response intensity and market potential. **While the variables of technological sophistication of the product, dedicated R and D, launch proficiency and market potential are found in The American studies,** as well the other 6 variables identified in this study have a predominance of market variables namely likelihood of competitive response, competitive response intensity, and firm process characteristics such as structured approach, cross functional communication and senior management support. It is therefore recommended that companies in India ensure that these 10 variables are present to a high degree in their new product ventures so that success is achieved.
In the American studies, the other variables are firm strategy characteristic of order of entry, dedicated human resources and firm product characteristics of product meeting customer needs and product advantage. While firm driven characteristics or inputs were found to be more of the dominant drivers, in this study it is found that more of the dominant drivers of new product success are market driven characteristics.

TABLES

TABLE – 1: ANALYSIS OF MEANS (T-TEST MANAGERS' SURVEY DATA. DIFFERENCES IN THE MEANS OF COMPANY A AND B.)

S No.	Item	Very Low	Low	High	Very High
1	More Advantageous		0.5634		
2	Meet Needs		0.4308		
3	Suitable Price		--	0.9269	--
4	Technological Sophistication	0.1755	--	--	--
5	Product Innovativeness	--	--	0.7641	--
6	Marketing Synergy	--	--	--	1.0858
7	Technological Synergy	--	--	--	1.3664
8	Time of Introduction	--	--	0.8733	--
9	Separate Team Working	--	--	0.6335	--
10	Dedicated R & D	--	--	--	1.2368
11	Success of Previous Products	--	--	--	1.5117
12	Market Proficiency	--	--	0.7953	--
13	Technological Proficiency	--	--	--	1.4464
14	Launch Proficiency	--	--	0.6335	--
15	Market/Customer Orientation	--	--	--	1.0331
16	Customer Oriented Product Development	--	--	0.8460	--
17	Reduced Cycle Time	--	--	--	1.778
18	Structured Approach	--	--	0.7953	--
19	Cross Functional Integration	--	0.4767	--	--
20	Cross Functional Communication	--	0.5653	--	--
21	Senior Management Support	--	0.4064	--	--
22	Likelihood of Competitive Response	--	--	--	1.2125
23	Competitive Response Intensity	--	--	--	1.4542
24	Market Potential	--	0.4737	--	--
25	Product Success	--	--	0.7589	--

TABLE – 2: ANALYSIS OF MEANS (T-TEST CONSUMER'S SURVEY DATA. DIFFERENCES IN THE MEANS OF COMPANY A AND B.)

S No.	Item	Very Low	Low	High	Very High
1	More Advantageous	--	--	--	1.0327
2	Meet Needs	--	--	--	1.3265
3	Suitable Price	--	0.5269	--	--
4	Technological Sophistication	0.3323	--	--	--
5	Product Innovativeness	--	--	--	1.7697
6	Marketing Synergy	--	--	--	1.3710
7	Technological Synergy	--	--	--	1.1429
8	Time of Introduction	--	--	--	1.9429
9	Separate Team Working	0.0791	--	--	--
10	Dedicated R & D	0.3345	--	--	--
11	Success of Previous Products	0.3941	--	--	--
12	Market Proficiency Product	--	0.5237	--	--
13	Technological Proficiency	--	--	0.7319	--
14	Launch Proficiency	--	--	0.9765	--
15	Market/Customer Orientation	--	0.6394	--	--
16	Customer Oriented Product Development	--	--	0.9527	--
17	Market Potential	0.1052	--	--	--
18	Product Success	0.0288	--	--	--

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KNOWLEDGE MANGEMENT FOR PERFORMANCE EXCELLENCE

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ABSTRACT

Knowledge management is emergence and acceptance of knowledge as critical resource. Knowledge workers are behind the evolution of knowledge management. Successful knowledge management initiatives are people-centric. Key knowledge management drivers, contribute for performance excellence. The key benefits and the key benefit parameters are discussed. Organizational benefits of knowledge management and organizational barriers for knowledge management excellence, finds that organizations double the return on their knowledge management investments which is leading to further investments in knowledge management. Report of American Productivity and Quality Council (APQC) indicates performance excellence through knowledge management. Sustainable competitive advantage can be achieved through knowledge management, which results in high performance excellence.

KEYWORDS

Knowledge Management, People-Centric, Performance Excellence, Sustainable Advantage, Turbulent Business.

INTRODUCTION

We are in an age of knowledge revolution. Knowledge has replaced other sources of production as the primary source of wealth creation and long term sustainability. Knowledge management has emerged as a coveted concept for firms around the globe to survive and grow in the current turbulent business environment as well as for achieving high performance.

Indian industry has got high expectations from the sphere of knowledge management. India as a country is buoyant about her fortunes. Even, the political bosses are making right articulations, about the Indian potential and opportunities for India in the Knowledge Economy.

The former President of India (Dr. A.P.J. Abdul Kalam) dreams of making India a superpower in this knowledge era and the Prime Minister has recently announced the setting up of a knowledge commission.

OBJECTIVES OF THE STUDY

Knowledge management involves a planned promise to improve the organization's efficiency, as well as to improve its occasion enhancement. The aim of knowledge management as a process is to improve the organization's skill to execute its core processes more efficiently. The broad objectives of knowledge management systems are

- Create knowledge warehouse
- Improve knowledge assets
- Enhance the knowledge environment
- Manage knowledge as an asset

The key to knowledge management is capturing intellectual assets for the touchable benefits for the organization. As such, vital of knowledge management are

- Transform knowledge to add value to the processes and operations of the business influence knowledge strategic to business to accelerate growth and innovation
- Use knowledge to provide an aggressive benefit for the business.

The aim of knowledge management is to continuously improve an organization's performance through the development and sharing of organizational knowledge throughout the society.

Also to ascertain whether Knowledge Management System (KMS) is imperative in a globalised economy and to Enhance Performance Improvement through the Creation and Installation of Knowledge Management Systems (KMS).

METHODOLOGY

Knowledge Management is a not technology, it is about people, processes and practice. Without the three main pillar of knowledge management, it is absolutely certain to fail even if you have state of art technology.

People are important from vision, commitment, change, and culture perspective. The organization needs an individual or a group to have a vision to lead the knowledge management initiative. Vision is not just aligning it with business drivers, but also thought process of taking it to a higher level. Not all initiatives see the light, success and adoption, commitment is the back bone of all implementations. It needs to come from executive management. Knowledge management is also about change in processes and culture. It is about openness and adoption from people who are part of it. Culture varies with organizations, geographical locations, and people. The success of knowledge management is heavily dependent on organization's culture as well.

Processes are policies that govern activities across the corporate. Knowledge management is set of processes by which companies organize themselves to generate value from their intellectual and knowledge based assets.

Practice is platform on which processes are designed, implemented and governed by the people for the organization. The processes managed and governed over the period of time become practice when it is widely adopted.

The Descriptive Research Methodology has been adopted in this study. KMS (Knowledge Management System) being an emerging field, Descriptive Research Methodology has been considered appropriate.

The knowledge management methodology framework consists of four stages. It is strategy, planning, execution and improvement. Though it is typical of any methodology to have these stages, but it is important to understand each of the stages of knowledge management before starting a new initiative.

Knowledge management is about generating value, value from knowledge assets. Knowledge is actionable piece of information that one can act upon for generating value. Value is subjective and varies depending upon the business strategy. One business strategy could be generating new business from products

and services or generating business from new products and services. The strategy is focused on the market and companies core business. For example, Google's main business runs out of web. It is important for Google to accumulate knowledge of user behavior and web traffic statistics. Google can plan the new products and services based on that knowledge. Another business strategy could be saving cost, enhancing predictability and quality by increasing productivity and reuse. The strategy is focused on internal resources and their productivity and knowledge reuse. For example, Cisco would want to reduce learning time and increase productivity of the employees through reuse of existing knowledge base.

Processes need to improve all the time. We need processes to collect data on processes from quantity and quality stand point. Using the data, we can build statistics, charts and reports for further improvement. Process should be seen as constant learning vehicle, learning and improving from the data supplied within.

The key activities in each of these stages are listed below:

PLAN

* Formulate measurable business objectives
* Obtain ongoing executive sponsorship
* Find right resources for KM team
* Identify and tackle cultural resistance

DEVELOPMENT

* Identify target users and experts
* Conduct detail needs assessment
* Identify small and critical first phase
* Identify organization knowledge
* Design processes for collate and create knowledge content
* Design effective business processes

IMPLEMENTATION

* Execute to a detailed project plan
* Keep user community involved at all times
* Focus of knowledge Quality
* Market Knowledge management Implementation

ENHANCEMENT

* Measure qualitatively and quantitatively success of KM processes
* Continuously improve KM processes
* Provide feedback to all the above stages

Each of the activities can further be divided into tasks with guidelines and finite deliverable.

A typical knowledge management implementation model can be divided following steps:

- Aligning with Corporate Strategy
- Identifying and Capturing Knowledge
- Communicating and Organizing Knowledge
- Creating a Knowledge-Sharing Culture
- Benchmarking
- Continuous Improvement
- Leveraging Knowledge for Market Success

KNOWLEDGE MANAGEMENT

It is a systematic, organized, explicit and deliberate ongoing process of creating, disseminating, applying, renewing and updating knowledge for achieving high organizational performance.

Emergence and Acceptance of Knowledge as Critical Resource

Today knowledge has emerged and is accepted as the most critical resource available to an organization.

Firstly, knowledge is the most costly resource, in terms of money and efforts.

Secondly, knowledge component/resource provides the highest returns.

Ultimately, knowledge has become the most critical resource because, management scholars today consider knowledge and the ability to create and utilize knowledge to be the most important source of a firm's sustainable competitive advantage.

THE IMPORTANCE OF KNOWLEDGE WORKERS

During the 1980s and early 1990s the trend was towards leaner organization through downsizing, restructuring and outsourcing. One advocate of business process re-engineering urged organizations not to automate but to obliterate.

Organizations lost a significant part of their corporate memory, skills and capabilities, which walked away when the people left. Middle managers proved to have been key knowledge coordinators and synthesizers; when they left, the loss to their firms went well beyond what their official job description would suggest.

A specific example of this corporate amnesia can be found at Ford, where new car developers wanted to replicate the success of the original 'Tour us' design team but no one remembered or had recorded what was so special about the effort. The organization rediscovered the central importance of people.

In many cases people who had been made redundant had to be rehired, often as consultants because their knowledge was found to be irreplaceable.

If NASA wanted to go to the moon again, it would have to start from scratch, having lost not the data but the human expertise that took it there last time. Secondly, the organization had to manage with lesser number of people in a leaner structure. This made it imperative to make the best use of knowledge and skills, remain in the organization. These pitfalls led the organizations towards knowledge management efforts.

Today for many companies, it is not the lack of finance or consumer demand that is limiting their growth, but the absence of quality people. The employee turnover is quite high, particularly in case of knowledge intensive industries such as software. Expertise gravitates towards the highest bidder.

One particular company in California's Silicon Valley estimates that it costs them an average of $1,25,000 every time an employee leaves. Loyalty Erosion is quite high.

Bill Gates has commented that if twenty of Microsoft's key people were to leave, his company would risk bank-reacceptance. How to encourage loyalty and turn down turnover rate is a big problem.

A study by Aon consulting, found that the single most effective way to strengthen employees' loyalty is to increase opportunities for growth.

Organizations are also trying to find out, how to replace expertise when it leaves. Knowledge makes resource mobile. Knowledge workers unlike manufacturing workers own the means of production. They carry their knowledge in their heads and therefore can take it with them.

So there is an increasing concern for having knowledge management systems, so as to codify and store knowledge. Further for the first time in history the richest persons on earth are knowledge workers. The following table provides the evolution of Knowledge Management over decades.

TABLE 1: -EVOLUTION OF KNOWLEDGE MANAGEMENT

The 1950s	The 1960s	The 1970s	The 1980s	The 1990s	The 2000s
Diversification, Quantitative management, Management by objectives	Centralization and decentralization, Conglomeration	Strategic planning, Portfolio management, Automation	Total quality management, Downsizing	Learning organization, Market valuation, Information systems, Intranets/Extranets, Re-engineering	Knowledge management, Knowledge sharing, Culture, Enterprise integration, Intellectual Capital Harnessing.

SUCCESSFUL KNOWLEDGE MANAGEMENT INITIATIVES ARE PEOPLE –CENTRIC

Initially knowledge management was hijacked by information technology, which resulted in a number of knowledge management failures. Later on a more holistic view emerged consisting of people, process and technology aspects.

Out of these three, the most important aspect is people. Technology is an enabler. It provides help to people to streamline things. At the end of the day, it is people who create new knowledge, share it with others and embody it is products/services. At the centre of successful knowledge management initiatives are people efforts.

There are three reasons for this.

First people are the creators and owners of knowledge. The most important resource lies in their head.

Second people related issues like conversion of tacit knowledge into explicit, sharing of knowledge etc, are the big hurdles in successful knowledge management initiatives.

Last but not the least people feature centrally because they are fundamental to intellectual capital.

Key Knowledge Management Drivers for Performance Excellence

In the earlier decades, technology was the key for an organization to ensure sustenance of its competitive advantage over its rivals. A cash-rich organization could easily outsource its rivals, because of its ability to procure and deploy the advanced technological platforms available.

The primary driver behind the implementation of a knowledge management solution is to improve profits and expand revenue streams, while other secondary drivers include employee retention and increased customer satisfaction.

KEY DRIVERS

1. Increase in profits/revenue
2. Retaining core talent/expertise
3. Increase in customer retention/satisfaction
4. Protecting market share
5. Faster product time to market
6. New market penetration
7. Cost reduction
8. New product generations

KNOWLEDGE BASED DRIVERS

Organizations are faced with issues, arising from the lack of proper and organized knowledge distribution system due to which, their employees cannot find the requisite knowledge when required. As a result of this, organizations are unable to keep pace with their competitors even though a lot of facts about an organization may be documented in its plans, documents, designs, database, and manuals. Much of its experience resides with their employees.

The largest part of the organizations' prowess is not in its organizational intellect, but in its human intellect. When an employee migrates, this critical piece of knowledge leaves the organization and assimilates with its competitor.

THE KEY BENEFITS

The key benefits experienced by the organizations, are furnished below.

Key Benefit Parameters

Improved decision making - 89%

Increased responsiveness to customers – 84%

Improved efficiency of people and operations – 82%

Improved innovation -73%

Improved products/services - 73%

Organizational Benefits of Knowledge Management

THE FOLLOWING STATISTICS HIGHLIGHT THE KEY ORGANIZATIONAL BENEFITS EXPERIENCED BY THE COMPANIES WHICH FORMED A PART OF THE STUDY:

Cost reduction - 68%

Increasing flexibility to adapt and change – 67%

Reducing the time to market for new products/services - 67%

Increasing sales - 65%

Reducing process cycle times - 62%

Organizational Barriers for Knowledge Management Excellence

Organizations' culture – 80%

Lack of ownership of the problem – 64%

Lack of time – 60%

Organization all structure – 54%

Top management commitment – 46%

Rewards/recognition - 46%

Emphasis on the individual rather than a team – 45%

Information/communications technologies – 55%

REPORT OF APQC REGARDING PERFORMANCE EXCELLENCE THROUGH KNOWLEDGE MANAGEMENT:

American Productivity and Quality Council (APQC) studied knowledge management measurement efforts at 33 organizations and finds that organizations double the return on their knowledge management investments which is leading to further investments in knowledge management.

It is no longer possible to make huge profits on doing or moving things or by controlling money. Increasingly there is less and less return on traditional sources – land, labor, and capital. Today, the main producer of wealth is information and knowledge.
These knowledge management efforts result in innovations, productivity, quality, customer satisfaction, operational efficiency, cost reductions, faster decision making and better intellectual property rights (IPRS) management. These result in sustainable competitive advantage and high performance excellence.

CONCLUSION

Now days, Indian industry is facing tough competition in the era of privatization, liberalization and globalization. Companies are striving to find out ways to survive and compete. While there are some exceptions, satisfactory underperformance is pervasive. As per the experts' opinion, knowledge management could be the panacea for the industry troubles.
World wide, companies are finding knowledge management useful from the point of sustainable competitive advantage and successful KM initiatives are leading to high performance. This can be replicated in the Indian scenario. Productivity of knowledge and management of knowledge workers must be the top priority of the firms.

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A NEW PARADIGM IN DESIGNING AN ADVERTISEMENT - AN APPLICATION OF REAL TIME DATA WAREHOUSE & DATA MINING IN PREPARATION OF AN AD COPY

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ABSTRACT

The purpose of the article is to address the modeling an ad copy through real-time data warehousing. In modern enterprises, the day-to-day activities information is to be stored in the database. The database with user-friendly uses we call it as data warehousing. We have taken the example of data warehouse concept is from SAP Business One application as an element of Enterprise Resource Planning software, where it acts as an internal data source by providing the external environmental solutions. Through the ERP software, we give special focus in planning the advertising strategy. At present the ad creators who are creating advertisement by using the trial & error method for collecting the product or service information with out getting updated information about the present situation. If we want to create an ad campaign, we have to make real & sensitive information in the advertising theme. So, we need to overcome these demerits with the real & updated information about the market place. By using this specific kind of database warehouse, we can provide an on-demand access to real-time information through one single system containing financial, customer relationship, manufacturing, and management control capabilities. By the way of using this user- friendly interface, it enhances the easier way to implement business management solution designed to address the needs of dynamically growing small and midsize businesses with the help of appropriate advertisement in educating the customers and to build the brand image for the new and existing product & services and also motivating the sales activity.

KEYWORDS
Real Data warehousing, Data mining, advertising strategy, ad copy, SAP Business One.

INTRODUCTION

In the last few years the storable data is getting precious by the way of decision making & Intelligence. In the customer-centric market, the data collection, storing & retrieving of information is a hectic process of all kind of business. In the modern economy, its full of with technology innovation and computerization of the business operations, it is quite common in nature and most of them are wish to minimize the operational cost and simplify the process of analyzing the different variants with in short period using database system. In organization database, data is the process of collecting, storing and retrieving the information periodically about the internal process and the market information. It provides a single, clean, consistent source of data for decision making. This process with a special kind of database is termed as data warehousing. Now-a-days, Data warehousing and data mining is the important phenomenon that suits the present marketing environment. It is a systematic and structural way of knowledge repository where provides the relevant data for preparing the extensive reporting and data analysis. The data warehousing is integrated, normalized and gives idea to the problem but not with transaction oriented, redundancy and aggregated data. It supports the extensive reporting and data analysis process on a relatively small subset of the complete warehouse, which terms “data mart”. The benefit of creating the data mart is to achieve the better performance of particular area of consolidated information.

Data mining is the process of knowledge discovery of analyzing data from different prospective and summarizing it into useful information. We can call this as ‘analysis tool’ which eliminates massive clutter and make lean data pattern for its simplicity in understanding the data.

The data mining is extracted in the form of post-of-sale record and the data is stored in data warehousing. It facilitates the trendiest knowledge recovery and prediction of certain situation for successful business. Many of the companies are being successful in using the capture information which enhances the communication gap. Data is a perishable commodity, but in the proportion of right mean it gets the real information. The integration of data warehousing and mining in to the preparation of ad copy is a new approach.

This concept explains the new mode of creating an advertisement based on the customer opinions like customer queries and their suggestions. In this, we like to point out the linkage of designing an advertisement which is relevant to the customer feedback information.

We want to create a real and expressive advertisement, so we need to get the information about the current needs and wants and then analyze the target customers and give a solution for that problem through the advertising information with sensible data. The main usage of these data is for creating various ad copy decisions. It is to address the various dimensional problems associated with the flow and its factors. Understanding the customer emotions about product or service is an important factor for the success of advertisement and business too.

For the above said purposes, we need to find out the potential customers expectation and the different alternatives available in the company data warehouse. Through data warehousing, the customer perception about the particular item is stressed and we need to trigger out the feelings of the customer segment and get the view of an advertising Intelligence. Several customer problems with multiple views can be easily correlated using this approach. To get this, we can create a sample prototype of advertising strategy, audience measurement, message creativity, design and refinement of an advertisement. The patterns, associations or relationships among advertising data can provide resultant information. It enables strong customer focus of internal and external factors towards the advertising Intelligence which helps in clear understanding of the origins. Active data and inactive data is taking place in the data life cycle. Through which we can make a routine right offer, to the Right market, at the Right Time through a Right Channel, with the right motives of message and of right budget which serves the criteria to be the best in advertising industry. The benefit of implementing data mining in the field of advertising includes Opinion mining, Behavioral targeting, Privacy preserving data mining approaches and tracking effectiveness of advertisement campaigns

BACKGROUND

The main theme of the study is to prepare the advertising campaign by using of real time information. By using of real time data warehousing and mining is a good opportunity of getting the hot data from the ongoing processes. Through the data mart, we can easily identify the particular area in a detailed manner of aggregated data and with denormoralized relations of data that exist in it. In past, we cannot easily identify the particular problem and provide real & hot data to the advertising messages. So, in order to overcome these kinds of problems in the forth coming days, we have to provide with the updated & attractive theme which is sizzling in the market place & it really works out in the customer decision making processes. It is mainly used to strengthen the decision making to helps management to spot out the trends, pinpoint the problems and make the intelligent decisions.

NEED OF THE STUDY

1) To collect the current information for preparing an ad copy by using data warehousing in a simplified way.
2) To analyze the information for develop the advertising strategy by using of data warehousing in the sense of data mining by using of SAP Business One.
3) To enhance the sales and to achieve the objectives of the organization both horizontal and vertically.
4) To give the suitable suggestion for betterment of creating an ad campaign.

A NEW DIMENSION OF PREPARING AN AD COPY - ENTERPRISE INFORMATION INTEGRATION SOLUTION FOR CREATING ADVERTISING:

It means that an integration of an information about the business process problems and finding the repetitive solution to the particular problem. From this we need to identify the repetitive & non-repetitive problems & solutions for solving the Marketing problems. The purpose of segregating the problem & solution is to analyze the process in a simplified manner and we can easily provide the appropriate solution to the problem in an advanced approach. Through we make the transparency in providing information from business users, Cost based optimization ensures efficiency and performance of the data storage, Low cost and faster implementation compared to physical data integration, Complement and extending of data warehouses is implemented easily and cost-effective ways. Deliver real-time access to integrated views of information across heterogeneous modules. With data mining approach, we can segregate the information which provides the information for preparing the ad copy.

DATA DRIVEN COMMUNICATION /DATABASE MARKETING:

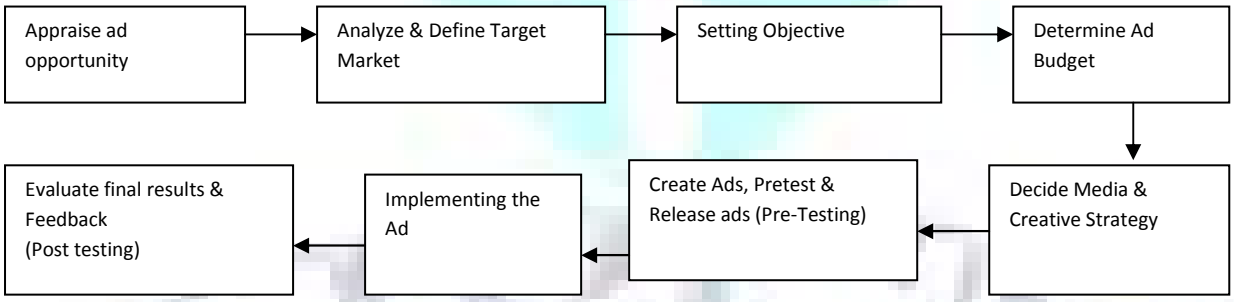
It Helps

- Understanding customers and prospective.
- Managing customer service.
- Understanding the competition.
- Managing the sales operation.
- Managing the marketing and marketing communication campaign.
- Providing information resources to customer.

ADVERTISING CREATION

Advertising is a Professional service by providing a form of marketing communication that enforces the real effectiveness of usability of product and service in the minds of the customer. In recent, Advertising is a powerful tool for stimulating the purchasing power nationally & internationally.
For that reason, the ad creating is getting more sensitive in nature in before marketing their product & services. Advertising theme play an important role in preparing an ad in the form of short, modulated audibility, clear, capture words and sentences. The endorser is an entity which acts as a bone of an advertisement. Through which we can provide effective communication to the consumers effectively within a short time span.

CREATING AN ADVERTISING CAMPAIGN



We have to get the information about an ad copy which basic problem or issue the advertising must tackle, advertising objective and communication objective, precise description of the target audience, the key benefits to communicate, creative strategy statement specifying campaign theme, appeal and execution techniques and other supportive information and requirements can also be handled.
Initially we need to identify the problem (like customer, marketer & producers standpoint) & solution (like Consumer motivations & marketer view point) area belonging to the product in planning of an ad copy creation. After identification, we need to appraise the opportunity of advertisement, in this search of information the ad has to give sufficient intensity to solve the problem. In giving information about presence of positive primary demand, meaningful & persuasive product differentiation and presence of powerful emotional buying motives is the key to create & influence the customers with strong positioning by its unique benefits. Sales & purchase analysis has to be made for setting the objective to determine the ad budget & the needs of the product & services analyzed therein.
Advertising can be very successful in communicating the hidden qualities (mental association about the product economy, reliability, roughness & etc.) to consumers in a manner that can be favorable influence to the consumers in the stage of buying decisions.

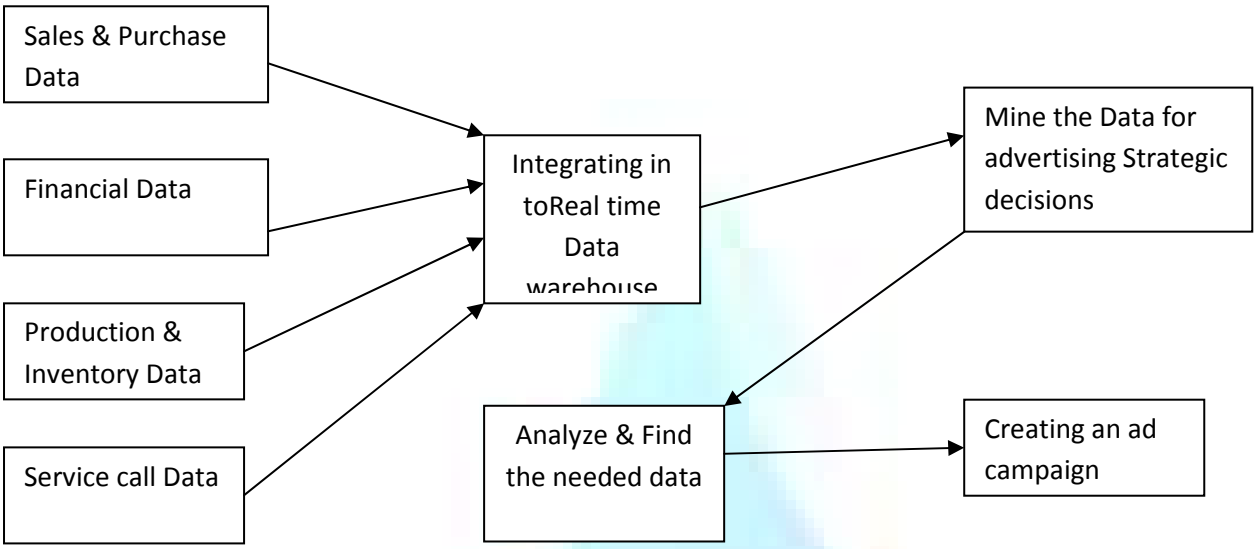
REAL-TIME DATA WAREHOUSING AND BUSINESS INTELLIGENCE SOLUTIONS

The real time data warehousing is parallel to the existing data warehousing but it is provided with other facility for updating the current information in the real time process of business data. The benefit of using this Provides real-time information to support operational business intelligence, Eliminates the need for periodic batch jobs, designed for minimal impact on source systems and platforms, Lower the risk of bulk process failures, Easy and cost-effective

implementation. From all these benefits, we can easily provide the alternative solutions with the result of different kinds of reports by selecting of specified attributes.

REAL TIME DATA MINING

PROCESS OF DATA MINING

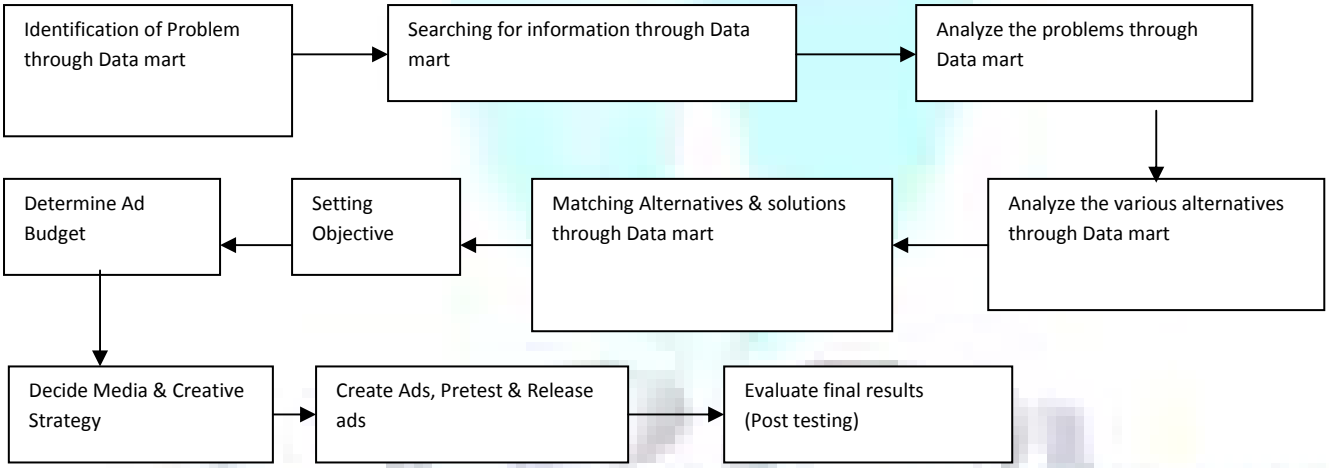


Real time data mining is alike to data mining. The data is updated frequently by using real time data warehousing. After the specification is given in the real time warehousing, the report is generated automatically. The message alert alerts the specific time which reminds at a specified interval by using of MS-Outlook. Data mining is the process of developing the segregated data in to a one single functional form based on designing the advertisement.

DATA MART

Data marts are analytical data stores designed to focus on specific business functions for a specific community within an organization. Data marts are often derived from subsets of data in a data warehouse. It is created from the union of organizational data marts. The reason for a data mart existence is to access the frequently required data in easily. It Creates a collective view by a group of users, Improves end-user response time , Ease of creation , Lower cost than implementing a full Data warehouse and Potential users are more clearly defined than in a full Data warehouse.

PLANNING OF ADVERTISING CAMPAIGN CREATION THROUGH DATA DART



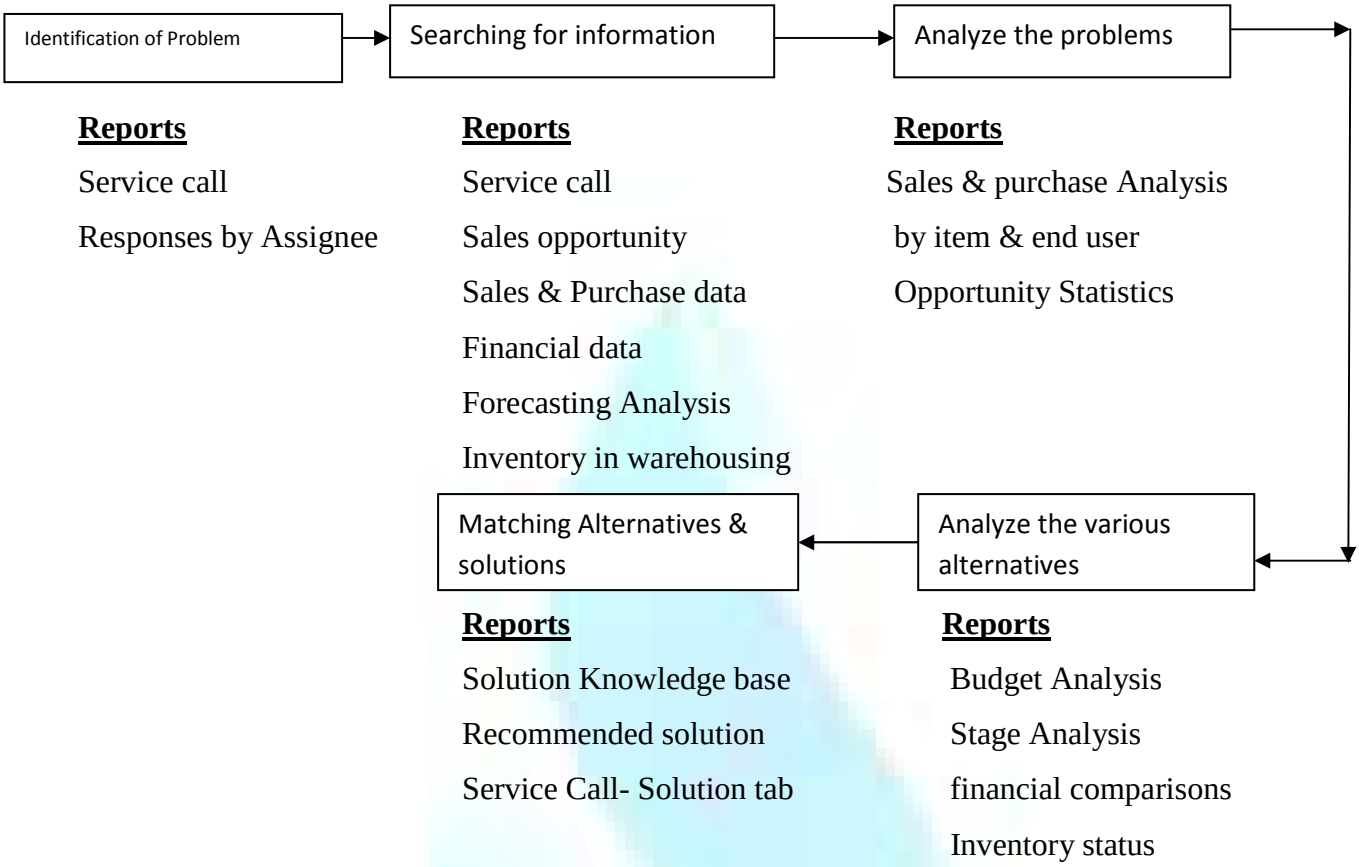
INTEGRATION OF DATA MART & CREATION OF AN AD COPY

The data mart is to get the customer information like the problem and solution about the particular product & services. This will help the advertiser/ marketing manager for creation of an advertisement campaign.

First they have to collect the data about the visually solving problems like awareness creations, usability, Identify about the product & services. The different kinds of information about the cross measures of customer feedbacks will help to make clear decision about the framing of a marketing strategy. The dependent feedback data like frequency of the purchasing, Media suitability, locality information and etc can be obtained.

From data warehouse, we can easily get the real-time information for timely decision making objectives. Through which, we can store the information of sales, purchasing, sales opportunities, inventories, forecasting, service calls, Material requirement planning, Accounting & Financial information & etc.

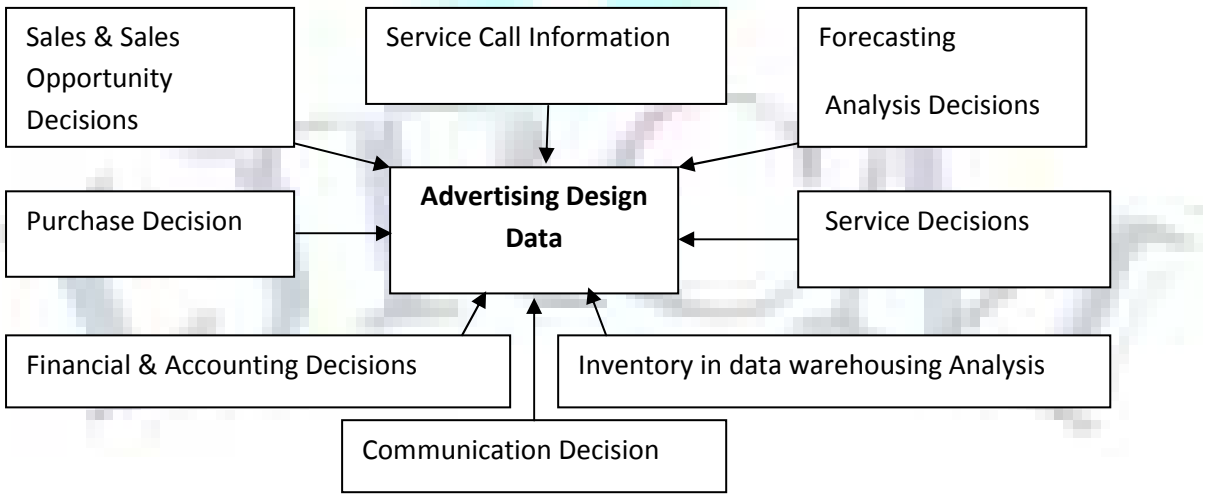
APPLICATION OF DATA WAREHOUSING IN SAP BUSINESS ONE



COMPRESSING ADVERTISING DATA MART

The consolidation of SAP Business One modules information is a consolidation of information for preparing the ad copy that is to be satisfaction to the customer and the company needs & wants.

Through enterprise data warehouse, we can easily integrate the different data mart information like, problems and solutions information. In the way of getting the information in the term of Enterprise information Management, specializes in finding optimal solution for supporting the process of preparing an ad copy for segregating the needful information.



CHECK LIST FOR CREATING AN AD CAMPAIGN

- How much money allocating for creation of ad towards attracting a new customer by means of creating awareness?
- Do you keep contact with respondents?
- By using various media of what resource you want to capture the customers?
- Do you regularly test the various media schedule and the different uses of media across countries?
- Do you identify what proportion of your sales comes from what proportion of your customer?
- Can you determine the segmentation of your customer?

- Can you quickly and inexpensively identify the actual customers for any research purposes?
- How much Advertising money to spend for differentiating the competitor product & service for existing customer by means of justifying the purchase/ profitable decision?

ADVERTISING MIX

- Message-what key idea/ information we want to convey?
- Media- how do we reach our audience? Which one to choose?
- Money-how much to allocate?
- Measurement- how do we measure the result of advertising?
- Motive- what is the reason for the customer to buy the product? why do they buy?
- Merchandise- What product/Service benefits we need to sell?
- Market-who are the people, whom we want to reach? Or who buys?

FUNCTIONS OF SAP BUSINESS ONE

- Real-time inventory position lets the enterprise make better decisions
- Multi-bin inventory allows the warehouse to optimize stock movement
- Batch and serial traceability let companies granularly manage their inventory
- Bar code enabled processes enforce accuracy, resulting in increased customer satisfaction and reduced error handling costs.
- Hard allocation reserves product from specific bin locations, ensuring that the right product goes to the right customer.
- Flexible allocation lets the warehouse reserve stock by FIFO, LIFO or expiry date
- Advanced pick and pack screen allows for more flexible pick document release, resulting in optimized workload batches.
- Flexible zone configurations allow the warehouse to efficiently distribute workload between employees and set up quarantine areas.
- Warehouse management software processes like flexible picking styles and replenishment streamline operations and reduce costs.
- Paperless processes automate document input, reducing clerical overhead.
- Pack size handling lets the warehouse meet customer specific pack size ordering requirements, optimize materials handling equipment usage and reduce bin replenishment.
- Labor statistics reporting allows the warehouse to more efficiently manage employees and forecast labor requirements.
- Warehouse efficiency reporting provides benchmarking information for goal setting.

TERMS RELATED TO SAP BUSINESS ONE DATA MART

SERVICE DATA MART (SDM)

SERVICE CALL REPORT

Created On From… To…-Enter the range of dates on which the service calls were opened.
Resolved On From… To…-Enter the range of dates on which the service call problems were solved.
Closed On From… To…-Enter the range of dates on which the service calls were closed.
Customer Code From … To…-Enter the range of codes that define the customers that initiated the service calls.
Assignee From … To…-Select the range of codes that define the employees responsible for the service calls
Item From … To…-Enter the range of codes that define items for which service calls were opened.
Queue ID-Enter the range of employee teams responsible for the service call.
Problem Type-Select to filter the report by type of problem.
Priority-Select to filter the report by priorities.
Call Type-Select to filter the report by type of service call.
Origin-Select to filter the report by the means of communication for complaints.
Call Status-Select to filter the report by status of service call.
Overdue Calls-Select to include service calls that have passed their due date in the report.
Sort-Select to display the Sort options and to select the corresponding criteria for sorting.
Sort Field-Select the field(s) from the list to be included as sort criteria in the report. This column only appears when you select Sort.
Order-Select the sorting order for the report: either Ascending or Descending. This column only appears when you select Sort.

SOLUTION KNOWLEDGE BASE

Item- Enter the item code.
Updated by, on (are displayed in the Find mode only) - Displays the date on which the solution last was updated and the code of the employee who updated the solution.
Status- status of the solution
No.- Displays the unique number of the solution
Owner- Displays the employee who created the solution.
Solution- Enter a description of the solution to the problem.
Symptom- Enter the factors that indicated the problem.
Cause- Enter the origin of the problem.
Details tab-Enter additional details about cause of problem, solution, or symptom.
Attachments tab-Use to add, display, or delete an attachment about the solution information.

RECOMMENDED SOLUTION REPORT

Created On-Displays the date on which the solution was created.
Owner-Displays the employee who created the solution.
Solution-Displays the solution text.
Status-Displays the status of the solution.
Find-Choose to display the Solutions Knowledge Base and to look for additional solutions to the service call problem.
Choose-Choose after selecting a solution from the list.

SAP IMPLEMENTATION SERVICES' AREA INCLUDES

Growth Trends: - A business management solution that integrates all facets of a business - Planning, Finance, Materials, Sales, Marketing, Manufacturing, Human Resources etc. The solution boosts productivity, connectivity and business insight for small and medium-sized companies in a cost-effective way.
Dynamic Business: - An integrated and affordable business management solution that is specifically designed for small and midsize businesses. It provides users with a consistent, intuitive environment that they can learn quickly and use effectively, and at the same time SAP Business One is powerful tool, enabling companies to manage their businesses and grow to new levels of success.
Financial Expertise: - Options for selecting multiple currencies, bank reconciliation and budgeting has given an extra edge to financial management system.
Operational Support: - An absolute inventory management system is starting from warehouse management to multi-level price listing increases workflow efficiency throughout the enterprise.

THE EXTENSIVE FUNCTIONALITY COVERS THE FOLLOWING AREAS

Customer Relationship Management (CRM): - SAP Business One CRM solution is integrated throughout (embedded) the system. It includes dispatching, contract management, warranty tracking, knowledge management (track problem resolution) and billing for services.
Financials: -Even though BI does not support inter-company transactions it provides analysis codes which can be attached to account transactions to maintain brevity of accounts.
Distribution: -Quotes, returns, flexible pricing, multiple warehouses, serial number tracking, landed cost, alternative items, vendor and customer item number cross-referencing and an automatic summary wizard that allows you to summarize multiple shipments onto one invoice.
Intuitive User Interface: - Dragging facility makes it easy to use and gives additional information. Customization is made easy as no alteration in source code is needed and there is smooth work flow by creating alerts and proper routing to transactions on requisition.
Manufacturing: - Material requirement planning, bill of materials, work orders, assembly and kits are included in manufacturing.
Report Generation: -Wild card helps to select information based on different criteria.

IMPLICATION OF THE STUDY

We have taken a model of Mobile Agency services for implying the concept of data warehousing and mining is to make easy process of sales and offer the quality product to the consumer without spending huge money for spending the ad presentation. We have chosen the advertising as direct communication through mobiles with the information of agency services. From this Agency, We have taken the different categories of mobile purchasers, in that we have identified the ranges of amount purchasing and its model preferences. Among these two categories, we have segregated the customer accordingly and have given the offers messaging via mobile Advertising. We have designed the text messaging ad in that we have used the agency identification and comparative offers on one day is to be shown in the advertising copy. From the resultant, we have identified the customers and the sales percentage is increased in to 30% on one day.

CONCLUSIONS

Now-a-days, the Strategy can be framed with lots of information of the business operation and competitive advantage is focused. As like, the various information is related to the in-depth information is collected & analyzed while preparing an advertising strategy. In this regard for storing various information & analyzing the information through the modern techniques are Data warehousing and Data mining are very essential for preparing an ad copy. The benefit of using sophisticated IT system provides a Cost-effectively data collection, Analyze and use of current information of such data in planning marketing communication

CORE CONCLUSIONS FROM THE NEED OF THE STUDY

After collecting the recent information & analyze the information about the advertising strategy which will create the uniqueness of different alternatives from the competitors product & services to enhance the advertising message for designing the ad campaign.

FURTHER EXTENSION OF THIS STUDY

The future scope of the study is to strengthen the information for getting the better result of the market. Related to advertising data mart is to be created with in-depth concepts through the real time data warehouse & mining information. They can more focus to advertising mix with respect to sourcing of unique Decision.

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UNETHICAL PRACTICE OF MIS-SELLING OF INSURANCE – IMPACT AND SOLUTIONS

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ABSTRACT

The Indian insurance sector which was de-regulated and thrown open to private competition has undergone tectonic shifts. Though the consumers have benefited because of the increasing competitive intensity in the sector, an area which is causing serious concern to the consumers, regulatory agencies and the government is the mis-selling of insurance policies. Mis-selling of insurance products has not only resulted in severe strain in the financial resources of the affected consumers but also wreaked havoc in their future financial planning. This paper discusses the current scenario of the insurance industry, the imperative for the orderly growth of the industry by gaining consumer trust, meaning of mis-selling, its various forms and impact and also suggests measures to be taken to curb this malady. The study is descriptive in nature and the scope includes the meaning of mis-selling, ramifications of mis-selling as well as suggestions to curb mis-selling of insurance products. Secondary data has been used and the sources of secondary data are newspaper, journal and magazine articles, company websites and other published sources of information. Valuable information was also collected through direct personal interaction with the customers, executives of insurance companies and members of consumer welfare organisations. The period considered for the study is 2000-01 to 2010-11. The growth of the insurance sector can happen in a sustained manner only if the sector functions in an ethical and transparent manner. The need of the hour is self regulation, adherence to prudent norms and continuous training of personnel.

KEYWORDS
Awareness, Ethics, Mis-selling, Regulation, Transparency.

INTRODUCTION

Insurance is an important pillar of the risk management system for individuals, businesses and the nation. The insurance products sold promising savings, health cover, pensions etc., are important components of the savings and investment portfolio of individuals. The insurance industry is an integral part of the financial system of a country and being an important source of long term finance contributes greatly to economic development. Insurance which acts as a risk mitigation device helps individuals and organisations to minimise the impact of risk and fosters entrepreneurship. The Indian insurance sector which was de-regulated and thrown open to private competition has undergone tectonic shifts. There has been paradigm shifts in terms of product design, service delivery, payment options, distribution channels, range of products and competitive strategies. Though the consumers have benefited because of the increasing competitive intensity in the sector, an area which is causing serious concern to the consumers, regulatory agencies and the government is the mis-selling of insurance policies. Mis-selling of insurance products has not only resulted in severe strain in the financial resources of the affected consumers but also wreaked havoc in their future financial planning. This paper discusses the current scenario of the insurance industry, the imperative for the orderly growth of the industry by gaining consumer trust, meaning of mis-selling, it's various forms and impact and also suggests measures to be taken to curb this malady.

LITERATURE REVIEW

Insurance plays an important role in the developmental process of an economy and its role is more pronounced in developing economies with their deficient social security mechanisms. (Hess Thomas, 2002, Bhat Ramesh, 2005). The period after the year 1999 saw a revolution in the Indian insurance sector, as major structural changes took place in the sector especially the competition, products and distribution channels. (Gupta P.K, 2009). It is a challenge for any insurance business to attract qualified and capable persons to join and work with them to sell insurance in the competitive environment. It requires capable people who could analyse the financial status, generate confidence among potential customers by giving the right advice and refrain from mis-selling. Knowledge about matching products to suit customer requirements over the entire life cycle is a key differentiator and would be a source of competitive advantage (Jap S, 2001, Beloucif, Kaxani Donaldson, 2004, Keith, J.E., Lee, D.J., Gravois Lee, R., 2004, Dagar S, Shalim, 2008, Maheswari Sunil, 2005, Mazumdar, A. 2009, Peppers Don et. al., 2008, Wiley Stepehen, 2005). The success of marketing insurance is dependent on understanding the social and cultural needs of the target population, tailoring products and services according to target market requirements and maintaining high standards of integrity. (Marwah, Sanjiv 2002, Mark L. Frigo, 2004, Schurr, Paul H. 2007, Rao GV, 2008)). In a service like insurance which promises in return for payment upfront, redemption of commitments has to be perfect at all times (Morgan R.M. and Hunt, S.D. 1994, Mony, S.V, 2003). Consumer education is the key to the growth of the insurance industry in India (Naren Joshi, 2004). Competition policy should ban the practice of tied sales whereby customers of large companies are forced to buy several services from the same group (Krishnaveni, 2008). To constantly differentiate themselves, insurers have to constantly raise the bar of customer service, weed out the menace of mis-selling and establish robust corporate governance standards (Mishra KK and et. al, 2005). Jagendra kumar (2008) stated that while insurance is a price competitive arena, trust and customer service play huge roles in attracting and retaining customers. Garg SC (2006), suggested that the orientation of insurance education today should be on developing a keen understanding of insurance customers, the benefits they seek and the aspiration they have of financial products and services, coupled with skills of customer cultivation, customer service and long term customer retention.

RESEARCH METHODOLOGY

The study is descriptive in nature and the scope includes the meaning of mis-selling, ramifications of mis-selling as well as suggestions to curb mis-selling of insurance products. Secondary data has been used and the sources of secondary data are newspaper, journal and magazine articles, company websites and other published sources of information. Valuable information was also collected through direct personal interaction with the customers, executives of insurance companies and members of consumer welfare organisations. The period considered for the study is 2000-01 to 2010-11.

CURRENT SCENARIO OF THE INDIAN INSURANCE INDUSTRY

The Indian life insurance industry is the fifth largest life insurance market in Asia, with a market size of US$ 41-billion and growing at a rapid pace of 32-34 per cent annually, according to the Life Insurance Council. Over the last five financial years, the overall insurance sector has grown by 202.09 per cent. Since the opening up of the insurance sector in India, the industry has received FDI to the tune of US$ 525.6 million. The government's proposal to reintroduce the Insurance Bill which proposes to increase the FDI cap in private sector insurance companies from 26 per cent to 49 per cent is expected to further boost FDI inflows into the sector. Currently 23 companies are operating in the life insurance sector and they have collected Rs 1,09,290 crore in fresh business premium during the fiscal 2009 – 10 which is 25 per cent higher when compared to the premium collections of the previous year.

INDIAN INSURANCE SECTOR – IMPERATIVE FOR ORDERLY GROWTH

A strong and competitive insurance sector is considered to be an imperative for the country's sustainable growth and economic development. In the case of deficient products in terms of coverage and scope, the economic activities would become high risk activities and in case of losses would place a huge burden on the government. It is a fact that only 8 per cent of the workforce in India is in the organised sector having some form of social protection leaving a vast majority of 92 per cent of the workforce without adequate or in some case even nil social security. According to the Old Age Social and Income Security (OASIS Report, 1999) there will be 113 million Indians over 60 years of age by 2016 and 179 million by 2026. The report, '2006 World Population Prospects' released by the UN Department of Economic and Social Affairs has projected that the country's life expectancy is set to increase from 64.7 years to 75.6 years The rise in life expectancy, break up of the joint family system with the youth taking care of their parents needs during their sunset years becoming a thing of the past, growing healthcare costs outstripping inflation consequently eroding retirees' purchasing power, decline in government spending on health which is just 1.5 per cent of GDP, etc., point out to the indispensability of insurance to provide for the life's needs.

The foundation of the insurance industry lies on providing assurance of safety and risk mitigation at an affordable cost. Since current payments are made with the hope of being compensated against uncertain events at a future date, trust is the prime component of this two way exchange. Customers expect high standards of integrity, transparency, financial soundness and fair dealings from their insurers.

MIS-SELLING OF INSURANCE - THE MEANING AND REASONS

Mis-selling of insurance has been the bug bear of the industry and inspite of the several steps taken by the regulator (IRDA), it is an area of serious concern. Since insurance penetration is already quite low in our country as compared to international standards, the mis-selling of insurance hampers the further growth of the industry and acts as a severe impediment to financial market deepening. It is important to understand that mis-selling is not confined to the mis-selling of insurance products by the agent, corporate broker, bank or through any other distribution channel. It also includes poorly designed products, lack of adequate explanation, inaccurate forecasting of risks, not being provided information of the available options which would suit a particular need and poor customer support.

There are basic reasons for mis-selling of insurance. First is the commission-based incentive to agents. The present agency network is not fully professional. The part-time nature of the job and very low business per agent are making the entire agency force costly to maintain and regulation a difficult task. The temptation, for agents, to sell policies that fetch maximum commission without any consideration to the financial needs of the individual is rampant. There have been many instances where customers have bought a policy on the advisor's recommendation, and ended up feeling aggrieved as either the policy is unaffordable, or it does not match their long-term financial goals.

Second, most Indians are naive about the real purpose of insurance. We buy it as a tax-saving product rather than as a protection product it is supposed to be. The sales pitch of being able to double or triple money in a unit-linked insurance plan (Ulip) is too tempting, especially when the agent is giving a rebate. Unsuspecting customers usually end up with wrong and inadequate insurance.

INTERNATIONAL EXPERIENCE

The large scale endowment scandal in UK which resulted in huge misery for thousands of households is ample proof that mis-selling of insurance is rampant in even the developed economies. Endowment mortgages became popular in the UK in the 1980s and 1990s since they were an affordable way to repay home loans. Borrowers would take an interest-only home loan with the principal to be paid at the end of the loan tenure. At the same time, borrowers would buy an endowment plan for which they would pay regular installments into an investment fund managed by the endowment provider. The insurance companies made a false promise that the investment would eventually generate enough money to pay off the home loan principal, in full, at the time of the loan's maturity. To further sweeten the deal, customers were promised a surplus as well as a life insurance cover for the investment period. The fact that the instrument was equity-linked and that returns were not guaranteed was cleverly concealed from the customers. When the stock markets crashed in 2000-02, the value of the investments fell drastically resulting in a financial disaster for more than 80 lakh households. Mis-selling liabilities of the sellers were estimated at approximately £17 billion (Rs 1,36,000 crore).

The parties involved in the scandal included intermediaries like building societies, insurance companies and banks. Prominent among them were, Winterthur (now part of Credit Suisse First Boston), Royal Scottish Assurance (part of Royal Bank of Scotland), Barclays, Standard Life, Royal & Sun Alliance, Friends Provident and Scottish Amicable (now part of Prudential). In fact, Prudential paid about £1.6 billion

(Rs 12,800 crore) towards cost of compensation arising from a previous pension mis-selling scandal before the endowment scandal hit bringing home the fact that companies have continued to indulge in this mal-practice.

FORMS OF INSURANCE MIS-SELLING AND ITS IMPACT IN THE INDIAN CONTEXT

(i) **POLICIES BEING ISSUED WITHOUT COLLECTION OF PROPOSAL FORMS:** In such cases, there is high probability of the insured facing unnecessary problems and harassment at the time of making a claim.

(ii) **POLICIES KEPT IN 'LAPSE' MODE EVEN AFTER PAYING PREMIUMS IN TIME:** Since lapsed policies are not entitled to any claim, the claim of the policy holder may be rejected by the insurance company.

(iii) **UNDUE DELAY IN RECEIPT OF POLICY CERTIFICATES:** This results in unwanted anxiety and stress to the insured. There is no specific timeline for sending of policy certificates.

(iv) **DIFFERENCE IN EFFECTIVE PREMIUM DATE AND THE DATE OF DEBIT FROM CUSTOMER'S ACCOUNT:** This has the impact of loss of interest and life cover during the period as well as possibility of misuse of customer's funds.

(v) **WILFUL MISREPRESENTATION OF PREMIUM PAYMENT TERM:** Lower premium payment term mentioned during the sales pitch in order to lure the buyer, but a higher policy paying term being mentioned in the policy'. For instance during the sales talk the customer would be told that he has to pay premium only for 5 years but the policy would specify that the policy payment term is 15 years. This leads to complete havoc in the financial planning of the insured leading to high degree of cancellation or lapsation.

(vi) **MIS-STATEMENT OF PREMIUM PAYMENT MODE:** The client might be comfortable paying the premium once a year and would have indicated this to the agent but in the policy it might be mentioned that the policy paying term is monthly, quarterly or half yearly. This again creates unnecessary problems in planning of financial commitments and creates mismatches between an individual's income and allocation for investment.
(vii) **FORGING OF CUSTOMER'S SIGNATURE:** This is a common practice resorted to by agents. This violation may lead the customer into serious financial troubles as he may be made to get into financial commitments for which he is not prepared.
(viii) **DIVERTING OF MONEY FROM FD'S TO INSURANCE POLICIES:** Many old people who go to banks to claim their FD's on maturity are mis-sold ULIP's promising safe and high returns. Too much emphasis is on the wealth creation upside of Ulips, without a clear explanation of the risks involved. In the event of an equity downturn, life insurers are unlikely to be affected much since in ULIPs, the investment risks are entirely borne by the policyholders. There are no guaranteed returns and therefore no solvency issues. Many of those who bought such ULIP's suffered greatly because of the financial market downturn in the year 2008.
(ix) **PROMISE OF HIGHEST GUARANTEED NAV'S:** It is not only the private players who are making the promise in their advertisements but also the government controlled LIC. Since NAV's are determined by market movements and markets can move both up and down, this promise is highly fallacious without any basis of logic but made with the sole purpose of luring the gullible investor. Moreover, the transparency leaves a lot to be desired. The guarantee is only in small print with a clear intention of actually concealing the facts. If each and every guaranteed product currently in the market is closely analysed, it will make a mockery of insurance. For example, some plans say that the guarantee is applicable only when the customer chooses days between 8 and 23 as the date of guarantee, or it is not guaranteed on any day except Friday. In other cases, the guarantee is applicable for only the first three years.
(x) **UNSOLICITED INSURANCE POLICIES:** Issuance of insurance polices without the consent of policy holders or proper proposal forms, i.e., unsolicited insurance policies. There has been a significant, undesirable rise in these instances. Besides being in violation of the Insurance Regulatory Development Authority (IRDA) norms, this practice also means trouble for a customer/policy holder. An unsolicited insurance policy could be more dangerous than an unsolicited credit card. If it is not returned within 15 days, the receiver of such a policy will automatically become a party to an insurance contract, the details of which he not fully aware of due to the absence of a proposal form. Even if one wishes to subscribe to it, there could be something fishy about the nominees. Keeping the policy and not paying the premium also may not bail one out as somebody else could be paying for it with some vested interest. If any such policy is received, the first thing to be done is to return it through registered post.
(xi) **NON REFUND OF PREMIUM IN CASE OF RETURNED POLICIES:** The customer can return any policy within 15 days of receipt of the policy document. This period of 15 days is known as the 'free look period' and is given so that the customer can decide whether the policy is suitable and meets his requirements and in case any dis-satisfaction, it can be returned to the insurer. Even if the policy is returned within the free look period the premium amount is not refunded. As per the terms in case of refunds, only the stamp duty can be deducted, but it is common to observe that insurance companies deduct penalties which they are not authorised to do so.
(xii) **DEFAULT REMINDERS IN RESPECT OF PREMIUMS PAID:** Default payment reminder being sent after payment of the premium amount has been made within time. If any customer by mistake again makes the premium payment, he would be unnecessarily making an extra premium payment and recovering it from the insurance company is an uphill task.
(xii) **DELAY IN SENDING THE PREMIUM PAYMENT INTIMATION:** Due to this customers might be paying late and would be penalized with late payment penalty.
(xiii) **ISSUE OF POLICIES TO THOSE WHO ARE INELIGIBLE BY FORGING PERSONAL INFORMATION:** For instance certain life policies cannot be issued to those who have crossed 65 years of age. This information is not disclosed to the client and the client's data of birth is forged to make him eligible for the policy though in reality he would have crossed the age limit and be ineligible for the said policy. The real magnitude of the problem would be felt at the time of claim settlement where the insurance company can repudiate the claim citing ineligibility. It is a well settled fact that insurance obtained under wrong, incorrect or mistaken information can render the insurance contract null and void, negating the very purpose of obtaining life insurance. According to the Insurance Regulatory and Development Authority of India (IRDA), a total of 9,027 policies were repudiated in 2007–08 by the life insurance industry, amounting to a repudiation of Rs 152.66 crore. Many of these were caused due to asymmetry of information.
(xiv) **MARKETING OF HIGH COMMISSION PRODUCTS:** Agents concealing information about term insurance to those who require pure risk cover and instead selling them ULIP's to benefit from the high commission structure offered by ULIP's'. It is a fact that term insurance is the cheapest and most basic form of life insurance and provides the policyholder with protection only. If the policyholder dies within the specified number of years (the term, say 25 years), his nominee gets the sum insured.
(xv**) PROMISE OF EARLY EXIT FROM ULIP'S :** Promising that investors can exit from ULIP's after three years with handsome returns. The reality is otherwise. An investor in ULIP's will not be able to exit the policy after 3 years because 30 per cent of the cost that go towards covering mortality charges and other expenses are charged upfront and it would take at least 6-7 years for the product to break even. The charges are deducted from the number of units that the investor has and not from the NAV. So even if the NAV of this fund has increased by 40 per cent, it is of no relevance since the charges are so steep in the first year that it will take several years for the investment to break even.

SUGGESTIONS

Mis-selling of insurance has the potential to undermine the growth prospects of the industry. Considering the needs for better insurance penetration to ensure income and livelihood protection for the masses who are not covered by any form of social security, the following measures are recommended to curb mis-selling:
(i) FOCUS ON SELF-REGULATION TO BUILD CUSTOMER TRUST: Since self regulation is convenient, cost effective and efficient than external regulation in most cases, the insurance companies should evolve a code of good practices and scrupulously adhere to them. It should be realised that customer trust is the edifice on which the institution of insurance is built and mis-selling has the potential to erode customer trust in a significant manner. They should ensure that all functions of the organisation become much more customer centric and transparency is ensured.
(ii) EASILY INTELLIGIBLE AND JARGON FREE SALES LITERATURE: Insurers have to take steps to ensure that the sales literature of their products is easily intelligible and short of needless jargon in order to enable the common man make an informed choice. The language used in the sales literature and policy documents should be simple.
(iii) NEED BASED SELLING: Sale of insurance policies should be based on a scientific model of needs analysis taking into account the income, age, number of dependents, future financial requirements and risk appetite from the customer's point of view. Agents and other members in the distribution channel should be trained in this regard as well as in matching products according to the unique needs of each customer. The potential risks of each insurance product should be clearly explained to the client.
(iv) PROVISION OF KEY FEATURES DOCUMENT: Providing a key features document which would provide comprehensive information of the policy should be made mandatory to enable transparency of the product structure and better decision making by the investor. The document should be developed in a clear format with an appropriate title and sub-titles so that it makes it easy for policyholders to comprehend. Illustrations relating to the cover/benefits offered should be part of the Key Feature Document. It should be made available in local languages depending on the region where the policy holder resides.
(v) CREATING AWARENESS OF THE ROLE OF OMBUDSMEN IN SETTLING GRIEVANCES: The industry sells about five crore policies annually and there are 12 Ombudsmen across the country. Of the three lakh unsettled claims, only 6,000 policyholders approached the insurance Ombudsmen for redress in 2009-10. This implies that policyholders lack awareness in approaching the Ombudsmen and do not know their rights. The regulator needs to create better awareness of the role and functions of the ombudsmen and as in banks, the contact details of the ombudsmen should be prominently displayed in the branches of all insurance companies.

(vi) PROFESSIONALISATION OF THE AGENCY FORCE: It is essential that the companies professionalise the agency force by a suitable filtration process and identify and train top achievers among the agents to become full-time distributors. The reduction in commission levels will have to be compensated by increasing per agent sales to make it an attractive career to pursue. In markets like Indonesia and Thailand, the average agent productivity is at least three to four times of that in India. Also, in these countries, a far smaller number of agents work on a part-time basis.

(vii) IMPOSING LEGAL RESPONSIBILITY ON THE AGENT: According to a media report, the self-regulatory organisation of the industry, the Life Insurance Council, and statutory regulator IRDA have decided to impose on customers buying life insurance products the burden of executing an affidavit to the effect that they have understood the product they intend to buy and the risks associated with it; the affidavit will contain illustrations that an insurer gives customers to help them understand the product. The proposal may be well-intentioned — to reduce the rampant mis-selling in the industry. The real purpose will be served if instead of the customer, the agent is made to swear an affidavit in order to make him more responsible for satisfactorily explaining the nitty-gritty of the product to the prospective customer.

(viii) INTEGRATED ONLINE GRIEVANCE REDRESSAL SYSTEM: IRDA should introduce an integrated online grievance redressal system to help the policyholders resolve their grievance quickly and without any needless waiting and hassles. Currently it takes a long time for companies to acknowledge the grievance and there are undue delays in redressal.

(ix) DISPLAY OF BLACK LISTED AGENTS DETAILS IN THE REGULATOR'S WEBSITE: To control mis-selling of policies and vanishing agents, and making agents accountable for their selling practices, the regulator should create a database of agents who have been asked to leave any insurance company due to misconduct and prominently display it in its website. This would enable the customers to become aware of blacklisted agents and refrain from dealing with them.

(x) ENSURING ACCURATE CUSTOMER INFORMATION: Insurers should minimise the possibility of errors and incorrect information in proposal forms and policy documents by adopting both corrective and preventive measures through maintaining high levels of data quality. Corrective measures include establishing multiple touch-points through which they can verify the information provided by applicants. This can be done through a verbal verification when a customer calls in about a query, or through physical verification at the time the insurance policy is being issued. Preventive measures include the use of improved backend data processing and technology to standardise data entries and detect any defects. Regular agent-education campaigns, direct e-mails to customers and quality checks with the field teams would make sure that insurance companies plug the gaps in customer information.

(xi) REVISION OF THE COMMISSION STRUCTURE: A major problem affecting the insurance sector apart from poorly trained agents is the problem of churning. An agent works with a company for a few years and then moves to another taking with him his customer base. In the way commissions are structured—being frontloaded—this practice is encouraged. An agent gets the most of the commission on a policy in its initial years and there is little incentive for him to think long term. To facilitate long term growth, the Insurance Act needs to be amended to ensure that the commissions are more evenly spread to encouraging agents to stay long term. In the current system, around 25 per cent is paid upfront and around 3 to 4 per cent is paid every year. In future, the commission could be spread in such a manner that 15 per cent is paid upfront and 10 per cent if the policy is renewed for the next five years. Such a structure would make the agent provide the right product to the customer because if the customer cancels the policy because of the unsuitability of the product, the agent's future incomes would be affected. This would also ensure that the agent provides long term service to the customer

(xii) Disclosure of MCEV (Market Consistent Embedded Value): MCEV refers to the value of future streams of renewal premium from the existing business and indicates the company's future prospects to the investors and customers. While the economic capital reflects the true fundamentals of the company, MCEV is indicative of its future financial strength. Since MCEV is a better indicator of financial strength and stability, the regulator should make its disclosure mandatory in the financial statements of the company.

(xiii) INVESTOR EDUCATION AND BETTER DISCLOSURE QUALITY: An informed investor is the best guard against the evil practice of mis-selling. Just as the stock market regulator SEBI has created an Investor Protection Fund and conducts Investor Awareness Campaigns, the insurance regulator should allocate funds for insurance investor awareness and protection. The current practice of disclosing new business volumes alone distorts the markets by encouraging insurers to get more new business instead of focusing on renewals. Since growth in new business without corresponding increase in renewals, solvency ratios and decrease in operating expenses, lapsation rates and outstanding claims settlement ratio is unsustainable, insurance companies should be mandated to publish lapsation rates, persistency rates, expense ratios, solvency ratio, renewal volume, grievances recorded, settled and outstanding claims settlement ratio. This would enable the customers to take better informed decisions

FINDINGS

(i) The Indian insurance sector has reported high growth rates during 2009-10, admirably weathering the impact of the global economic crisis.

(ii) Mis-selling of insurance is rampant in the industry and has the potential to derail the growth of the industry.

(iii) Mis-selling of insurance products causes great hardships to customers since they realise that the product does not match their financial needs, does not consider their risk profile nor its payment terms are suitable.

(iv) The industry also suffers due to mis-selling because it results in customer dis-satisfaction and high lapsation rates. Due to high lapsation rates, renewal premiums decline and companies have to spend heavily on advertisements, promotion and need to incur high commission costs to garner new business.

(v) Mis-selling is not only prevalent in India but also in several advanced economies and has resulted in huge losses to customers.

(vi) The regulator needs to ensure stringent regulation and strict action against those involved in mis-selling. The need of the hour is to create better awareness among customers to guard them against the evil practice.

(vii) The insurance industry needs to train and professionalise its agency force, ensure better transparency and adhere to high standards of ethics and corporate governance in order to curb mis-selling and ensure orderly growth of the industry.

(viii) There is need to provide for better documentation such as Need Analysis and Key Features document to ensure better understanding and matching of products to customer needs. Technology needs to be leverage to provide better information quality to customers.

CONCLUSION

Instead of resisting attempts to reform the industry if insurers take a fresh look at the new IRDA regulations, they would find that the reforms improve transparency, social security and help the insurer to better penetrate the under-insured Indian market. Sustained growth of the insurance sector depends on its ethical and transparent functioning. The need of the hour is self regulation, adherence to prudent norms and continuous training of personnel. The government and the regulator need to focus on improving financial literacy of the masses by conducting regular investor awareness programs detailing the various avenues of investment, importance of insurance in securing one's life, method of matching requirements to the products available and the methods of seeking redress. Considering the fact that insurance penetration and density are woefully low in India, it is high time that regulations are formulated in order to ensure orderly growth of the industry and the industry comes forward to follow regulations both in their letter and spirit to ensure sustained growth and profitability.

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BUSINESS PROCESS DEVELOPMENT IN SERVICE ORIENTED ARCHITECTURE

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ABSTRACT

The Study explores and proposes a new concept in developing outline and asses strategic business and technology aspects of cloud computing. Theoretical background and overview is presented on the basic underlying principles, autonomic and utility computing, Service oriented Architecture. Service-oriented architecture (SOA) paradigm for Orchestrating large-scale distributed applications offers significant cost savings by reusing existing services. However, the high irregularity of client requests and the distributed nature of the approach may deteriorate service response time and availability. Static replication of components in data centres for accommodating load spikes requires proper resource planning and underutilizes the cloud infrastructure. Their relation to cloud computing is explored and a case for scaling out vs. scaling up is made and scaling out of relational databases in traditional application is stressed a bottleneck. The rapid progress in information technology and availability of services at low cost has broadened the use of internet for multiple applications. By evaluating strategic issues and weighting in business adoption pros and cons. Cloud computing is expected to be an economically visible alternative to conventional methodology for implementation of projects without compromising the quality of services. I specifically point out cost efficiency, vendor lock in effects leading to operational risks to be prevailing for the majority of larger business customers that could potentially mandate their IT and computing needs from the cloud. Leading current cloud architectures are compared in software industry. I explore that the process of cloud business deployment will be gradual, but also that government regulations and legal aspects are also likely to business development process further. Ultimately, I conclude with an outlook and recommendations for companies and cloud providers.

KEYWORDS
cloud architectures, cloud computing adoption, autonomic computing, Business Process Management System, and Service Oriented Architecture.

INTRODUCTION AND MOTIVATION

Cloud computing is a very current topic and the term has gained a lot of traction being sported on advertisements all over the Internet from web space hosting providers, through data Canters to virtualization software providers. Cutting through the hype of cloud computing is not an easy task as a simple web search suffices to convince that there are nearly as many definitions on what constitutes 'cloud computing' as there are players in the market seeking to gain new territory in that promising new business field. Cloud computing is an emerging technology which play a vital role in effective implementation of a lower cost. Today's dynamic environment of changing needs require on demand location independent computing services which include software, platform and scalable infrastructure. The cloud computing can provide such an environment for optimum utilization of resources. They either provide cloud computing commercial Solutions in one form or another, or actively sponsor research centres, Pursuing development of marketable technology. cloud computing aim at and what are typical services that are expected to be encompassed by the definition of cloud computing, as evidenced for instance by the work of the "new offerings that allow enterprises to benefit from the developments taking place in the area of Cloud Computing" yet they attempt to steer clear out of the hype and highlight that they have redefined cloud computing to include everything sharing among different platform. Cloud computing technology from industry optimism to critique on the viability and feasibility along with concerns on privacy, security and not least cost efficiency of the currently offered cloud computing models is available as and seems to be broadly discussed within the IT community.

The main goal is to "clear the air on cloud computing" and provide an unbiased and independent, albeit critical outlook of the technology. As the title of this thesis suggests its aim is to enable the reader to gain an overview of the vital aspects of cloud computing in a three-fold way: by a) providing common definitions of the important terms; b) by setting apart the advantages of the technology and the disadvantages and problems inherent to it; and c) by ultimately delivering concrete technical and business model details on popular cloud architectures, offered by the big players in the field. Special emphasis is put on the critical examination of each strategy as now more than ever in the face of the global economic crisis, companies face higher refinancing and investment costs and as any company thinking about Adopting or moving to cloud computing technology would do in practice, short-to-medium term disadvantages of the technology have to be pragmatically and carefully weighted out against any hyped long-term potential efficiency achievements, be it strategic, technical or cost related.

AUTONOMIC AND UTILITY COMPUTING

In order to understand the vision, goals and strategy behind cloud computing, two key concepts that form its foundations need to be explained first. What seem to be the promising advantages of autonomic computing – systems that manage themselves, coupled with the flexibility and freedom of utility computing mark the core values of the business proposition offered by what is referred to as 'cloud computing'. There primary target is by developing 'autonomic elements' to combat the ever growing complexity of integrating and interconnecting the myriad diverse software systems that still continue to emerge exponentially throughout all areas of IT. A parallel could be drawn from these four characteristics to the desired characteristics one would want (or expect) systems deployed 'in the cloud' to posses:

- **Self-management** – automatic configuration of components according to high-level policies. This would assure seamless adjustment of the rest of the system
- **Self-optimization** – components strive proactively to optimize their own performance. That would accounts for a continuously improving efficiency of the whole system in general
- **Self-healing** – the system in general diagnoses and removes software (IBM cited even hardware) issues. Thereby the system should ideally self-repair and self-maintain to the extent possible
- **Self-protection** – the system defends itself from malicious attacks and cascading failures. Software organizations 'early warning' mechanism to prevent systemic failures.

According to software industry even though their own claims for such a high degree of automation might seem like science fiction, increasingly autonomic systems in their vision would not spawn out of nowhere, but rather gradually as engineers add more and more sophisticated autonomic managers to existing humanly managed elements. However, software industry states in addition two necessary attributes to autonomic computing, that taken in the context of cloud computing seem to be problematic and relevant right now, long before the significant engineering challenges towards developing all the fancy autonomic systems are overcome. These purely organizational challenges are:

• **Privacy policies and laws** – autonomic systems must appropriately segregate and protect private data (not even remotely mentioned how)

• **Open standards** – the system must rely on such, also including its communication protocols; it cannot and shall not exist in a proprietary world. Additional arguments are provided further on in this thesis that emerging cloud computing providers almost naturally expect to perform a 'vendor lock' into their proprietary world on their clients, which reflects both the customer as well as the cloud computing industry negatively.

CLOUD COMPUTING

Cloud computing is a model generally defined as the clusters of scalable and virtualized resources like distributed computers, storage, and system software etc.which makes use of internet to provide on demand services to the user. The opinions differ, but a pattern is found such that the wording in almost all explanations hovers around the keywords scalability, on-demand, pay-as-you-go, self-configuration, self maintenance and Software as a Service. A technical stance and considers a 'cloud' to be a pool of virtualized resources that hosts a variety of workloads, allows for a quick scale-out and deployment, provision of virtual machines to physical machines, supports redundancy and self-recovery and could also be monitored and rebalanced in real time.

"A Cloud is a type of parallel and distributed system consisting of a collection of interconnected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements established through negotiation between the service provider and consumers."

It emphasize that a 'cloud' is thereby not only a combination of clusters and grids, but is also extended by the implied usage of virtualization technologies such as Virtual Machines (VMs) to meet a specifically *negotiated* service quality level. This definition implies and captures two potentially problematic issues of a) the business issue of negotiating *the proper* SLA from the customer's perspective and b) of having the technical capacity to correctly account for and guarantee the service outlined in that SLA at all resource monitoring, failure redundancy, rebalancing of workloads, etc. from the provider's perspective

"Cloud Computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the datacenters that provide those services (Software as a Service - SaaS). The datacenter hardware and software is what we will call a Cloud. When a Cloud is made available in a pay-as-you-go manner to the public, we call it a Public Cloud; the service being sold is utility Computing.".

The could also be seen as recursive in case of mash-up provider that is a cloud user of another platform at the same time:

CLOUD PROVIDER SAAS PROVIDER / → CLOUD USER → SAAS USER

It is specifically of the usage of the terminology Infrastructure/Hardware as a Service and Platform as a Service, which is commonly found in cloud computing explanations by industry experts and academics – rather Utility Computing (used here again interchangeably with Cloud Computing) is classified in three models – Computation, Storage and Networking. The following building blocks of cloud computing:

• Storage-as-a-Service
• Database-as-a-Service
• Information-as-a-Service
• Process-as-a-Service
• Application-as-a-Service
• Software-as-a-Service
• On-demand self-Service
• Infrastructure-as-a-Service
• Platform-as-a-Service
• Integration-as-a-Service
• Security-as-a-Service
• Management/Governance-as-a-Service
• Testing-as-a-Service
• Measured-as-a-Service

SERVICE ORIENTED ARCHITECTURE

Service-oriented Architecture refers to a modular design principle in software architecture. Service-orientation aims at separating individual functions into distinct units or "services", that could be accessed, e.g. via a network, by developers to integrate them in a reusable manner in their applications. A Paramount is the loose coupling of those services to programming languages and specific underlying platforms, i.e. the services communicate with the applications (or other services) that invokes them via their predefined interfaces. Ideally, those should be standard, available, documented and easily implementable. It suggests the following guiding principles towards designing a service – it should be granular, componentized, encapsulated, eve raging existing modules, having life cycle management and complying to common industry and IT standards. Ultimately, SOA based applications should leverage a multitude of already developed services – purposefully designed, stateless pieces of business logic that compute specific tasks and deliver clear and usable results in return. XML/SOAP protocols are examples of commonly used for building SOA applications and utilizing web services (services accessible via HTTP protocols). From the business perspective SOA should allow for reuse of existing investments through leverage of already bought technology, evidenced e.g. as plenty of companies are creating services extracted from existing applications to be mandated for further standardized usage company wide in the enterprise SOA. Moreover, by deploying a flexible SOA in the enterprise, existing systems could be changed more flexibly to accommodate for changing business and user needs. SOA, as an architecture design principle is a necessary ingredient towards enabling any of the cloud computing models and paradigms mentioned in this thesis for two key reasons:

• **Firstly**, the term Service-oriented Infrastructure (SOI), as defined by software organizations to be the "virtualized IT infrastructure in an industrialized way" manages a multitude of services as well as SOA applications. Intel reaches to draw a parallel with autonomic computing and further enhance the understanding of these"SOA layer" with a couple of very high-level tasks such as management of virtualization, load balancing and capacity planning, monitoring and problem diagnosis, security enforcement and utilization metering (incl. SLA compliance). If and when, theoretically, systems (including those of normal, non-IT enterprises) are made to be capable of such seamless encapsulation, abstraction and management of whole computing resources, moving, providing or acquiring them from the Cloud would be the next logical thing to do. However, for the time being this as well as most of software industry vision of autonomic computing remains largely wishful thinking, yet still points towards the general trend in automating enterprise IT resources.

• **Secondly**, any software or software platform that is to be 'offered as a service' or "provided in a pay-as-you-go manner" should be designed along SOA principles. Customers, or software application developers would thereby theoretically design their systems to be modular or use other's modules and ideally pay only for the components they need (if they are drawing on external pieces of code). Although apparently not a new concept at all, I would argue that the trend towards cloud computing and the resulting need for more interoperable systems (as they are hosted/executed in the cloud) would naturally strengthen the case for SOA based software. According to some experts, SOA is already anchored to a point that in ten years from now there will be no market segment for SOA software, "as this would be the way things are done".

BUSINESS ACCESS FROM ANYWHERE

Cloud computing is a network based service. This makes accessibility to the cloud services location independent. The only prerequisite is the use of standard internet-enabled devices like low cost desktop computers, mobile handsets etc at client side with high speed network. Business access is a fast reaction to change and the ability to rapidly implement changes. Business agility needs to be holistic in scope. Business agility consists of three interoperable components: Human, Business Process, and Technical agility. Humans are assumed to be agile in management and operations for the enterprise to be agile. Human agility is the main enabler of business agility. Business process agility has gone long road till it reached Business Process Management System (BPMS). Technical agility, that addresses IT infrastructure and information systems architecture, can make use of SOA. Aligning BPMS and SOA can enhance business agility.

BUSINESS PROCESS MANAGEMENT: POTENTIAL BUSINESS ADVANTAGES VS.SETBACKS IN REALITY

Cloud computing, is a pragmatically and independent point of view. Advantages and pros spread faster as the technology gains traction – prominent examples are outlined in the introductory section. The goal is however to critically set apart the following, more unpopular key aspects:

- Marketing claims for future potentials vs. current technical capabilities
- Business models for which cloud computing makes sense vs. those for which it does not – arguably, the majority of IT spending
- Different types of vendor lock-in effects – explained and weighted
- Security issues to which more concern should be paid

Business Process Management (BPM) is the key to business agility. Business process is a Series of inter-related activities that cross functional enterprise boundaries with individual inputs and outputs. Business processes are either operational or supporting. Operational Business processes are associated with the way enterprise develop strategies, invent, market and sell products or services. Support processes include the provision of Human Resource Management (HRM) activities, information systems infrastructure, and finance and asset Management.

The Cloud computing implies, the effectiveness of resource usage and scalability of grid computing. Grid computing architectures are not easy to set up as they imply complexities of all sorts – middleware and network configurations among others. However, as grids are 'taken to the next level', here are some of the often quotes pros from the business perspective of companies to move to cloud computing.

- **Countering of standardized resources usage** based on actual consumption – utility computing and pay-as-you-go models are introduced to charge the customer for hardware usage, be it server- RAM-hours, gigabyte-storage-hours, CPU-hours, etc. Thus, in addition to

the currently spread standardized-server-configuration-hours (for renting a dedicated server from a datacenter) and network bandwidth usage (GB of data transferred), more flexibility is introduced as resources are relinquished after no longer being needed

- **Elasticity** – scalability and load-balancing of the server resources are built-in. There by short-term automatic provision, enabling invocation of additional resources is paramount. The benefits of this could be enormous to companies that experience frequent and significant Changes in computing or storage needs.

Service unavailability and therefore lost-customer-costs are avoided as all potential computing needs/server requests are possible to be met. A classic example may include social networks that receive a sudden surge in popularity ("victim of own success"), a web shop during peak pre-holiday times, but also a news or company website (e.g. an airline) that, due to critical events receives an overwhelming amount of traffic that requires more than the planned/available computing resources, in order for all of the requests to be served

- **No capital expenditure** on hardware (as well as software) that performs the computing needs. These are the fixed costs associated with one time purchases of IT infrastructure that are amortized over time. They are converted to operating expenses for renting the resources of the cloud provider.
- **Uncomplicated deployment** as well as availability of autonomic management features that lead to easier and less costly maintenance, i.e. less personnel costs of the cloud provider for managing a given pool of server resources (e.g. administrators per 1000 servers), thus the ability to offer the resources at lower prices.

All of the above listed lead to *faster time-to-market* as well as *lower specific project costs* related to the implementation of a given software solution in a cloud rather than a traditional internal IT department or datacenter. However, as argued further on in this chapter, those benefits are easily pinpointed if one were to "create the next Face book" or "the next YouTube", but largely questionable if one were to move their on-premises or own datacenter existing computing resources to the cloud.

TECHNICAL MIGRATION TO NEW TECHNOLOGY

In a dynamic environment, the government policies of various ministries change from time to time requiring appropriate changes in e-government applications. Sometimes it may require migration to new technology in the distributed setup, migration is a challenging task which requires implementation at site, often at multiple locations.comparatively, migration to new technology is relatively easier and faster in case of clod based architecture because changes at one location alone ensure migration to new application by its users.

Technical agility refers to the ability to quickly change the type and flow of information within an organization within enterprise. Technical agility parameters are IT infrastructure, and information system architecture. IT advance has not yet satisfied business requirements due to improper information systems architectures. SOA addresses technical agility requirements by presenting compos ability, modularity, and loose coupling concepts as services that wrap underlying IT infrastructure, databases, and legacy systems and present them via standard interface. There is a need to stabilize IT infrastructure rather than developing new ones and SOA enables this stabilization. Enterprises should balance IT to become better positioned and more agile .Services is the building Blocks of an agile enterprise Service as 'A Component capable of performing a task'. Service is 'A vehicle by which a consumer's need or want is satisfied according to a negotiated contract (implied or explicit) which includes Service Agreement, Function Offered and so on'

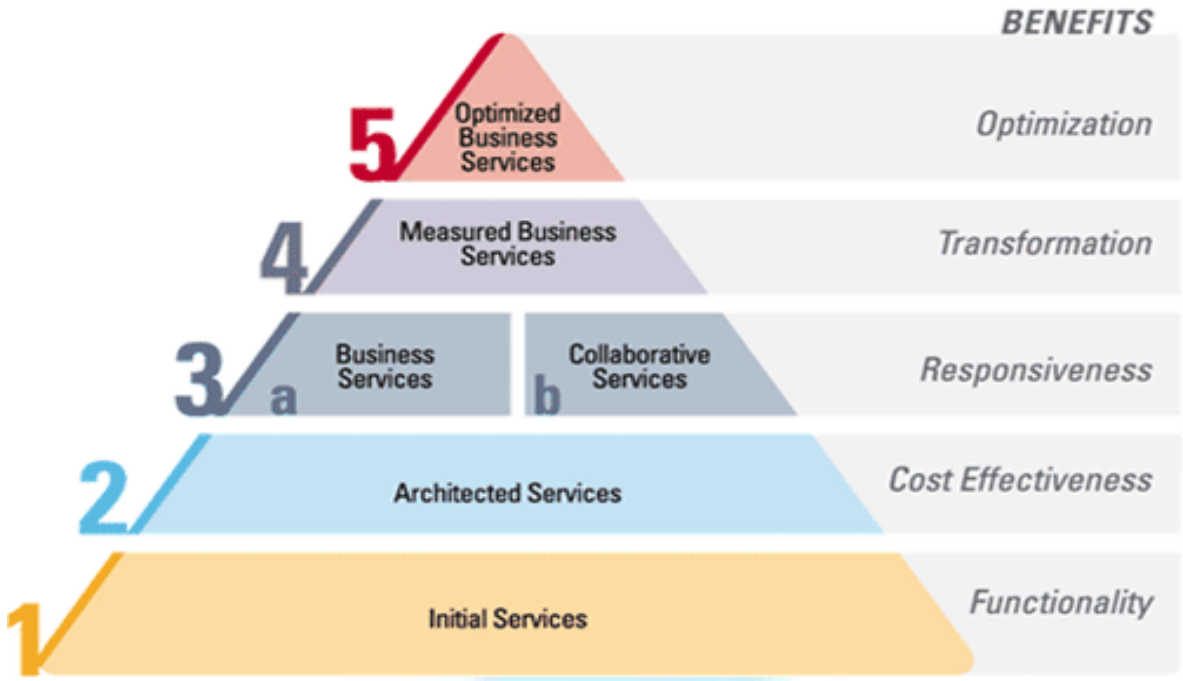
PRIVACY AND SECURITY ISSUES

Shared infrastructure scares many enterprise customers. Placing enterprise data in a public cloud is a serious concern and companies wary about their sensitive data logically question the ability of public cloud computing providers to provide the same level of security as their own datacenters. Depending on the type of cloud computing used and the level of abstraction (OS-level vs. platform vs. application level) different security issues arise in public clouds. The cloud provider is responsible for the physical security of the machines, for ensuring that virtual machine instances are running isolated from one another (i.e. crashes and software exploits of one system do no affect the others) as well as for setting up firewalls to protect the Virtual Machines from the network. However, higher level cloud services such as Google App Engine and platforms like Azure are also responsible for their application-level security and clients have less control controlling it. In addition, downtimes, outright data losses in storage services and risks of cloud provider malfeasance are further threats to be weighted when a company considers public cloud services usage.

Data Security – Confidentiality and Availability**:** Virtual Machines have shown vulnerabilities to certain kinds of memory attacks. Even though physical access to the PC running the Virtual Machines is a prerequisite, I argue that private clouds are generally more secure, as availability of the physical machines and full administrative rights are at the company's disposal. Arguably, it is much more likely that in case a bug is found (or proactively with malicious attacks) problems arise that allow Virtual Machines users to access other users' Virtual Machines instances or storage data. Naturally, such problems exist in large datacenters too, yet the implications of ultra large scale failures given hundreds of thousands of potential cloud users sharing the same infrastructure could be devastating. Debugging such distributed such developed; widely distributed systems may later be very difficult, as some errors could not be reproduced in smaller, test configurations. Companies should spend additionally to ensure that their data and applications are as secure as possible in the cloud. Encrypted all data sent to the cloud may be an option to ensure security, yet this may have implications on costs for developing/configuring applications appropriately.

THE FIVE PILLAR MODEL OF SOA COMMITMENT

FIG. 1: FIVE PILLAR MODEL OF SOA COMMITMENT



SOA Commitment as encapsulating by giving all functionality at work. This commitment entails things as using time constructively, attention to detail, cost effectiveness,responsiveness,transformation,making that collaborative effort, accepting change, co-operation with others business development, In this paper, we propose a cost-efficient approach for dynamic and geographically-diverse replication of components in a cloud computing infrastructure that effectively adapts to load variations and offers service availability guarantees. In our virtual economy, components rent server resources and replicate, migrate or delete themselves according to self optimizing strategies. We experimentally prove that such an approach outperforms in response time even full replication of the components in all servers, while offering service availability guarantees in optimization techniques.

CONCLUSION

Cloud computing is undoubtedly still work in progress – both from a technical and business perspective. Although projects attempt to bring about a platform that is provider-independent, the lack of open standards and the abundance of proprietary APIs that each provider actively tries to bestow upon its users is still a major setback to wider scale adoption in my opinion. Clearly put, my conclusion is that non-IT industry businesses' IT departments are not yet justified to be moved to cloud architectures, and if so only for very specific business tasks and with great caution. Yet, execution of batch jobs/parallel processing tasks and smaller online businesses running only pure web applications seem to be a nice fit, regardless of being locked in with a specific cloud provider. Listed below are my concluding thoughts, listed arbitrarily that also relate to certain vendors and technologies:

• Google App Engine is likely to serve as a showcase for cloud computing. Companies may realize the advantages of scaling their web applications as they look up to Google as a technology leader and try to see how they can benefit from that using other ways. App Engine in its current form is not likely to be something other than a niche in that sense.

• On the hardware side, cloud based memory architectures are likely to grow in popularity and be offered by providers to instances as an additional premium perk. Twitter.com reportedly stores much of its data in RAM instead on hard disks and is thus able to restart in to minutes.

• The global financial crisis is likely to affect decisions for cloud technology and contrary to popular belief, not in a good way, at least in short-to-medium term. Companies will not massively invest in uncertain technologies no matter how promising they are, even though the. This is no ordinary crisis and as with cloud computing risk aversion could be amplified more than potential savings, and rightly so

Ultimately, legal and regulatory issues are likely to be a decisive factor. If and when major cloud computing adoption takes place, governments will need to step in and regulate in one form or another either the service providers or the cloud users or both and rightly so.

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VARIANCE OF THE TIME TO RECRUITMENT IN A SINGLE GRADED MANPOWER SYSTEM – SCBZ PROPERTY

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ABSTRACT

In this paper, the expected time to recruitment in a single graded system is obtained by assuming that the two threshold variables which satisfy the setting the clock back to zero property. The analytical results are numerically illustrated and relevant conclusions are presented.

KEYWORDS

Manpower planning, graded system, threshold, SCBZ property, mean and variance of the time to recruitment.

INTRODUCTION

Manpower planning is an attempt to match the supply of people with the jobs available for them. It can be viewed as a process by which management determines how the organization should move from current manpower structure to a desired one. In the study of manpower planning one important concept of study is relating to wastages of man power. Many models have been discussed using different kinds of wastages and also different types of distributions. Such models could be seen in Grinold and Marshall 1977 and Barthlomew and Forbes 1979. Many researches Sathiyamoorthy, R. and Elangovan,R,1998, Karlin Samuel and Taylor, M.Hayward, 1981, Sathiyamoorthy, R. and Parthasarathy,S, 2003, Srinivasan, A and Saavithrei, V, 2002, Chitrakalarani, T and Samundeeswari, D, December 2010 have considered the problem of time for recruitment in a single graded marketing organization involving only one threshold under different conditions. Since the number of exits in a policy decision making epoch is unpredictable and the time at which the cumulative loss of man hours crossing a single threshold is probabilistic, the organization has left with no choice except making recruitment immediately upon the threshold crossing. In this paper, this limitation is removed by considering the following new recruitment policy involving two thresholds in which optional threshold; the organization may or may not go for recruitment. However, recruitment is necessary whenever the cumulative loss of manhours crosses the mandatory threshold. In view of this policy, the organization can plan its decision upon the time for recruitment. For a single graded system involving the optional and mandatory thresholds, the mean and variance of the time to recruitment are obtained in this paper, using the above cited recruitment policy.

The concepts and tool in stochastic process have found applications in disciplines like biology, medicine, engineering, economics, demography, etc. One of the most important problems in stochastic process is to identify the underlying model which generates the observation when only the data on failure times is available. Some innovations in this regard are to identify a characteristic property of the distribution that is of interest. From this point of view, we change our direction to a new property which is called Setting the Clock Back to Zero (SCBZ) property

MODEL DESCRIPTION

Consider an organization taking decisions at random epochs in (0,∞) and at every decision making epoch a random number of persons quit the organization. There is an associated loss of manhours to the organization if a person quits. It is assumed that the losses of manhours are linear and cumulative. Let Xi be the loss of manhours due to the i^{th} decision epoch, i=1,2,3,…. forming a sequence of independent and identically distributed random variables. Let g(.) be the probability density function of X_i, i= 1,2,3,….. It is assumed that the inter-decision times are independent and identically distributed random variables with probability density function f(.) (and cumulative distribution function (F(.)). Let $f_k(.)(F(.))$ be the k fold convolution of f(.)(F(.)). Let f*(.) (g*(.)) be the Laplace transform of f(.) (g (.)). Suppose that the loss of manhours process and the process of inter-decision times are statistically independent. Let Y (Z) be a positive continuous random variable denoting the optional (mandatory) threshold following exponential distribution with parameter $\mu_1(\mu_2)$ such that Z > Y. Let p be the probability that the organization is not going for recruitment whenever the total loss of manhours corosssess the optional level Y. If the total loss of manhours exceeds the optional threshold level the organization may or may not go for recruitment, but if the total loss of manhours exceeds the mandatory threshold recruitment is necessary. This is the recruitment policy employed in this paper. Let W be a continuous random variable denoting the time for recruitment in the organization with probability density function l(.) and cumulative distribution function L(.). Let $V_k(t) = F_k(t) - F_{k+1}(t)$ be the probability that there are exactly k-decision epochs in [0,t] where $F_0(t) = 1$. Let E (W) be the expected time for recruitment and V (W) be the variance of the time for recruitment.

MAIN RESULTS

The survivor function of W is given by

$$P(W>t)=\sum_{k=0}^{\infty}\left\{\begin{array}{l}(\text{Probability of exactly k decision in } [0,t],\ k=0,1,2,\ldots. \text{ x (the probability of total}\\ \text{number of exists in these k - decisions does not cross the optional level Y or the}\\ \text{probability of total number of exist in these k - decisions cross the optional level Y}\\ \text{but lies below the mandatory level Z and the organization is not making recruitment)}\end{array}\right.$$

$$P(W>t)=\sum_{k=0}^{\infty}V_k(t)P\left(\sum_{i=1}^{k}X_i<Y\right)+\sum_{k=0}^{\infty}V_k(t)\,x\,px\,P\left(Y\le\sum_{i=1}^{k}X_i\right)x\,P\left(\sum_{i=1}^{k}X_i<Z\right) \quad (1)$$

By the law of total probability, for i=1, 2, 3 …

$$P(X_i < Y) = \int_0^\infty e^{-\mu_1 x} g(x)dx = g^*(\mu_1)$$

$$\therefore P\left(\sum_{i=1}^{k} X_i < Y\right) = [g^*(\mu_1)]^k \quad (2)$$

$$P\left(\sum_{i=1}^{k} X_i < Z\right) = [g^*(\mu_2)]^k \quad (3)$$

Using (2) and (3) in (1) and on simplification we get,

$$P(W > t) = 1 + [g^*(\mu_1) - 1]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)]^{(k-1)} + p\,x[g^*(\mu_2) - 1]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_2)]^{(k-1)}$$

$$- p\,x[g^*(\mu_1)g^*(\mu_2) - 1]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)g^*(\mu_2)]^{(k-1)} \quad (4)$$

Since L(t) = 1 – P(W > t), from (4)

$$L(t) = [1 - g^*(\mu_1)]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)]^{(k-1)} + p\,x[g^*(\mu_2)]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_2)]^{(k-1)}$$

$$- p\,x[g^*(\mu_1)g^*(\mu_2) - 1]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)g^*(\mu_2)]^{(k-1)}$$

$$\therefore l(t) = [1 - g^*(\mu_1)]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)]^{(k-1)} + p\,x[g^*(\mu_2)]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_2)]^{(k-1)}$$

$$- p\,x[g^*(\mu_1)g^*(\mu_2) - 1]\sum_{k=1}^{\infty} F_k(t)[g^*(\mu_1)g^*(\mu_2)]^{(k-1)}$$

$$l^*(s) = \left[\frac{[1 - g^*(\mu_1) f^*(s)]}{1 - f^*(s)g^*(\mu_1)}\right] + \left[\frac{p\,x[1 - g^*(\mu_2)]f^*(s)}{1 - f^*(s)g^*(\mu_2)}\right] - \left[\frac{p\,x[1 - g^*(\mu_1)g^*(\mu_2) f^*(s)]}{1 - f^*(s)g^*(\mu_1)g^*(\mu_2)}\right] \quad (5)$$

and

$$E(W) = \left[\frac{-d}{ds} l^*(s)\right]_{s=0} \quad \text{and} \quad E(W^2) = \left[\frac{-d^2}{ds^2} l^*(s)\right]_{s=0}$$ from which V(W) is obtained.

.

SPECIAL CASE

In this case W satisfies the SCBZ property with parameter μ_1 and μ_2 and assume that X~exp(α) and U~ exp(λ)

From (5)

$$l^*(s) = \left[\frac{\lambda[1 - g^*(\mu_1)]}{\lambda + s - \lambda g^*(\mu_1)}\right] + \left[\frac{p\,x\,\lambda[1 - g^*(\mu_2)]}{\lambda + s - \lambda g^*(\mu_2)}\right] - \left[\frac{p\,x\,\lambda[1 - g^*(\mu_1)g^*(\mu_2)]}{\lambda + s - \lambda g^*(\mu_1)g^*(\mu_2)}\right] \quad (6)$$

$$E(W) = \frac{1}{\lambda}\left[\left[\frac{(\alpha + \mu_1)}{\mu_1}\right] + \left[\frac{p(\alpha + \mu_2)}{\mu_2}\right] - \left[\frac{p(\alpha + \mu_1)(\alpha + \mu_2)}{[\alpha(\mu_1 + \mu_2) + \mu_1\mu_2]}\right]\right] \quad \text{on simplification} \quad (7)$$

$$E(W^2) = \frac{2}{\lambda^2}\left[\left[\frac{1}{[1 - g^*(\mu_1)]^2}\right] + \left[\frac{p}{[1 - g^*(\mu_2)]^2}\right] - \left[\frac{p}{[1 - g^*(\mu_1)g^*(\mu_2)]^2}\right]\right] \quad \text{on simplification} \quad (8)$$

and

$$V(W) = E(W^2) - [E(W)]^2 \quad (9)$$

(7) give the mean time to recruitment and (7) and (8) together with (9) gives the variance of the time for recruitment.

NUMERICAL ILLUSTRATION

The analytical expression for expectation and variance of the time to recruitment are analyzed by varying parameters. The influence of nodel parameters λ, $\mu_1$and μ_2 on performance measures namely mean and variance of the time to recruitment for this model by varying one parameters and keeping the other parameters fixed. In table -1 and table-2 the corresponding results for this model are shown.

Table - 1 Effect of λ, μ_1 and μ_2 on performance measures ($\mu_1 = 0.2$; $\mu_2 = 0.06$; p = 0.03; α =0.8)

ll	α	P	μ□	μ□	l ll ll
0.1	0.8	0.03	0.2	0.06	50.313
0.5	0.8	0.03	0.2	0.06	10.313
0.9	0.8	0.03	0.2	0.06	5.868
1.3	0.8	0.03	0.2	0.06	4.158
1.7	0.8	0.03	0.2	0.06	3.254
2.1	0.8	0.03	0.2	0.06	2.693
2.5	0.8	0.03	0.2	0.06	2.313

FIGURE 1

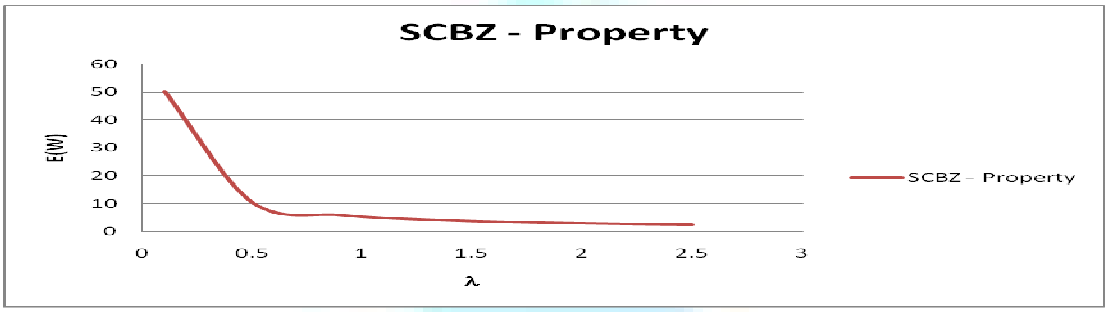
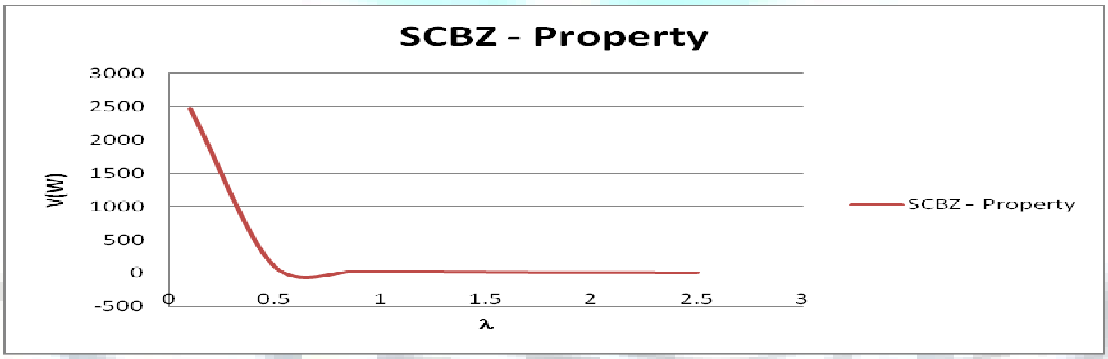


Table 2: Effect of λ, μ_1 and μ_2 on performance measures ($\mu_1 = 0.2$; $\mu_2 = 0.06$; p = 0.03; α =0.8)

ll	α	P	μ□	μ□	l ll ll	v(w)
0.1	0.8	0.03	0.2	0.06	50.313	2474.33
0.5	0.8	0.03	0.2	0.06	10.313	99.352
0.9	0.8	0.03	0.2	0.06	5.868	32.996
1.3	0.8	0.03	0.2	0.06	4.158	17.99
1.7	0.8	0.03	0.2	0.06	3.254	12.418
2.1	0.8	0.03	0.2	0.06	2.693	9.787
2.5	0.8	0.03	0.2	0.06	2.313	8.35

FIGURE 2



CONCLUSION

From the above table the expected value of W and Var (W) are obtained using SCBZ property. However, as λ increases the mean and variances are decreasing simultaneously and converge together. This is the behavior of mean and variance of time to breakdown or time to reach uneconomic status when increased tends to shorten the time to breakdown. It is also represented by using graphs.

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SURVEY - 3D FACE TRACKING

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ABSTRACT

In this paper we present a comprehensive and critical survey of 3D face Tracking algorithms.Face tracking is a very hard problem to solve due to the very large amount of variables that appear when trying to teach a computer how a face looks like and how it moves. Face tracking involves both tracking the pose of the head in 3D space, and the location of facial features. Some facial features, such as the eyes and nose are rigidly attached to the head and their motion can be directly linked to the head pose. Other features, such as the mouth and eyebrows, are deformable, and their location is a function of both the head pose and their own deformation. Recent advances in image processing and computer vision have made this work increasingly possible, but there is still a long way to go to create a totally robust face tracker.

KEYWORDS

3D face Tracking, Color Based, Shape Based, Model Based, Landmark Based, Template Matching Based.

INTRODUCTION

Lowe's object tracking algorithm (Lowe, 1991) presents a model-based approach to determining the pose of a known 3D object. Model-based vision uses prior knowledge of the structure being observed to infer additional information than is otherwise evident from an image. When a 3D object is viewed in an image the locations of its features are a non-linear function of the pose of the object relative to the camera. Given an initial guess of the pose, a least squares solution can be achieved iteratively by applying Newton's method to locally linearism the problem. Lowe augments this minimization in order to obtain stable approximate solutions in the presence of noise. This is achieved by incorporating a model of the range of uncertainty in each parameter, together with estimates of the standard deviation of the image measurements, into the minimization procedure. Lowe demonstrated that this method could efficiently track the pose of known 3D objects with complex structures and provide reliable results. This algorithm provides an attractive means of tracking the pose of a known 3D object in a monocular image sequence.

Azarbayejani et al. (1993) implemented a Kalman filter to track the head pose using an approach similar to that adopted by Clark and Kokuer (1992) and Reinders et al. (1992) for calculating the orientations of objects. Azarbayejani et al. extract feature templates in an initial image, and use normalised cross correlation to locate these features in subsequent image frames. The head pose is iteratively determined using an extended Kalman filter with an 18-dimensional state vector containing a concatenation of the six 3D pose parameters and their first and second derivatives. Measurement variances are determined from the correlation values obtained from the feature templates. Despite the non-linear relationship between the observed 2D feature locations and the pose parameters, the local linearization employed by the extended Kalman filter was shown to provide suitable tracking results. Azarbayejani and Pentland (1995) later extended this method to recover not only the 3D pose of the head (or other 3D object) but also the 3D structure of the object itself, along with the focal length of the camera.

Gee and Cipolla (1994) used four facial features, namely the pupils and mouth corners, to track the head pose. These features were assumed to lie in a plane, and two vectors are determined: one joining the eyes, and one joining the mid-point of the eyes with the mid-point of the mouth corners. From these vectors a third vector is calculated normal to the face that described the head pose. Maurer and von der Malsburg (1996) also tracked facial features and assumed they lay in an plane, however, they used more features than Gee and Cipolla. The head pose was determined by solving the resulting over-constrained system using least squares. Shakunaga et al. (1998) used a similar approach but did not assume the features lay in a plane. They solved for the pose under orthographic projection and could cope with an arbitrary number of features.

Xu and Akatsuka (1998) track the head pose by reconstructing the 3D locations of facial features using stereo. The pupils and mouth corners are tracked using stereo and their 3D locations determined. The pose is determined as the normal to the plane defined by the pupils and a mouth corner.

Matsumoto and Zelinsky (2000) also made use of stereo for their Karman filterbased solution to the head tracking problem. This system used calibrated stereo cameras and was able to run in realtime and determine the head pose with higher accuracy than the method proposed by Azarbayejani et al.. Recently this system has been evolved into the commercial FaceLab system by Seeing Machine. It requires no markers or special make-up to be worn and runs on a standard PC. The software consists of three key parts, 3D Facial Model Acquisition, Face Acquisition, and 3D Face Tracking.

The Face Model Acquisition module builds a model of the subject's face off-line. The face model consists of up to 32 features (Ti, i = 0, 1, 2, ...) corresponding to a set of 3D model points (mi, i = 0, 1, 2, ...) in the head reference frame. The system starts operation in Face Acquisition mode where it attempts to find an initial lock on the face in the image stream. During this phase a template constructed from the edge map of the entire central region of the face is searched for. This template is automatically extracted during the model acquisition phase where the position of the face in the image is known. Normalised correlation matching is used both here and during tracking to make this process robust to changes in lighting conditions.

When a match is found with a correlation above a preset value, the approximate positions of the features Ti are identified based on their known offsets from the centre of the face (again calculated during model acquisition). Tracking is performed using the templates Ti obtained during model acquisition. These are correlated with the current stereo view in the input stream and their 3D positions are calculated using linear triangulation. This technique is described below (for more detail the reader is referred to Trucco and Verri (1998)). Ideally the 3D rays projected from the camera centres through the observed feature points on the image plane will intersect, defining the 3D location of the feature point. However, in general, owing to small errors in feature locations or camera parameters, the rays will not meet. This situation is illustrated in Figure 2.25. Linear triangulation proceeds to determine the location for the 3D point x that minimizes the distances e0 and e1. More specifically for n cameras
linear triangulation minimizes E in

$$E = \sum_{i=0}^{n} e_i^2 \quad (1)$$

Returning our attention to the Figure 2.25, the distances, e0 and e1 can be expressed in terms of x by observing that they are side lengths of right angle triangles (indicated in yellow). Considering each of these triangles separately, the side lengths, and thus e2i can be written as

$$e_i^2 = \|((x - C_i).d_i)d_i)\|^2 - \|x - Ci\|^2 \quad (2)$$

where di is a unit vector along the optical axis of the camera. For the case of two cameras Equation 2.6 can be expanded to

$$E = \|((x - C_i).d_0)d_0)\|^2 - \|x - C0\|^2 + \|((x - C_i).d_1)d_1)\|^2 - \|x - C1\|^2 \quad (3)$$

Setting the partial derivatives of this equation with respect to the elements of x to zero gives a system of linear equations of the form

$$Ax=b \quad (4)$$

where A and b are

$$A = \begin{pmatrix} (d_{0x}^2 - 1) + (d_{1x}^2 - 1) & d_{0x}d_{0y} + d_{1x}d_{1y} & d_{0x}d_{0z} + d_{1x}d_{1z} \\ d_{0x}d_{0y} + d_{1x}d_{1y} & (d_{0y}^2 - 1) + (d_{1y}^2 - 1) & d_{0y}d_{0z} + d_{1y}d_{1z} \\ d_{0x}d_{0z} + d_{1x}d_{1z} & d_{0y}d_{0z} + d_{1y}d_{1z} & (d_{0x}^2 - 1) + (d_{1x}^2 - 1) \end{pmatrix}$$

$$b = \begin{pmatrix} d_{0x}C_0.d_0 - C_{0x} + d_{1x}C_1.d_1 - C_{1x} \\ d_{0y}C_0.d_0 - C_{0y} + d_{1y}C_1.d_1 - C_{1y} \\ d_{0z}C_0.d_0 - C_{0z} + d_{1z}C_1.d_1 - C_{1z} \end{pmatrix} \quad (5)$$

and dix,y,z and cix,y,z are the elements of di and ci respectively. These equations can be solved for x,

$$X = A^{-1}b \quad (6)$$

giving the 3D location of the point.
A more sophisticated alternative to linear triangulation is Hartley and Sturm's optimal triangulation method that minimizes the error observed in the images subject to the epipolar constraint (Hartley and Sturm, 1995; Hartley and Zisserman, 2000). However, the linear triangular method detailed above provides suitable performance for the 3D head tracking system. Once the 3D position of the features are determined an estimate of the pose of the head is computed. The translation vector t, and the rotation, encapsulated in the rotation matrix R, that together describe the head pose are estimated via least squares minimization as follows. Minimize the error

$$E = \sum_{i=1}^{n} \omega_i \|X_i - Rm_i - t\|^2 \quad (7)$$

where X_i is the measured 3D feature location, mi is the 3D model point, and wi is the weighting factor for the feature. The value of the weighting factor is set to the correlation value obtained for the associated feature in the template tracking step. This applies a more dominant weighting to features that returned higher correlation values making the system more robust to mismatched features.
The translation t is determined by differentiating Equation 7 and setting the result to zero, yielding

$$t = \bar{X} - R\bar{m} \quad (8)$$

Where

$$\bar{X} = \frac{\sum_{i=1}^{n} \omega_i X_i}{\sum_{i=1}^{n} \omega_i}$$

$$\bar{m} = \frac{\sum_{i=1}^{n} \omega_i m_i}{\sum_{i=1}^{n} \omega_i}$$

are weighted averages of the measured features locations and the model points respectively.
Substituting t from Equation 8 into Equation 2.8 and ignoring all terms that are not dependent on R gives us

$$E' = 2\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T R(\bar{m} - m_i) \quad (9)$$

Using the quaternion representation for a rotation matrix R can be written as

$$R = \begin{pmatrix} a^2 + b^2 - c^2 - d^2 & 2(bc - ad) & 2(bd + ac) \\ 2(bc + ad) & a^2 - b^2 + c^2 - d^2 & 2(cd - ab) \\ 2(bd - ac) & 2(cd + ab) & a^2 - b^2 - c^2 + d^2 \end{pmatrix} \quad (10)$$

where a, b, c and d are real numbers and $a^2 + b^2 + c^2 + d^2 = 1$.
The method of Lagrange multipliers can then be used to minimize E0 as follows.

Define

$$E'' = 2\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T R(\bar{m} - m_i) + \lambda(a^2 + b^2 + c^2 + d^2 - 1) \quad (11)$$

Determine the partial derivatives of E00 with respect to a, b, c and d, and set these to zero. This gives the following four linear equations,

$$\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T \begin{pmatrix} a & -d & c \\ d & a & -b \\ -c & b & a \end{pmatrix} (\bar{m} - m_i) - a = 0 \quad (12)$$

$$\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T \begin{pmatrix} b & c & d \\ c & -b & -a \\ -d & a & -b \end{pmatrix} (\bar{m} - m_i) - b = 0 \quad (13)$$

$$\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T \begin{pmatrix} -c & b & a \\ b & c & d \\ -a & d & -c \end{pmatrix} (\bar{m} - m_i) - c = 0 \quad (14)$$

$$\sum_{i=1}^{n} \omega_i (X_i - \bar{X})^T \begin{pmatrix} -d & -a & b \\ a & -d & c \\ b & c & d \end{pmatrix} (\bar{m} - m_i) - d = 0 \quad (15)$$

These can be combined in a single matrix equation

$$(A - \lambda I)a^T = 0 \quad (16)$$

This equation is solved by choosing a to be any eigenvector of A. The solution that minimizes E00 is the eigenvector corresponding to the maximum eigenvalue of A (Horn, 1986). These quaternion values define the rotation matrix R.

Thus both the translation and rotation have been determined giving the optimal pose that best maps the model to the measured 3D feature positions. The number of templates tracked can be less than the total number. This allows the system to continue tracking when some templates suffer severe perspective distortion or are occluded altogether. The best templates to track can be determined from the estimated head pose as those that are visible and will appear most fronto-parallel to the image plane. For our research we are interested in using existing head tracking technology to track the pose of the head, and then overlay the functionality to track deformable facial features. A monocular system based on Lowe's object tracking algorithm is used as the basis for a monocular lip-tracking system. Lowe's approach was chosen for this initial implementation owing to its simple and efficient implementation, robustness to noise in feature locations, and suitability for a monocular system.

We then extend the work to a stereo system, and the stereo head tracker developed in our lab (Matsumoto and Zelinsky, 2000) and detailed above, is used as the basis for a stereo lip tracking system.

CHALLENGES IN FACE TRACKING

The main challenges that face tracking methods have to faces are (i) variations of pose and lighting, (ii) facial deformations, (iii) occlusion and clutter, and (iv) facial resolution. These are the areas where future research in face tracking should concentrate. We will now briefly review some of the methods that have been proposed to address these problems.

Robustness to pose and Illumination Variations- Pose and illumination variations often lead to loss of track. . In Xu, Y.,et.al.(2007), the authors proposed a model-based face tracking method that was robust to both pose and lighting changes. This was achieved through an analytically derived model for describing the appearance of a face in terms of its pose, the incident lighting, shape and surface reflectance. One of the well-known methods for dealing with illumination variations was presented in Hager et.al.(1998), where the authors proposed using a parameterized function to describe the movement of the image points, taking into account illumination variation by modifying the brightness constancy constraint of optical flow. Illumination invariant 3D tracking was considered within the Active Appearance Model (AAM) framework in Koterba S.et.al. (2005), but the method requires training images to build the model and the result depends on the quality and variety of such data. 3D model based motion estimation algorithms are the usually robust to pose variations, but often lack robustness to illumination

Tracking through Facial Deformations-Tracking faces through changes of expressions, i.e., through facial deformations, is another challenging problem. A well-known work in this area is Terzopoulos, D., et.al.(1993), which has been used by many researchers for tracking, recognition and reconstruction. A survey of work on facial expression analysis can be found in Fasel, B., et.al.(2003). The problem is closely related to modeling of facial expressions, which has applications beyond tracking, notably in computer animation. More recently, the 3D morphable model ,Blanz, V. et.al.(2003) has been quite popular in synthesizing different facial expressions, which implies that it can also be used for tracking by posing the problem as estimation of the synthesis parameters (coefficients of a set of basis functions representing the morphable model).

Occlusion and Clutter-As with most tracking problems, occlusion and clutter affect the performance of most face trackers. One of the robust tracking approaches in this scenario is the use of particle filters Arulampalam, M.et.al.(2002) which can recover from a loss of track given a high enough number of particles and observations. However, in practice, occlusion and clutter remain serious impediments in the design of highly robust face tracking systems.

Facial resolution-Low resolution will hamper performance of any tracking algorithm, face tracking being no exception. In fact, Zhao, W., et.al.(2003) identified low resolution to be one of the main impediments in video-based face recognition. Figure 3 shows an example of tracking through scale changes and illumination. Super-resolution approaches can be used to overcome these problems to some extent. However, super-resolution of faces is a challenging problem by itself because of detailed facial features that need to be modeled accurately. Recently, Dedeoglu, G.,et. al.(2006) proposed a method for face super-resolution using AAMs. Super-resolution requires registration of multiple images, followed by interpolation. Usually, these two stages are treated separately, i.e., registration is obtained through a tracking procedure followed by super-resolution.

Illumination variations-Illumination variations often lead to a lost of track. Depending on the context where the tracker is running, illumination variations may be very likely. For example, if the camera is situated inside a car trying to track the driver's head, and suddenly they drives into a tunnel, the illumination conditions would change a lot.one of the numerous techniques developed in order to deal with this problem. It this case, a histogram equalization enhancement is used in every frame and therefore the video is somehow illumination independent. Another well-known method was presented in Baker, S., et.al.(2004), where the authors propose to use a parameterized function to describe the movement of the image points, taking into account illumination variation by modifying the brightness constancy constraint of optical flow.

Pose variations- In some situations the face that is being tracked is not frontal. These pose changes make the work more challenging; if the face movements are just frontal, applying an affine transformation based tracker, like the one, can be enough to track the face. However, this technique does not work when pose variation occurs. For example, when the subject turns his face to the right, the whole pattern that is being tracked changes, hence, the tracker has to deal with it and follow a new pattern. As Black, M., et. al.(1995) shows, using Active Appearance Models enables to deal with pose variation, although the results are not totally satisfactory. Another approach to deal with it is presented in Koterba, S. et.al.(2005), where the authors use a Kernel Principal Component Analysis (KPCA) of local parts for pose independent object recognition.

APPLICATIONS OF FACE TRACKING

We highlight below some applications where face tracking is an important component.

Video Surveillance-Since faces are often the most easily recognizable signature of identity and intent from a distance, video surveillance systems often focus on the face. This requires tracking the face over multiple frames.

Biometrics-Video-based face recognition systems require alignment of the faces before they can be compared. This alignment compensates for changes of pose. Face tracking, especially 3D pose estimation, is therefore an important component of such applications. Also, integration of identity over the entire video sequence requires tracking the face.

Face Modeling-Reconstruction of the 3D model of a face from a video sequence using structure from motion requires tracking. This is because the depth estimates are related non-linearly to the 3D motion of the object. This is a difficult non-linear estimation problem and many papers can be found that focus primarily on this, some examples being.

Augmented Reality Applications-Many potential Augmented Reality (AR) applications have been explored, such as medical visualization, maintenance and repair, annotation, entertainment, aircraft navigation and targeting.

Visual Servoing-Visual servoing involves the use of one or more cameras and a Computer Vision system to control the position of a device such as a robotic arm relative to a part it has to manipulate, which requires detecting, tracking, servoing, and grasping. It therefore spans computer vision, robotics, kinematics, dynamics, control and real-time systems, and is used in a rich variety of applications such as lane tracking for cars, navigation for mobile platforms, and generic object manipulation.

Interfaces between Man and Machine-3D tracking can be integrated into man–machine interfaces. For example, it could be used to continuously update the position of a hand-held object, which would then serve as a 3D pointer. This object would then become an instance of what is known as a *Tangible Interface*. Such interfaces aim at replacing traditional ones by allowing users to express their wishes by manipulating familiar objects and, thus, to take advantage of their everyday experience.

A GOOD HEAD TRACKING SHOULD SATISFY THE FOLLOWING PRE-REQUISITES

It should be without any mark- the head tracking system should not rely on any marker attached to the human head and moreover it should not require any of the head features(such for example eyes, nose, mouth, ears) to be visible over the entire video sequence.

It should be accurate- This means that the system should be able to track and calculate the pose of the head over long time periods, using just one single and uncelebrated camera and possibly without introducing any kind of cumulative error during the tracking, given any arbitrary complex trajectory of the head.

It should be robust- The system should not be affected by varying light conditions, local head deformations and should also be able to handle partial head occlusions. Moreover its performance should not depend heavily on some set of parameters that need to be tuned properly for each different sequence.

It should be fast- Many of the situations where and head tracking system may be used require the algorithm to run in real time; thus the procedure should be fast enough to be implemented real time without using expensive hardware.

It should be easy to initialize- The first fundamental task that needs to be accomplished in order to track the head is to find the head on the initial frame and to provide the algorithm with an initial estimate out automatically , without affecting the performance of the algorithm even though the initial pose estimation is not so precise.

Face tracking that can serve as a front end to other facial image analysis tasks, such as face recognition, face expression analysis, gaze tracking and lip-reading. Face tracking is different from face detection in that face tracking uses temporal correlation to locate human faces in a video sequence, instead of detecting them in each frame independently. With temporal information, we can narrow down the search range significantly and thus real-time tracking possible. The major problems encountered in face tracking are changes in illumination, pose, scale and rotation of the faces being tracked and occlusion in the case of tracking multiple people.

The face tracking methods can be mainly classified into five categories.

- The first one being the ***shape based approach and template matching Approach***, where the elliptical contour of the face. This tracking method is not influenced by background color and illumination changes, but the assumption may break when a person is occluded by an object or another person. These conditions make it unsuitable for tracking multiple faces.
- The second type of method being ***feature based tracking***, where the invariant structural features are extracted from the faces to classify the extracted faces.
- The third type of approach being the ***model based approach*** where face models are used for detection and tracking. To overcome the problem of pose variations, the face is modeled using a 3D model and is used for pose estimation and for matching purposes. The model based approach is reliable and accurate, but the computational cost is high making it unsuitable for real time applications.
- The four type of approach being the ***landmark based tracking*** or fudicial tracking**.**
- The final category of face tracking method, the ***color based approach*** which is suitable for real time applications. These approaches rely upon the accuracy and the robustness of the skin color model used. The model fails when the faces are occluded by other faces or objects. We propose an approach for tracking multiple faces for overcoming the problems of illumination and pose changes, velocity and trajectory changes of the faces, and also to recover from the problems of partial and total occlusions. The tracker is initialized by proposed face detection method and continues the tracking of each face by means of color and edge information. A predictive filter is used to estimate the state of face. The proposed method track faces in real-time. At the proposed method each face adds time cost about **16 ms** to system.

SHAPE BASED APPROACH

During the offline learning step the objective is to learn for a given person its specific 3D shape, its specific texture and its specific update matrix. Chaumont et.al.(2007) given a paper ,that are limiting the test to an Active Model (AM) instead of an Active Appearance Model (AAM) as *Dornaika and Ahlberg*. We do not then learn any texture modes variations. Our paper bring an improvement to Active Appearance Model approach2 (the multi-resolution) but for the experiments and the approach justification we do not need to use the property of variation on textures and then we do not use a complete AAM approach. Additional improvements to the AAM approach, proposed in this paper, are the use of a 3D model and the illustration, trough a complete implementation, that our face tracking solution is near real-time.Note that this offline learning step may easily be extended to AAM learning where a face data-base would have been used. More details on shape learning and texture learning may be found in.In order to learn the 3D shape of a specific person to track, we are using as input some 2D face feature points. The 2D feature points may be set manually or obtained thanks to an automatic approach.

A 3D-face model is then deformed in order to best fit the 2D feature points. This deformation is proceed thanks to the minimization of the distance error E between the input set of 2D feature points $\{(v_i, u_i)^t\}$ and a set of 2D points $\{(v_i', u_i')^t\}$:

$$E = \sum_i (u_i - u_i')^2 + (v_i - v_i')^2 \quad (17)$$

The set of 2D points $\{(u_i', v_i')^t\}$ is obtained by applying on 3D vertex three linear operations: a shape deformation (S_i,σ), an animation displacement (A_i, σ) and a week perspective projection (T2×4) the above Equation minimization gives parameters $T_{2\times4}$, σ, and α. Parameters $T_{2\times4}$ and σ are then used to deform the average 3D model and thus learn the specific face shape. More details on the minimization and the underlining hypothesis are given in.

In Texture learning,For an easier intelligibility we will name the image map: the image domain and the texture map: the texture domain. Once the 3D-model is shaped and the $T_{2\times4}$ pose is obtained, the texture may be learned. This learning step is a simple warping procedure. The 3D mesh is projected onto the 2D image map in order to then, each texture triangle from the 2D mesh of the image domain is warped to the corresponding triangle in the texture domain.

Lets note that the warping process needs two computational costly informations for each pixel: its associated triangle, and its three barycenter coefficients. Those informations are computed offline and do not change during the tracking process (indeed, the 2D mesh in the texture domain do not move). This pre-processing allows to pass of any 3D graphics card for image warping since it enables faster processing during the tracking step.

Update matrix learning, Thus, once the texture, the 3D shape and the 3D pose are known, one compute the update matrix used for the tracking.

In Single-resolution,During the tracking the objective is to project as well as possible the 3D model onto the image map in order to minimize the intensity difference computed between image It and projected model's texture. Without high lost of precision, one prefer minimizing the difference between the warped image W(I_t) and the model's texture I_m(Equ. 3.). This choice is done for real-time reason. Indeed, during the tracking step, the warping computation from image domain to texture domain is faster than the inverse warping due to offline pre-processed computation during texture learning .

$$E(p) = \|r(p)\|^2 = \|W(I_t) - I_m\|^2 \quad (18)$$

Parameter p involved in minimization of Equ. (18) is composed of the animation vector (α) and the pose matrix ($T_{2\times4}$) . A first order Taylor expansion gives:

$$r(p + \Delta p) = r(p) + \frac{\delta r(p)}{\delta p}\Delta p \ldots\ldots \quad (19)$$

During the model fitting, we wish to minimize the equation $\|r(p + \Delta p\|^2$. So we are looking for the Δp which minimizes this equation. The solution of this least square problem is to choose Δp such that:

$$\Delta p = U.r(p), \qquad with\ U = -(G^T G)^{-1} G^T, \qquad and\ G = \frac{\delta r(p)}{\delta p}, \quad (20)$$

The update U matrix may be processed offline before the tracking. This update matrix is known as the negative pseudo-inverse of the gradient matrix G. G is computed by numeric differentiation such that the jth column of G is estimated with:

$$G_j = \frac{r(p + \Delta q_j) - r(p - \Delta q_j)}{2\Delta} \quad (21)$$

where h is a disturbance value and q_j is a vector with all elements zero except the jth element that equals to one.

In Multi-resolution,With a single-resolution approach, the face target is lost when there is a strong head motion. To overcome that problem, we have chosen to use a multi-resolution tracking similarly to multi-resolution motion estimation. The multi-resolution approaches allow to keep valid the linear hypothesis near to the solution. Thus, multi-resolution pyramids are built (an image pyramid, a model's texture pyramid and 2D mesh pyramids). A U^{r_i}, ^{r_t} matrix is then computed for each couple (r_i, r_t) where r_i is a given image resolution and rt is a given texture resolution.

During the tracking step, the low resolutions allow to catch strong motions (parameter p is roughly estimated) and high resolutions allow to catch motion details (parameter p is refine). Lets remark that experiments show that low resolutions are only of interest for the pose computation (and not for the facial animations) and that texture size should be similar to face-region size.

TRACKING: ACTIVE MODEL SEARCH

In the case of face tracking, the face localization is in general a difficult problem.10 Even with a full implementation of an AAM approach one should initialized the 3D-face model pose relatively close to the solution. In the case of frontal view, many solutions have been proposed and the best results seem to be obtained by methods using a previous learning and a complete image scan (Neural Network, Hidden Markov Model, Support Vector Machine, Naive Bayes Classifier ...). We have then chosen to use one of this technique to localize the face.

ACTIVE MODEL SEARCH (AMS)

After the face localization, the Active Model search is preceded by the multi-resolution gradient descent. For each valid couple (r_i, r_t), the 3D model is iteratively updated until convergence or until a fixed number of iterations. Lets remark that lots of computation are processed offline. Online computations are the image pyramid building, the 3D mesh projections, the images warpings (with the used of pre-processed accelerators), the image differences, the matrix products and the 3D model updates. Actually, the costly operations are the matrix products.

FEATURE BASED APPROACH

Akira Inoue et. al.(2000) develop a video-rate face tracking system that requires no special hardware so that it can be used on popular personal computers. Recently, Drummond et. al.(1999) have developed a real-time visual tracking system for complex structures like ship models. This fast system used the edge features of the target, and Lie algebras D. H. Sattinger et.al.(1986) were introduced for estimating motions. Proposed face tracking system uses 3D feature points on the target human face instead of edges, and also adapted Lie algebras to the algorithm of estimating motion matrices of a target human face. In practice, such weaknesses make purely recursive systems nearly unusable, and the popularity of ARToolKit H. Kato et. al.(2000),in the Augmented Reality community

should come as no surprise: It is the first vision-based system to really overcome these limitations by being able to detect the markers in every frame without constraints on the camera pose. There are two main categories of face tracking algorithms. The first category is feature-based tracking, which matches the local interest-points between subsequent frames to update the tracking parameters, such as a 3D pose tracker [L. Vacchetti et.al.(2004), Q. Wang,et.al.(2006)] and 3D deformable face tracking. Because local feature matching does not depend on the training data, the feature-based tracking is less sensitive to variation in illumination and object appearance. Furthermore, the coarse-to-fine local feature search scheme, Q. Wang et.al. (2006) can effectively handle fast motion. One limitation of this approach is that the feature matching is error-prone resulting in jittery and inaccurate tracking.

The second category is appearance-based, using generative linear models of face appearance, such as 2D Active Appearance Models (AAM), T. F. Cootes et.al.(2006) and 3D Morphable Models , V. Blanz et.al.(1999). Compared to the feature-based tracking, AAM can track a face more accurately and stably with little jitter. However, AAM may have difficulty generalizing to unseen images becauseAAMis trained from a set of example faces. Also AAM is sensitive to the initial shape and may easily be stuck in local minima because of its gradient decent optimization. Cluttered backgrounds also reduce AAM stability in tracking a face outline.

Early approaches were edge-based,D. G. Lowe(1991), F. Jurie et.al.(1998)], but methods based on feature points matching have become popular since, C. Schmid et. al.(1997) shows that local invariants work better than raw patches for such purpose. C. Schmid et. al.(1997) ,uses invariants based on rotation invariant combination of image derivatives but other local invariants have been proposed. Considering feature point appear to be a better approach to achieve robustness to scale, viewpoint, illumination changes and partial occlusions than edge- or eigen-image- based techniques.

During an offline training stage, one builds a database of interest points lying on the object and whose position on the object surface can be computed. A few images in which the object has been manually registered are often used for this purpose. At runtime, feature points are first extracted from individual images and matched against the database. for tracking-by-detection purposes, the so-called *wide baseline* matching problem becomes a critical issue that must be addressed.

In the remainder of this subsection, we discuss in more detail the extraction and matching of feature points in this context. We conclude by discussing the relative merits of tracking-by-detection and recursive tracking.To handle as wide as possible a range of viewing conditions, feature point extraction should be insensitive to scale, viewpoint, and illumination changes. As proposed in, T. Lindeberg(1977), scale-invariant extraction can be achieved by taking feature points to be local extrema of a Laplacian-of-Gaussianpyramid in scale-space. To increase computational efficiency, the Laplacian can be approximated by a Difference-of-Gaussians , D. Lowe (1999). Research has then focused on affine invariant region detection to handle more perspective changes. [A. Baumberg(2000), K. Mikolajczyk et.al.(2002) used an affine invariant point detector based on the Harris detector, where the affine transformation that makes equal the two eigen values of the auto correlation matrix is evaluated to rectify the patch appearance. In Wide Baseline Matching Once a feature point has been extracted, the most popular approach to matching it is first to characterize it in terms of its image neighborhood and then to compare this characterization to those present in the database. Such characterization, or *local descriptor*, should be not only invariant to viewpoint and illumination changes but also highly distinctive. We briefly review some of the most representative below. The remarkable invariance of the SIFT descriptor is achieved by a succession of carefully designed techniques. First the location and scale of the keypoints are determined precisely by interpolating the pyramid of Difference-of-Gaussians used for the detection. To achieve image rotation invariance, an orientation is also assigned to the keypoint. It is taken to be the one corresponding to a peak in the histogram of the gradient orientations within a region around the keypoint. This method is quite stable under viewpoint changes, and achieves an accuracy of a few degrees. The image neighborhood of the feature point is then corrected according to the estimated scale and orientation, and a local descriptor is computed on the resulting image region to achieve invariance to the remaining variations, such as illumination or out-of-plane variation.Statistical Classification,The SIFT descriptor has been empirically shown to be both very distinctive and computationally cheaper than those based on filter banks. To shift even more of the computational burden from matching to training, which can be performed beforehand, we have proposed in our own work an alternative approach based on machine learning techniques, V. Lepetit, P (2005). We treat wide baseline matching of keypoints as a classifi cation problem, in which each class corresponds to the set of all possible views of such a point. Given one or more images of a target object, the system synthesizes a large number of views, or image patches, of individual keypoints to automatically build the training set. If the object can be assumed to be locally planar, this is done by simply warping image patches around the points under affine deformations, otherwise, given the 3D model, standard Computer Graphics texture-mapping techniques can be used. This second approach relaxes the planarity assumptions.

The classification itself is performed using randomized trees, Y. Amit et al.(1997). Each non-terminal node of a tree contains a test of the type: “Is this pixel brighter than this one?” that splits the image space. Each leaf contains an estimate based on training data of the conditional distribution over the classes given that a patch reaches that leaf. A new image is classified by simply dropping it down the tree. Since only pixel intensities comparisons are involved, this procedure is very fast and robust to illumination changes. Thanks to the efficiency of randomized trees, it yields reliable classification results.we briefly describe here the SIFT-based implementation reported in , I. Skrypnyk et. al. (2004). First, during a learning stage, a database of scene feature points is built by extracting SIFT key points in some reference images. Because the key points are detected in scale-space, the scene does not necessarily have to be well-textured. Their 3D positions are recovered using a structure-from-motion algorithm. Two-view correspondences are first established based on the SIFT descriptors, and chained to construct multi-view correspondences while avoiding prohibitive complexity. Then the 3D positions are recovered by a global optimization over all camera parameters and these point coordinates, which is initialized as suggested in, R. Szeliski et.al.(1994).

At run-time, SIFT features are extracted from the current frame, matched against the database, resulting in a set of 3D correspondences. The search is performed so that bins are explored in the order of their closest distance from the query description vector, and stopped after a given number of data points has been considered, as described in, J. Beis et.al.(1997).

This greatly reduces the number of false matches that may result from cluttered background. A good idea at this point is that matches based on feature point recognition should be refined by a local image-patch based search for improved matching accuracy before being used for tracking. recovering the camera positions in each frame independently and from noisy data typically results in jitter.

To stabilize the pose, regularization term that smoothes camera motion across consecutive frames is introduced. Its weight is iteratively estimated to eliminate as much jitter as possible without introducing drift when the motion is fast. The full method runs at four frames per second on a 1.8 GHz ThinkPad.

MODEL-BASED TRACKING

Using markers to simplify the 3D tracking task requires engineering the environment, which end-users of tracking technology do not like or is sometimes even impossible, for example in outdoor environments. Whenever possible, it is therefore much better to be able to rely on features naturally present in the images. Of course, this approach makes tracking much more challenging and some 3D knowledge is often used to make things easier. The 3D knowledge can come in the form of a CAD model of a scene object, a set of planar parts, or even a rough 3D model such as an ellipsoid. Such models can be created using either automated techniques or commercially available products. For completeness sake, we also present methods that do not require 3D scene models and simultaneously recover both camera trajectory and 3D structure. We will see that these methods can be make to work reliably in-real time. However, they cannot eliminate error accumulation and are not adequate in cases where the model semantics are important. For example, for automated grasping purposes, one must not only recover camera trajectory but also decide where exactly to grasp. Furthermore, the model-based techniques can usually be made to be more robust and fail-safe. In short there exists a trade-off between

the inconvenience of building the 3D model and the increased reliability it affords and choosing one approach over the other depends on the application at hand. To organize the massive literature on the subject, we distinguish here two families of approaches depending on the nature of the image features being used. The first one is formed by edge-based methods that match the projections of the target object 3D edges to area of high image gradient. The second family includes all the techniques that rely on information provided by pixels inside the object’s projection. It can be derived from optical flow, template matching or interest point correspondences.

Of course, during tracking, knowledge of the pose in the previous frames considerably simplifies the task: Once initialized, usually by hand or using an *ad hoc* method, a motion model is often used to predict the pose in the coming frame to help look for image features. The simplest such model is to assume that the camera does not move very much from one frame to the next one. The early approaches to tracking were all edge-based mostly because these methods are both computationally efficient, and relatively easy to implement. They are also naturally stable to lighting changes, even for specular materials, w hich is not necessarily true of methods that consider the internal pixels, as will be discussed later. These edge based methods can be grouped into two categories:

• One approach is to look for strong gradients in the image around a first estimation of the object pose, without explicitly extracting the contours C. Harris,et.al.(1992), E. Marchand,et.al.(2001), L. Vacchetti,et.al.(2004), T. Drummond et.al.(2002), A. Comport, et.al.(2003). M. Armstrong et.al.(1995)]. This is fast and general.

• Another approach is to first extract image contours, such as straight line segments and to fit the model outlines to these image contours D. G. Lowe,et.al.(1992), D. Koller,et.al.(1993), H. Kollnig et.al.(1997), A. Ruf,et.al.(1997), D. Gennery,et.al.(1992)]. The loss in generality can be compensated by a gain in robustness. We discuss both kinds of approach below.

Because of its low computational complexity, RAPiD C. Harris,et.al.(1992) was one of the first 3D tracker to successfully run in real-time. Even though many improvements have been proposed since, we describe it here in detail because many of its basic components have been retained in more recent systems. The key idea is to consider a set of 3D object points, called control points, that are most likely to project on high-contrast image edges.

Once initialized, the system performs a simple loop: For each frame, the predicted pose, which can simply be the pose estimated for the previous frame, is used to predict which control points will be visible and what their new locations should be. The control points are matched to the image contours, and the new pose estimated from these correspondences. For each control point, the system looks for its projection **m'** in the new image around **m**, its projection in the previous frame. Because of the aperture problem, the position **m'** cannot be completely determined. As depicted by Figure 4.2 only the perpendicular distance *l* of **m** from the appropriate image edge is measured. A. Comport, et.al.(2003) uses a precomputed convolution kernel function of the contour orientation to find only edges with an orientation similar to the reprojected contour orientation, as opposed to all edges in the scan-line.

In C. Harris,(1992), some enhancements to this basic approach are proposed. When the edge response at a control point becomes too weak, it is not taken into account into the motion computation, as it may subsequently incorrectly latch on to a stronger nearby edge. As we will see below, this can also be handled using a robust estimator. An additional clue that can be used to reject incorrect edges is their polarity, that is whether they correspond to a transition from dark to light or from light to dark. A way to use occluding contours of the object is also given. In R. Evans, (1990), integrating a Kalman filter into RAPiD is proposed. The control points can be defined on the fly. C. Harris,(1992),shows how profile edge points can be created along occluding contours defined by the model projection. B. Lucas et.al.(1981) also discusses the discretization of the model edges visible at time *t* to produce the control points for the estimation of the pose at time *t* + 1.

The main drawback of of the original RAPiD formulation is its lack of robustness. The weak contours heuristics is not enough to prevent incorrectly detected edges from disturbing the pose computation. In practice, such errors are frequent. They arise from occlusions, shadows, texture on the object itself, or background clutter. Several methods have been proposed to make the RAPiD computation more robust. T. Drummond et.al.(2002) uses a robust estimator and replaces the leastsquaresestimation by an iterative re weighted least-squares to solve the new problem. B. Lucas et.al.(1981) uses a framework similar to RAPiD to estimate a 2D affine transformation between consecutive frames, but substitutes a robust estimator for the least-squares estimator. The affine transformation is used to infer an approximate 3D pose, In fact, when using a more powerful minimization algorithm, linearizing the problem is not required, instead one can minimize the actual distances between the detected features and the reprojected 3D primitives.

E. Marchand et.al.(2002) discusses the computation of the relevant Jacobian matrices when the 3D primitives such as straight lines segments, circles or occluding boundaries of cylinders can be defined analytically. G. Simon et.al.(1998) considers free-form curves and uses an approximation of the distance. In the approaches described above, the control points were treated individually, without taking into account that several control points are often placed on the same edge, and hence their measurements are correlated. By contrast, in [M. Armstrong et.al.(1995), G. Simon et.al.(1998)] control points lying on the same object edge are grouped into primitives, and a whole primitive can be rejected from the pose estimation. In M. Armstrong et.al.(1995),a RANSAC methodology is used to detect outliers among the control points forming a primitive. If the number of remaining control points falls below a threshold after elimination of the outliers, the primitive is ignored in the pose update. Using RANSAC implies that the primitives have an analytic expression, and precludes tracking free-form curves. By contrast, G. Simon et.al.(1998)] uses a robust estimator to compute a local residual for each primitive. The pose estimator then takes into account all the primitives using a robust estimation on the above residuals. When the tracker finds multiple edges within its search range, it may end-up choosing the wrong one. To overcome this problem, in T. Drummond et.al.(2002), the influence of a control point is inversely proportional to the number of edge strength maxima visible within the search path. L. Vacchetti,et.al.(2004) introduces another robust estimator to handle multiple hypotheses and retain all the maxima as possible correspondents in the pose estimation. The previous approaches rely on matching points sampled on edges.An alternative approach is to globally match model primitives with primitives extracted from the image [D. G. Lowe,et.al.(1992), D. Gennery,et.al.(1992), D. Koller,et.al.(1993), A. Kosakaet.al.(1995), A. Ruf,et.al.(1997)].

line segments, but, in theory, they could be more complex parametric curves.For each image, straight line edge segments are extracted, while the model edge segments are projected with respect to the predicted pose.

An iterative procedure is used to find the best correspondences between 3D model edge segments *Mi* and 2D image segments *Di*, while estimating the pose. In D. Koller,et.al.(1993), a model segment *Mi* is matched with the closest data segment *Di* according to the Mahalanobis distance of Equation , if this distance is lower than a threshold. The pose **p** is then estimated by minimizing

$$\sum_i (X_d^i - X_m^i(P))^T \Lambda_d^i \left(X_d^i - X_m^i(P)\right), \quad (22)$$

with respect to **p** where **X***i m*(**p**) is the attribute vector of the model segment *Mi* projected with respect to the pose **p**. An additional term can be added to the criterion to account for a motion model. The minimization is performed using the Levenberg-Marquardt algorithm. The process is repeated until a stable pose is found. Such approaches, which are only adapted to polyhedral object tracking, have been applied to vehicle and robot arm tracking, but they seem to have fallen out of use and been replaced by RAPiD like algorithms. We believe this can be attributed to bottom-up nature of the edgeextraction process, which makes it unreliable. The RAPiD approach both avoids this drawback thanks to the local search around an *a priori* pose and tends to be significantly faster.

DIRECT OPTIMIZATION ON GRADIENTS

It is better to take into account the expected direction of the projected contour: E. Marchand,et.al.(2001) proposes to minimize the sum of the values. This measure tends to support locations where the gradient is both strong and in the expected direction. H. Kollnig et.al.(1997) maximizes the correlation between the predicted and the measured gradient norm plus an additional term to constrain the motion. Such approaches require a very good initial estimate to converge to the correct pose. Therefore, they are best used as a refinement step.

Optical Flow-Based Methods, Optical flow is the apparent motion of the image projection of a physical point in an image sequence, where the velocity at each pixel location is computed under the assumption that projection's intensity remains constant. It can be expressed as

$$m' = m + \begin{pmatrix} u \\ v \end{pmatrix} dt, \quad (23)$$

where **m** the projection of a point in an image *I* at time *t*, It can be computed using the Lucas- Kanade method [83] for example, which adopts a multiscale approach and assumes that the optical flow varies smoothly.

Using Optical Flow Alone, An early attempt to use optical flow as a cue for 3D tracking relied on the well-known normal optical flow constraint

$$\left(\frac{\partial I}{\partial u}, \frac{\partial I}{\partial v}\right)\left(m' - m\right) + \frac{\partial I}{\partial t} = 0 \quad (24)$$

derivatives of the image computed at location **m**. That means that if we know the 3D correspondent **M** for some **m** on the model projection, Nevertheless, this approach has two important drawbacks: First, for large motions, there exists a large linearizing error in the normal optical flow constraint that affects the estimation. Second, while the control points on edges provide absolute information and act as anchors, relying on optical flow causes error accumulation, which quickly results in drift and tracking failure.To avoid error accumulation, H. Li,et.al.(1993) uses a render-feedback loop. Instead of applying the previous method to the actual image, it applies it to a synthetic image of the object rendered under a pose predicted using a motion model. If the motion model is valid, the synthetic image is closer to the new image, the error due to the linearity assumption is smaller and the computed motion more reliable. The process can then be iterated to suppress the drift effect. Unfortunately, this method requires a motion model to handle fast motion and is sensitive to lighting effects, since it is difficult to render a synthetic image that takes illumination into account. It is also relatively slow since several image synthesis per frame are required. Nevertheless, it was one of the first successful methods to use Computer Graphics techniques to solve a Computer Vision problem.

S. Basu,et.al.(1996) applies the regularized optical-flow method developed in M. J. Black et.al.(1997) to 3D tracking to handle fast motion.

In Combining Optical Flow and Edges,Several authors combine edge and optical flow information to avoid error accumulation. For example, M. Haag et.al.(1999) uses a Kalman filter to combine the two cues. The edges are taken into account by a term similar to the one of the Equation, the optical flow by a term analogous. A different combination is proposed in D. DeCarlo et.al.(2000), where the optical flow information is treated as a hard constraint. In this work, the deformations of the tracked shape, a human face, are also estimated but we will drop here the deformation terms. This approach yields impressive results especially because it estimates not only the motion but also the deformations of a face model. Nevertheless, it still depends on the brightness constancy assumption during optical flow computation, and major lighting changes can cause tracking failure. Because of the linearization in the optical flow equation cue, the range of acceptable speeds is also limited.

Template matching based face tracking, this is the first and a very simple approach to face tracking, totally based on the template matching technique detailed in the following.

The Lucas-Kanade algorithm B. Lucas et.al.(1981), S. Baker et.al.(2004) was originally designed to compute the optical flow at some image locations, but in fact has a more general purpose and can be used to register a 2D template to an image under a family of deformations. It does not necessarily rely on local features such as edges or interest points, but on global region tracking, which means using the whole pattern of the object to be tracked. Such a method can be useful to treat complex objects that are difficult to model using local features. While it can be computationally expensive, [50] showed that under some conditions, it can be effectively formulated. Since then it has been extended by several authors and applied to 3D tracking [M. Cascia et.al.(2000), F. Jurie et. Al. (2001), F. Jurie et.al.(2002)].

Using Hyperplane Approximation**,** The approach presented in F. Jurie et.al.(2002) relies on a reinterpretation that yields a faster implementation than the Jacobian formulation discussed above. It treats the equation as an approximation by hyperplanes. This allows the estimation of the **A** matrix during a learning stage. It is done by producing random small disturbances **Δ** around the reference position, for which the change of brightness δ**i** can be measured by virtually moving the region of interest. A matrix δ**p** that maps the δ**i** to the δ**p** can then be estimated in the least-squares sense. The paper F. Jurie et.al.(2002) experimentally shows that such a matrix gives a more reliable approximation of the relation between image differences and the motion. This can be explained by the fact that the objective function of Equation has many local minima, which this approach allows the algorithm to skip.

For 2D Tracking, The general goal of the Lucas-Kanade algorithm is to find the parameters p of some deformation **f** that warps a template *T* into the input image *It*, where the **f** deformation can be a simple affine warp as well as a much more complex one. This is done by minimizing

$$(P) = \sum_j \left(I_t\left(f(m_j; P)\right) - T(, m_j)\right)^2, \quad (25)$$

O

the sum of squared errors computed at several **m***i* locations. The Lucas-Kanade algorithm assumes that a current estimate of **p** is known, which is reasonable for tracking purposes. It iteratively solves for **p** by computing **Δ***i* steps that minimize

$$\sum_j (I_t(f(m_j; P_j + \Delta)) - T(m_j))^2.$$

As in the Gauss-Newton algorithm, the *It*(**f** (**m***j* ; **p**+**Δ**) term is linearized by performing a first order Taylor expansion. This lets us write

$$\Delta_j = A\delta i, \quad (26)$$

where **A** is the pseudo-inverse of the Jacobian matrix **J** of *It*(**f** (**m***j* ; **p**)) computed at **p***j* , and δ**i** = [*T*(**m***j*) − *It*(**f** (**m***j* ; **p**)] is the vector of intensity differences between the template and the warped input image. **J** depends both on the image gradients computed at pixel locations **f** (**m***j* ; **p**) and on the Jacobian of the warping function. It can be computed as

$$J = \sum_j \left(\frac{\partial I_t}{\partial f}\right) \cdot \left(\frac{\partial f}{\partial p}\right)(m_j). \quad (27)$$

In this derivation, the function **f** can be arbitrarly complex. In the general case, this means that the the pseudo-inverse of **J** must be recomputed at each iteration, which is computationally expensive. As we will see below, the method can be made to be much more efficient by restricting **f** to a specific class.

Use Jacobian Formulation, G. Hager et.al.(1998),shows that for some classes of displacements, including linear models, the previous iteration step can be replaced by

$$\Delta_j' = A'\delta i, \quad (28)$$

$$\Delta = \sum (P)^{-1}\Delta_j', \quad (29)$$

where Σ(**p**) is a matrix that only depends on the displacement **p**. This time, the matrix **A** does not depend on time-varying quantities and can be computed beforehand. G. Hager et.al.(1998),restricts the estimation to a single step, but it could be iterated as in the Gauss-Newton algorithm. The final algorithm requires about a hundred image accesses and subtractions to compute δ**i**, a few hundred of multiplications and a matrix inversion to compute the displacement **Δ**. F. Dellaertet.al.(1999) gives a similar derivation but also proposes an efficient sampling of the target region to reduce even further the online computation cost without losing too much image information. Ideally the subset that reduces the expected variance of recovered motion should be retained. In practice, the combinatorics are too large, and F. Dellaertet.al.(1999)proposes to compute the expected for individual pixels and constructs a random subset of the best pixels, constrained to be well spread on the target image.

A limitation of the formulation given above is sensitive to changes in illumination of the target region. To handle such variations, G. Hager et.al.(1998),adds a linear combination of basis vectors to the expression of $\mathbf{I}t(\mathbf{p} + \boldsymbol{\Delta}j)$. These basis vectors can be learned from a set of training images of the target region, taken under varying illumination. It is shown that the motion can still be computed using no more online computation than before.

Another drawback is that it does not handle potential partial occlusions of the tracked regions, which could result in tracking failure. To solve this problem, G. Hager et.al.(1998),turns the least-squares formulation of Equation into a robust one by introducing a robust estimator. The motion is then recovered using an iteratively re-weighted least-squares approach.This method was originally used to track in real-time human faces assuming a 2D affine transformation for the motion model.

Interest Point-Based Methods, We now turn to methods that use localized features instead of global ones, which has several advantages. In the same way as edge-based methods, they rely on matching individual features across images and are therefore easy to robustify against partial occlusions or matching errors. Illumination invariance is also simple to achieve. But, unlike edges methods, they do not get confused by background clutter and exploit more of the image information, which tends to make them more robust. They are similar in some ways to optical flow approaches, but they allow faster motions since no small inter-frame motion assumption is made. The local features can be patches manually selected in several registered views of the target object during a preliminary stage [S. Ravela et.al.(1995), M. Uenohara et.al.(1991)].

From 2D to 3D Tracking,The template matching approach has been used to track 3D objects., F. Jurie Et.al.(2001) uses a homography to model the object pose **p** to track 3D planar objects.

A few improvements can be added to the original method described in F. Jurie et.al.(2002) . The locations considered to compute the pose should be taken following the method described in F. Dellaert et.al.(1999). At least a simple heuristics is to retain locations to strong gradients, with some care to take well spread locations. These locations cannot be taken on the border of the object: in the contrary case, they could lie on the background once the object has moved, and disturb the intensity difference computation. The locations intensities should be normalized to be robust to most of lighting changes. Finally, while the original paper only discusses single iteration step estimation, several iterations can be performed to allow for fast motion. It can be done using a cascade of **A** matrices instead of a single one, where the first matrices of the cascade are trained from large motions, and the last ones capture finer and finer motions. M. Cascia et.al.(2000) also uses this approach to track the position and orientation of a human head using a non-planar surface model. The head is modeled as a generalized cylinder. It can thus be described as a parametric surface, where a 3D point **M** on the model surface is a function of two coordinates (s, t) in the surface's parametric coordinate system $\tilde{\mathbf{M}} = \mathbf{x}(s, t)$. This allows the definition of a relatively simple warping between the image and the texture map on the head model, and a template matching approach similar to the one of G. Hager

Et. al.(1998) is used to recover the six degrees of freedom of the 3D model. A confidence map is also introduced is to account for the fact that pixels are not equally informative due to perspective distortion. They are assigned a confidence level proportional to the image area of the triangle they belong to. A motion model is also used to regularize the recovered motion. The resulting tracker overcomes the biggest problem of using a planar approximation for the face, that is instability in presence of out of plane rotations.

An object feature is then defined by its 3D object location and by a template image that captures its image appearance. Once initialized, the algorithms perform a simple loop similar to the one of edge-based methods. For each frame, the object features are matched by localizing feature templates in search windows around hypothesized locations using steerable filters to compensate for image-plane rotations, and normalized cross-correlation for insensitivity to lighting changes. The pose is then obtained from these model to image correspondences. Note that in S. Ravela et.al.(1995), aspect changes are handled by initially building an aspect table that associates object features with discrete viewpoints in which they can be expected to be seen. Of course, the above algorithms require both manual intervention and actual expertise to select appropriate patches. A far more effective and practical approach is to have the system itself choose the features for optimal performance. We refer to these automatically chosen features as interest points. In the remainder of this subsection, we first discuss their extraction and matching. We then present ways of using them for 3D tracking.

In Interest Point Detection,Matching only a subset of the image pixels reduces computational complexity while increasing reliability if they have been correctly chosen. This task usually falls on an "interest operator," which should select points with the following properties W. F¨orstner et.al.(1986): The patches surrounding them should be textured so that they can be easily matched. They should be different from their immediate neighbors to eliminate edge-points that can give rise to erroneous matches. Similarly, pixels on repetitive patterns should also be rejected or at least given less importance to avoid ambiguous matches. Finally, the selection should be repeatable, which means that the same points should be selected in different images of the same scene, despite perspective distortion or image noise. This last property is important because the precision and the pose estimation directly depends on the invariance of the selected position.

Such operator were already in use in the 1970's for tracking purposes [H. Moravec et.al.(1996) , H. Moravec et.al.(1997)]. In these early works, pixels with the largest minimum variance of intensity differences in the four directions were retained. Numerous other methods have been proposed since and [R. Deriche et.al.(1993), S. M. Smith et.al.(1995)] give good surveys. Most of these techniques involve second order derivatives, and results can be strongly affected by noise. Currently popular interest point detectors, sometimes called the F¨orstner operator W. F¨orstner et.al.(1986) , the Plessey operator, the Harris-Stephen detector C. Harris et .al.(2000), or the Shi-Tomasi detector J. Shi et.al.(1994), all rely on the auto-correlation matrix

$$\mathbf{Z} = \begin{pmatrix} \sum I^2 u & \sum I_u I_v \\ \sum I_u I_v & \sum I^2 v \end{pmatrix}$$

computed at each pixel location. The coefficients of **Z** are the sums over a window of the first derivatives Iu and Iv of image intensities with respect to (u, v) pixel coordinates. The derivatives can be weighted using a Gaussian kernel to increase robustness to noise C. Schmid et.al.(1997). The derivatives should also be computed using a first order Gausian kernel. This comes at a price since it can reduce localization accuracy. As discussed in W. F¨orstner, et al. (1996), the pixels can be classified from the behavior of the eigen values of **Z**: Pixels with two large, approximately equal eigen values are good candidates for selection. C. Harris et. al.(1998) defines a "textureness" measure from the trace and the determinant of **Z** to avoid explicit computation of the eigen values. J. Shi et.al.(1994),shows that locations with two large eigenvalues of **Z** can be tracked reliably especially under affine deformations. It therefore focuses on locations where the smallest eigen value is higher than a threshold. Interest points can then taken to be the locations $\mathbf{m}i$ that are local maxima of the chosen measure above a predefined threshold. It should be noted that these measures have a relatively poor localization accuracy and are computationally demanding.

However they are widely used they have proved effective and are easy to implement.

Interest Point Matching, A classical procedure Z. Zhang et.al.(1995) runs as follows. For each point $\mathbf{m}i$ in the first image, search in a region of the second image around location. The search is based on the similarity of the local image windows centered on the points, which strongly characterizes the points when the images are sufficiently close. The similarity can be measured using the zero-normalized cross-correlation that is invariant to affine changes of the local image intensities, and make the procedure robust to illumination changes. In practice, we reject matches for which this measure is less than 0.8 as unreliable matches. We also limit the search of correspondents for a maximum image movement of 50 pixels. In terms of code optimization, some efficient implementations using MMX instructions for both point extraction and matching. An alternative to matching points across images is to use the Kanade-Lucas-Tomasi (KLT) tracker which extracts points from an initial image and then tracks them in the following images by mostly relying on the optical flow. Both approaches have their strengths: KLT handles continuity better and keeps tracking points that cannot be detected as interest points. By contrast, performing detection in every frame naturally handles the appearance and disappearance of interest points due to aspect changes and occlusions.

Alternatively,This results in implementations that are both robust and fast because extraction and matching can now be achieved in real-time on modern computers.

Pose Estimation by Tracking Planes,An alternative way to use interest points is to track 3D planar structures as opposed to full 3D models. This choice is justified by the fact that it is a common special case that makes the 3D model acquisition problem trivial. Furthermore, the resulting method is efficient and precise. The relation between the plane and a frame of the sequence can be retrieved by chaining the homographies, and used to estimate the camera pose.

In this approach the jittering effect is minimal because the homo-graphies between consecutive, close views can be computed very accurately. Nonetheless, because the motion is computed recursively by chaining transformations, one can expect error accumulation and drift after a while, even if this is delayed by the accuracy of the computed homo-graphies.

Several authors, matching only against keyframes does not, by itself, yield directly exploitable results. This has two main causes. First, wide-baseline matching as described in the previous paragraph, is inherently less accurate than the short-baseline matching involved in frame-to-frame tracking, which is compounded by the fact that the number of correspondences that can be established is usually less. Second, if the pose is computed for each frame independently, no temporal consistency is enforced and the recovered motion can appear to be jerky. If it were used as is by an Augmented Reality application, the virtual objects inserted in the scene would appear to *jitter*, or to tremble, as opposed to remaining solidly attached to the scene.

Temporal consistency can be enforced by some dynamical smoothing using a motion model. Another way proposed in is to combine the information provided by the keyframes, which provides robustness, with that coming from preceding frames, which enforces temporal consistency. This does not make any assumption on the camera motion and improves the accuracy of the recovered pose. It is still compatible with the use of dynamical smoothing that can be useful to in case where the pose estimation remains unstable, for example when the object is essentially front-parallel.

The tracking problem is reformulated in terms of bundle adjustment. In theory, this could be done by minimizing a weighted sum of the reprojection errors computed both for the 3D keyframe interest points and for points **N***i* tracked from frame to frame, with respect to the camera poses up to time *t*, and to the 3D locations of the points *Ni*. Finally, the combination of the information from wide baseline matching and from preceding frames in Equation ,results in a real-time tracker that does not jitter or drift and can deal with significant aspect changes.

n-Images Methods,The first class of approaches relies on projective properties that provide constraints on camera motion and 3D point locations from 2D correspondences. While such approaches have long been used for offline camera registration in image sequences [C. Tomasi et.al. (1992), A. Fitzgibbon Et.al.(1998), M. Pollefeys,et.al.(1998), R. Hartley et.al.(2000)], only recent improvements in both algorithms and available computational power have made them practical for real-time estimation. For example, D. Nister,et.al.(2004) shows how to recover in real-time the trajectory of a moving calibrated camera over a long period of time and with very little drift. The algorithm first estimates the relative poses between three consecutive frames from point correspondences established. This is done by robustly estimating the essential matrix **E** between image pairs.

The scale is then taken to be the one that best aligns these points against the current reconstruction. As direct application of this approach would quickly in drift, two techniques are used in D. Nister,et.al.(2004) to mitigate this problem. First, the pose is refined once in a while by minimizing the reprojection error of the already reconstructed 3D points over sets of frames. Second, the system is made to occasionally "forget" the 3D coordinates and to recomputed them from scratch to avoid error accumulation. This system has been tested with a vehicle-mounted camera and yields results very close to that of a GPS, even for trajectories of several hundreds of meters. In other words, error accumulation is not completely avoided, but considerably reduced.

Filter-Based Methods,Pose and structure can also be recursively estimated using the Extended Kalman filter [A. Azarbayejani et.al.(1995), P. A. Beardsley,et.al.(1997), A. Chiuso,et.al.(2002), F. Jurie, et.al.(1998), A. Davison,et.al.(2003)]. In particular, [28], shows that it can yield very good results in real-time. While D. Nister,et.al.(2004) proposes a bottom-up approach – interest points are tracked in 2D then reconstructed to 3D, here the pose estimation is done in a top-down manner. The camera is supposed to move smoothly, with unlikely large accelerations. The filter state therefore contains the camera pose parameters, and the linear and angular velocities used to predict the camera pose over time. The filter state also contains the 3D locations of some points detected in the images. In each coming frame, the position of a feature point is predicted and its uncertainty is estimated using uncertainty propagation, using the 3D location stored in the filter state, the predicted camera pose and its uncertainty. This constraints the search for the point position in the current image, retrieved using sum-of-squared difference correlation. This position is then given to the Kalman filter to update the point 3D location. These hypotheses are tested in subsequent images by matching them against the images, and their probabilities are re-weighted One issue is the initialization in the filter of appearing feature points, since the depth of such a point cannot be estimated from one measurement. A. Davison et.al.(2003) proposes to represent the initial probability density over point depth by a equally-weighted particle set. Discrete depth hypotheses are made along the semi-infinite line stated at the estimated camera position heading along the point viewing direction. The hypotheses are tested in the subsequent time steps by projecting them into the images, and re-weighted according to their likelihood. After some times, the distribution becomes closely Gaussian. A covariance matrix can then be enough to represent the distribution, and the feature point can be integrated into the filter. To handle the distortion on the point appearances due to perspective, this method was extended in N. Molton,et.al.(2004) to also estimate the orientation of the local surface. The orientation is initialized to be parallel to the current viewing direction. For each coming frame, the current orientation estimate is used to predict the point appearance to help finding the point projection, and updated from the actual image.

LANDMARK BASED TRACKING OR FUDICIAL TRACKING

Vision-based 3D tracking can be decomposed into two main steps: first image processing to extract some information from the images, and second pose estimation itself. The addition in the scene of *fiducials*, also called *landmarks* or *markers*, greatly helps both steps: they constitute image features easy to extract, and they provide reliable, easy to exploit measurements for the pose estimation.

Here, we distinguish two types of fiducials. The first type is what we call "*point fiducials*" because each fiducial of this type give one point correspondence between the scene and the image. To obtain more information from each fiducial, it is possible to turn it into a planar

shape with identifiable corners and we will refer to those as "*planar fiducials*": A single planar fiducial provides all six spatial constraints needed to define a coordinate frame.

Point Fiducials: Fiducials have been used for many years by close-range photogrammetrists. They can be designed in such a way that they can be easily detected and identified with an *ad hoc* method. Their image locations can also be measured to a much higher accuracy than natural features.

In particular, circular fiducials work best, because the appearance of circular patterns is relatively invariant under perspective distortion, and because their centroid provides a stable 2D position that can easily be determined with sub-pixel accuracy. The 3D positions of the fiducials in the world coordinate system are assumed to be precisely known:

This can be achieved by hand, with a laser, or with a structure-frommotion algorithm. To facilitate their identification, the fiducials can be arranged in a distinctive geometric pattern. Once the fiducials are identified in the image, they provide a set of correspondences**M***i* ↔ **m***i*

and techniques similar to the ones can be applied to retrieve the camera pose. For high-end applications, as found by close-range photogrammeters who have a long experience in this area, fiducial locations should be estimated carefully. In particular, there should be uniform lighting and a strong foreground-background contrast. Most of the professional solutions use circular or spherical fiducials made from retro reflective material, and cameras instrumented with a ring flash or other symmetric lighting coming from within a few degrees. Images are exposed so that the background is suppressed and the fiducials can be detected automatically due to their high contrast. It then become easier to estimate their center of gravity with subpixel accuracy. The targets should be at least 4-5 pixels across in the image and appear against a clear background with diameter at least 3 times the foreground diameter.

Advanced Real-time Tracking, Metronor, ViconPeak, and AICON 3D Systems all propose commercial products based on this approach. Low-cost, and lower-accuracy solutions, have also been proposed by the Computer Vision community. For example, the Concentric Contrasting Circle (CCC) fiducial W. A. Hoff,

Et.al. (1996) is formed by placing a black ring on a white background, or vice-versa. To detect these fiducials, the image is first thresholded, morphological operations are then applied to eliminate too small regions, finally a connected component labeling operation is performed to find white and black regions, as well as their centroids. In fiducial W. A. Hoff, et.al. (1996),four CCC's are placed in a flat rectangular pattern, and a fifth CCC is added on a side of the rectangle to remove ambiguities.

The three collinear CCC's can be found by testing each subset of three points for collinearity.
A. State,et.al.(1996) uses color-coded fiducials for a more reliable identification. Each fiducial consists of an inner dot and a surrounding outer ring, four different colors are used, and thus 12 unique fiducials can be created and identified based on their two colors.
Some heuristics are also introduced:
During tracking the fiducials should remain close to their predicted position; if the centroids of the outer and the inner regions are not close enough, the fiducial may be partially occluded, and is not taken into account in the pose computation.
Because the tracking range is constrained by the detectability of fiducials in input images, Y. Cho, et. al.(1998) introduces a system that uses several sizes for the fiducials. They are composed of several colored concentric rings, where large fiducials have more rings than smaller ones, and diameters of the rings are proportional to their distance to the fiducial center, to facilitate their identification. When the camera is close to fiducials, only small size fiducials are detected. When it is far from them, only large size fiducials are detected.
The previous extraction methods involve thresholds to segment the images, and can usually not be used under different lighting conditions without adjusting them. To handle variable lighting, Y. Cho,
et. al.(1998)] uses a rulebased approach that groups samples of similar color that are likely to all belong to the same fiducial. L. Naimark et.al.(2002) uses homomorphic image processing, which is designed to eliminate the effect of non-uniform lighting. The thresholding operation is applied not on the image itself, but on the gradient of the logarithm of the image. This allows a robust detection of the fiducials, even in presence of very non-uniform lighting, including blooming effects.
In order to expand the number of uniquely identifiable fiducials, L. Naimark et.al.(2002) adds "data rings" between the traditional outer and inner rings. These additional rings are composed of sectors that are black or white, and can be used as a bar code, to encode the fiducial index. With this
design, they can have as many as 3×215 different fiducials.While all the previous methods for fiducial detection use *ad hoc* schemes, D. Claus et. al. (2004) uses a machine learning approach which delivers significant improvements in reliability. The fiducials are made of black disks on white background, and sample fiducial images are collected under varying perspective, scale and lighting conditions, as well as negative training images. A cascade of classifiers is then trained on these data:
The first step is a fast Bayes decision rule classification, the second one a powerful but slower nearest neighbor classifier on the subset passed by the first stage. At run-time, all the possible sub-windows in the image are classified using this cascade. This results in a remarkably reliable fiducial detection method.
Planar Fiducials: The fiducials presented above were all circular and only their center was used. By contrast, D. Koller, et.al.(1997) introduces squared, black on white, fiducials, which contain small red squares for identification purposes. The corners are found by fitting straight line segments to the maximum gradient points on the border of the fiducial. Each of the four corners of such fiducials provides one correspondence $\mathbf{M}i \leftrightarrow \mathbf{m}i$, and the pose is estimated using an Extended Kalman filter.
[J. Rekimoto et.al. (1998), H. Kato et.al.(1998), H. Kato et.al.(2000)] also use planar, rectangular fiducials, and show that a single fiducial is enough to estimate the pose. Their approach has become popular, both because it yields a robust, low-cost solution for real-time 3D tracking, and because a software library called ARToolKit is publicly available ARToolKit see ref. in website.
As most of the fiducials seen before, the fiducials of ARToolKit have a black border on a white background to facilitate the detection.The 3D tracking system does not require any hand-initialization, and is robust to fiducial occlusion. In practice, under good lighting conditions, the recovered pose is also accurate enough for Augmented Reality applications. These characteristics make ARToolKit a good solution for 3D tracking whenever engineering the scene is possible. Because it has a low CPU requirement, such markers based applications begin to be implemented on mobile devices such as PDA and mobile phones D. Wagner et.al. (2003). Free Computer Vision libraries on Symbian OS, which is the dominant operating system for smart phones are also in development M. Moegring,et.al. (2004), and lets hope for the development on such techniques on mobile devices.

COLOR-BASED TRACKING WITH PAN-TIL-ZOOM CAMERAS

METHODS FOR TRACKING

Andreas et.al.(2008),describe the tracking and recognizing nonrigid objects in video image sequences are complex tasks. Using color information as a feature to describe a moving object or person can support these tasks. The use of four-dimensional templates for tracking objects in color image sequences was suggested in [Bro et al. 941. However, if the observation is accomplished over a long period of time and with many single objects, then both the memory requirements for the templates in the database and the time requirements for the search of a template in the database increase. In contrast to this, active shape models **(ASMs)** represent a compact model for which the form variety and the color distribution of an object class are taught in a training phase [Coo et al. 95].
Several systems use skin color information for tracking faces and hands (see, e.g., [ComRamOO], [Li et al. 001, and [MarVil02]). The basic idea is to limit the search complexity to one single color cluster representing skin color, and to identify pixels based on their membership in this cluster. Several problems affect these approaches. First, skin colors cannot be uniquely defined and, in addition, a person cannot be identified when seen from behind. Here tracking clothes instead of skin is more appropriate [Roh et al.2001] Second, color distributions are sensitive to shadows, occlusions, and changing illuminations. Addressing the problem occurring with shadows and occlusions, Lu and Tan assume that the only moving objects in the scene are persons [LuTan0l]. This assumption does not hold for many applications. Most of the approaches mentioned above cannot be easily extended to multicolored objects other than persons. A very efficient technique for the recognition of colored objects is color indexing [SwaBal9 I]. Based on comparisons between color distributions, an object in the image is assigned to an object stored in a database. This technique usually needs several views of the object to be recognized, which is not always ensured when tracking people in a road scene, for example. Furthermore, color indexing partly fails with partial occlusions of the object. Active shape models do not need several views of an object, since by using energy fimctions they can be adapted to the silhouette of an object represented in the image. However, the outlier problem, which can occur particularly with partial object occlusion, represents a difficulty for these models.
Active Shape Models,For tracking a human target in video, detecting the shape and position of the target is the fundamental task. Since the shape of a human object is subject to deformation and random motion in the two-dimensional image space, ASM is one of the best-suited approaches in the sense of both accuracy and efficiency.
ASM falls into the category of deformable shape models with a priori information about the object. ASM-based object tracking models the contour of the silhouette of an object, and the set of model parameters is used to align different contours in each image frame. An extension of traditional ASMs to color active shape models.
Automatic Target Acquisition and Handover from Fixed to PTZ Camera,When a breach occurrence is detected, the fixed camera in charge of monitoring the direction of motion triggers an alarm and provides the position of the target in the world coordinate system. The PTZ camera then uses that position information to determine its pan-and-tilt angles and lock on the target for ubsequent tracking.The pan-and-tilt angles for the PTZ camera are respectively given as a function of the coordinates *(xt* , yt , *ht*) of the target

$$\theta = sin^{-1} \frac{xt}{\sqrt{xt^2 + yt^2}},$$

(30)

$$\delta = cos^{-1} \frac{\sqrt{xt^2 + yt^2}}{\sqrt{xt^2 + yt^2 + (h_c - h_t)^2}},$$ (31)

Handover is considered complete only when the PTZ camera is able to extract the moving target from its background and lock on it. This step is achieved using the same principle of direction of motion; only this time the motion being searched for is top-down motion instead of left to right. A GUI view of a typical image captured from the two-camera system.

Color and Predicted Direction and Speed of Motion,Image distortions caused by PTZ cameras make the tracking task difficult.Features that are robust to these distortions are needed for the tracking task. Color information of the target can be such a feature. When color constancy is preserved,the color distribution of interesting regions can be used to track objects. Color

indexing CSwaBal91 is one of the techniques used to find similar color targets in consecutive frames. The video from the overhead camera is first analyzed to detect and extract breaches. Each extracted region is used to build a color histogram model. Once the histogram models are acquired, the nearest and most similar color regions are searched through histogram intersection. The results are trajectories of the objects that caused the alarm. Since the trajectories were computed for each frame, the speed and direction of motion can also be predicted and used to compute the internal parameters of the PTZ camera, such as pan and tilt angles.

The PTZ camera is then automatically controlled to view the predicted location and to extract the top-down motion caused by the breach. **A** verification process will then follow to check whether the extracted regions are effectively caused by the breach.

TECHNICAL ASPECTS OF TRACKING

This section provides more detailed information on various technical considerations associated with color-based tracking.

Feature Extraction for Zooming and Tracking,Three features are selected for automatic zooming and face tracking. The first feature is the mean location *(xc,yc)* of hue values, which are located between *f(xi)Low-rh* , and *f(xi)Hj-th* , within the detected region-of-interest (ROI)

$$x_c = \frac{\sum_x H(x,y)}{E_H}, \qquad y_c = \sum_y \frac{H(x,y)}{E_H},$$ (32)

where ***H(x,y)*** represents the pixel location of an effective hue value and *EH* the number of selected pixels having effective hue values. The second feature is the area of the detected ROI, and the third is the effective pixel ratio, *RRO],* within the detected ROI. The mean location **xc** and *y ,* indicates the direction of the moving object and the second feature *&Of* determines the optimum zooming ratio; the third feature, *RROI,* is used for fault detection in zooming and tracking. The second and the third features can be formulated as

$$A_{ROI} = Width_{ROI} \times Height_{ROI} \text{ and } R_{ROI} = \frac{E_H}{A_{ROI}}$$ (33)

Automatic zooming is performed using the AROI feature.

COLOR ACTIVE SHAPE MODELS,Special considerations for digital image processing are required when tracking objects whose forms (and/or their silhouettes) change between consecutive frames.For example, cyclists in a road scene and people in an airport terminal belong to this class of objects denoted as *nonrigid objects.* ASMs can be applied to the tracking of nonrigid objects in a video sequence. Most existing ASMs do not consider color information [ParSayOl]. We present several extensions of the ASM for color images using different color-adapted objective functions.

Detecting the shape and position of the target is a fundamental task for tracking a nonrigid target in a video sequence. Two-dimensional deformable models typically use **i l** boundary representation (deformable contour) to describe an object in the image. Within the class of deformable models, the ASM is one of the best-suited approaches in the sense of both accuracy and efficiency for applications where a priori information about the object (or more precisely about the shape of the object) in the image is available. The basic concept of ASMs consists of modeling the contour of the silhouette of an object in the image by parameters in order to align the changing contours in the image frames to each other. More specifically, our ASM-based tracking algorithm consists of five steps:

1. Assignment of landmark points
2 . Principal component analysis (PCA)
3 . Model fitting
4. Local structure modeling
5. In this approach, an additional color component analysis

Landmark Points,Given a frame of input video, suitable landmark points should be assigned on the contour of the object. Good landmark points should be consistently located from one image to another. In a two-dimensional image, we represent *n* landmark points by a 2n-dimensional vector as

$$X = [x1, \ldots\ldots, xn, y1, \ldots\ldots, yn]^T$$ (34)

A typical setup in our system consists of 42 manually assigned landmark points *(n* = **42).** Various automatic and systematic ways of obtaining landmark points were discussed by Tian et al. [Tia et al. 011. The role of landmark points is controlling the shape of model contours. More specifically, the initially assigned landmark points are updated by minimizing the deviation from the original profile, which is normal to the boundary at each landmark point. More rigorous quantification of the deviation.

Principal Component Analysis,A set of *n* landmark points represents the shape of the object. Although each shape in the training set is in the 2n-dimensional space, we can model the shape with a reduced number of parameters using the *principle component* analysis *(PCA)* technique. Suppose we have *m* shapes in the training set, presented by ***Xi,*** for *i* = 1,. . .,*m* . The PCA algorithm is as follows.

PCA algorithm

1. Compute the mean of the *m* sample shapes in the training set

$$\bar{X} = \frac{1}{m} \sum_{i=1}^{m} x_i,$$ (35)

2. Compute the covariance matrix of the training set

$$S = \frac{1}{m}\sum_{i=1}^{m}(X_i - \bar{X})(X_i - \bar{X})^T \quad (36)$$

3. Construct the matrix

$$\emptyset = (\emptyset_1 | \emptyset_2 | \ldots . | \emptyset_q) \quad (37)$$

Where $\emptyset_j, j = 1, \ldots\ldots, q$ represent eigenvectors of S corresponding to the q largest eigenvalues.

4.Given $\emptyset \; and \; \bar{X}$, each shape can be approximated as

$$X_i \sim \bar{X} + \emptyset b_i \quad (38)$$

Where

$$b_i = \emptyset^T (X_i - \bar{X}) \quad (39)$$

In step **3** of the **PCA** algorithm, *q* is determined so that the sum of the *q* largest eigenvalues is greater than 98% of the sum of all eigenvalues.
In order to generate plausible shapes, we need to evaluate the distribution of **b** . To constrain **b** to plausible values, we can either apply hard conditions to each element ***bi*** or constrain **b** to be in a hyperellipsoid. The nonlinear version of this constraint is discussed in [Soz et al. 951.

Model Fitting, The best pose and shape parameters to match a shape in the model coordinate frame, ***x ,*** to a new shape in the image coordinate frame, ***y ,*** can be found by minimizing the following error function

$$E = (y - M_x)^T W (y - M_x), \quad (40)$$

where **W** is a diagonal matrix whose elements are weighting factors for each landmark point and **M** represents the geometric transformation of rotation *6* ,translation **t ,** and scaling s. The weighting factors are set in relation to the displacement between the computed positions of the old and the new landmark points along the profile. If the displacement is large, then the corresponding weighting factor in the matrix is set low; if the displacement is small, then the weighting is set high. Given a single point, denoted by *[x ~ , y o]*th~e, g eometric transformation is defined as

$$M\begin{bmatrix} x_0 \\ y_0 \end{bmatrix} = s\begin{bmatrix} cos\theta & sin\theta \\ -sin\theta & cos\theta \end{bmatrix}\begin{bmatrix} x_0 \\ y_0 \end{bmatrix} + \begin{bmatrix} t_x \\ t_y \end{bmatrix}, \quad (41)$$

After the set of pose parameters, **{thetha,t,s},** is obtained, the projection of **y** into the model coordinate frame is given as

$$X_p = M^{-1} y \quad (42)$$

Finally, the model parameters are updated as

$$b = \emptyset^T (X_p - \bar{X}) \quad (43)$$

As the result of the searching procedure along profiles, the optimal displacement of a landmark point is obtained. The combination of optimally updated landmark points generates a new shape in the image coordinate frame **y** .
This new shape is now used to find the nearest shape using Equation above. After computing the best pose, denoted by **M** , this new shape is projected into @ phi ,which contains principal components of the given training set. This process updates the model parameter **b** . As a result, only similar variation corresponding to the principal components can affect the model parameters. After computing the model parameters, the new shape, denoted by **x** , can be generated by Eq. (1 1,15), and this new shape is used for the following iterations as in Eq. above. After a suitable number of iterations, the final shape is obtained as **X,**

Modeling a Local Structure,A statistical, deformable shape model can be built by assignment of landmark points, PCA, and model fitting steps. In order to interpret a given shape in the input image based on the shape model, we must find the set of parameters that best match the model to the image. Assuming that the shape model represents strong edges and boundaries of the object, a profile across each landmark point has an edge-like local structure.
Let ***g j*** , j = 1,. . . . *n* , be the normalized derivative of a local profile of length *K* across the j t h landmark point, and *g j* and *S j* the corresponding mean and covariance, respectively. The nearest profile can be obtained by minimizing the following Mahalanobis distance between the sample and the mean of the model as

$$f(gj, m) = (gj, m - \bar{g}j)^T S_j^{-1} (gj, m - \bar{g}j) \quad (44)$$

where *gj,m* represents ***g j*** shifted by *m* samples along the normal direction of the corresponding boundary. In practice, we use a hierarchical ASM technique because it provides a wider range for the nearest profile search.
Active shape models can be applied to the tracking of people. The shape of a human body has a unique combination of head, torso, and legs, which can be modeled with only a few parameters of the ASM. ASM-based video tracking can be performed in the following order: (1) shape variation modeling, ***(2)*** model fitting, and (3) local structure modeling,

$$E = (y - M_x)^T W (y - M_x) \quad (45)$$

where **M** represents the geometric transformation of rotation *B* , translation *t,* and scale s. After the set of pose parameters, **{O,t,s},** is obtained, the projection of **y** into the model coordinate frame is given as **xp** = **M-'y** . The model parameters are updated as

$$b = \emptyset^T (X_p - \bar{X}). \quad (46)$$

Hierarchical Approach for Multiresolution ASM,Video tracking systems inherently have variously shaped and sized input objects.which often results in a poor match of the initial model with an actual input shape.The hierarchical approach to multiresolution ASM is essential for video tracking systems to deal with such large deviation of initial fitting from the original shape.
The idea of using pyramid models in image analysis was introduced by Tanimoto and Pavlidis [TanPav75] as a solution to edge detection. One important property of the pyramid model is that it is computationally efficient with comparable or better performance than with nonpyramidal approaches [Kro96]. Experiments with color stereo images have shown that matching is in general more accurate when using a hierarchical correspondence analysis instead of a nonhierarchical one. In addition, the computation time can be significantly reduced with a hierarchical approach [KosRod97].
Baumberg [Bau98] suggested a hierarchical implementation of snakes in intensity images. He discusses how a Kalman filter can be used with a snake model approach to improve shape-fitting robustness. He varies the number of landmark points in a coarse-to-fine sampling. The approach presented in this section differs from this in that (1) ASMs are used instead of snakes, (b) the same number of landmark points is used in every level of the image pyramid, and (3) a sequence of color image pyramids (one pyramid for every frame) instead of a sequence of intensity images is used for tracking. Furthermore, we will show that

our approach applying an image pyramid can significantly improve the shapefitting accuracy while Baumberg [Bau98] states that his hierarchical approach "does not appear to reduce the accuracy of image fitting" (p. 333).

The proposed hierarchical algorithm employs a quad pyramid of color images. In the calculation of a quad pyramid, each level is determined by a reduction of the resolution by a factor of four from the nearest lower level. A level *L* image represents an image that has been reduced by a factor *21L* from the original image (level 0). The color values of the pixel are determined by calculating the mean values in each color component. It is noted that a color distortion appears when calculating the mean values in the color component [Zhe et al. 931. This is, however, not important for our tracking algorithm, since in the upper levels of the pyramid only estimated values for the model fitting are determined. The final fitting values for the original color images are calculated at the lowest level (here, level 0). The example in Fig. 11.16 shows an image data pyramid with three resolutions (three levels, *L* = 3) of 320 x 240 pixels,160 x 120 pixels, and 80 x 60 pixels.

The proposed hierarchical algorithm first reduces the size of the input image by a factor of 22L, and performs model fitting on the reduced image, which we denote "level *L* image." The result from the level *L* image is used as the initial model shape for the level *L* - 1 image, and this hierarchical process continues until the result of the level 0 image is obtained.

In order to determine the optimal length of the local profiles and the corresponding number of hierarchies, denoted by *K* and *L* , respectively, different sets of these parameters are tested. Experimental results and discussions pertaining to the multiresolution ASM will be given in the next sections.

In gray-level image processing, the objective functions for model fitting are determined along the normals for a representative point in the gray-value distribution. When selecting a vector-valued technique for extending ASMs to color image sequences, derivatives of vector fields can be incorporated into the objective functions for model fitting. However, the use of derivatives of vector fields in color image processing is based on classical Riemannian geometry, which makes it difficult to apply them to color spaces other than *RGB.* Our motivation for incorporating color information into ASM-based video tracking is to have the capability to distinguish between objects (or persons) of similar shape but with different colors.

Here, we present a simpler way to deal with color information by applying a monochromatic-based technique to the objective functions for model fitting. This can be done by first computing objective hnctions separately for each component of the color vectors. Afterward, a "common" minimum has to be determined by analyzing the resulting minima that are computed for each single color component.

One method for doing this consists of selecting the smallest minimum in the three color components as a candidate. The common minimum becomes

$$\min\{\arg\min_{m} f_A(g_j,m), \arg\min_{k} f_B(g_j,k), \arg\min_{l} f_c(g_j,l)\} \quad (47)$$

where fA, *f s* , and *fc* are defined as in Eq. (1 1.2 1) for the three components in a tristimulus color space *ABC* (e.g., RGB). Consider the following example in the RGB space. We find the best fit (based on the minimization of **Eq.** (1 1.21)) for landmark point ***Y*** between frame ***i*** and frame ***i*** + 1 of the image sequence by a displacement (along the normal) of 4 pixels in the R-component, a displacement of **3** pixels in the G-component, and a displacement of ***5*** pixels in the B-component.

The new updated position of landmark point ***Y*** in frame ***i*** + 1 is its old position in frame ***i*** shifted by 3 pixels along the normal. However, if one of the three color components contains an outlier this outlier might be selected as a minimum.

Another procedure consists of selecting the mean value of the absolute minima in all three color components. The mean value becomes

$$\frac{1}{3}\{\arg\min_{m} f_A(g_j,m) + \arg\min_{k} f_B(g_j,k) + \arg\min_{l} f_c(g_j,l)\} \quad (48)$$

where all parameters are previously defined. However, outliers in one color component also lead in this case to a wrong result. Furthermore, the mean value may represent a value that does not correspond to any of the results of the energy functions' optimization. One way to overcome this problem is to use the median of the absolute minima in the three color components as a candidate.

Thereby the influence of outliers in the minima of the objective functions is minimized. The median becomes

$$\text{median}\{\arg\min_{m} f_A(g_j,m), \arg\min_{k} f_B(g_j,k), \arg\min_{l} f_c(g_j,l)\} \quad (49)$$

However, further false values may arise during the alignment of the contours.Moreover, we will further address the question whether a contrast-adaptive optimization might improve the ASM performance. This approach is motivated by the observation that in general ASMs fit better to the object contour in highcontrast areas than in low-contrast areas. For every single landmark point we will select the color channel with the highest contrast and minimize the corresponding objective function. Based on the local contrast, we use, for example, the minimum of the objective function for the red channel for landmark point 1 and theminimum of the objective function for the blue channel for landmark point 2 to compute the fitting ASM.

We studied the performance of the ASM when employing the color spaces *RGB, YUV,* and *HSI.* So far, the same procedure has been applied to all color spaces. In these experiments, the best results were obtained when using the median in the *RGB* space. In addition, we applied a hierarchical implementation using image pyramids to speed up the process and decrease the error [Kan et al. 021.

Hill et al.1994, suggested a genetic algorithm that determines the "best" form parameters from a randomly specified set of initial values. Here a manual definition of the form parameters is suitable since the initial form has only to be determined once for a class of similar-shaped objects. Our goal in this example is to track persons and to ignore other moving objects. Moreover, a maximum shift between two image frames is defined for an object to be tracked. This limitation is due to a reduction of the computing time and does not restrict the algorithm in general. The maximum shift parameter depends on the size of the object, the distance between the camera and the object. the velocity of the object, and the moving direction of the object. For example, for tracking a person in an airport we can predict the maximum size of a person, the maximum velocity of a walking or running person, and the minimum distance between the camera and a person. To limit the moving direction of a person, we can further assume that only a few persons might move toward a camera that is mounted on a wall. In this investigation the maximum shift is limited to 15 pixels for the hierarchical approach.

OTHERS METHODS

TEMPLATE MATCHING METHODS

Dan Casas et.al.(2009) ,The matching error" between the patch and any given location inside the image where this is being searched can be computed using different methods. This section gives a brief description of each of them.

In the following mathematical expressions, I denote the input image, T the template, and R the result.

- **Square difference matching methods**. These methods match the squared difference, which means that the perfect match would be 0 and bad matches would lead to large values. shows its mathematical expression.

$$R_{sq-diff}(x,y) = \sum_{x'y'} [\,T(x'y') - I(x+x',y+y')]^2 \quad) \quad (50)$$

- **Correlation matching methods**. These methods multiplicatively match the template against the image, which means that a perfect match would be the largest. follwing Equation shows its mathematical expression.

$$R_{corr}(x,y) = \sum_{x'y'} [\, T(x'y') - I(x+x', y+y')]^2 \quad (51)$$

- **Correlation coefficient matching meth**ods. These methods match a template relative to its mean against the image relative to its mean. The best match would be 1 and the worst one would be -1. Value 0 means that there is no correlation. Its mathematical expressions are shown below.

$$R_{corr}(x,y) = \sum_{x'y'} [\, T'(x'y').I(x+x', y+y')]^2 \quad (52)$$

$$I(x+x', y+y') = I(x+x', y+y') - \frac{1}{(w.h)\sum_{x''y''} I(x+x'', y+y'')} \quad (53)$$

$$T'(x', y') = T(x', y') - \frac{1}{(w.h)\sum_{x''y''} T(x'', y'')} \quad (54)$$

- **Normalized methods**. It is also possible to normalize each of the three methods that have been just described. It is useful to normalize if there is interest in reducing the effect of lighting differences between the template and the image. In every case, the normalization coefficient

$$z(x,y) = \sqrt{\sum_{x',y'} T(x',y')^2 . \sum_{x',y'} I(x+x', y+y')^2} \quad (55)$$

ALGORITHM

Step I-First frame to track
Step II- Run Face detector
Step III- If Face Found Then Go to Step IV
else
Read Next Frame and Go to Step II.
Step IV-If More than one Face Then Select Bigger Face and Go to next step
else
Go to step V.
Step V-Face= Template Go to next step.
Step VI-Set ROI around face region
Step VII- Read Next Frame, Go to next step
Step VIII-Run template matching algorithm inside ROI, Go to next step
Step IX-Update template with best match, Go to next step
Step X-Set up new ROI, Go to Step VII.

Advantages and Disadvantages of the above algorithm-As it has already been said, this is a very simple tracker and this simplicity is its main strength. Moreover, it is important to say that it is scale, pose and rotation independent, and theoretically it will keep tracking the face even when this one is not in a frontal position.But not everything is perfect; it has a lot of weaknesses and drawbacks. The first one happens when an occlusion occurs and the face is not totally visible. This situation will corrupt the template to track, because it will contain the occlusion itself, and it is possible that in the following iterations the template matching algorithm would track the occlusion instead of a the face. This could be fixed reinitializing the template to track periodically, using the face detector algorithm.

There is also a problem with the scale factor, because the tracker does not know how far or close the subject is with respect to the camera. The main consequence of this weakness is that the template size is always the same, even if the subject to track moved far away from the camera, which means that the face looks much smaller.

Finally, this tracker does not give any information about the rotation, because it does not know anything about how the face moves rather than the translation motion.

As it has been showed, this tracker is a very simple one and it is only useful when a face has to be tracked in a very simple scenario, and no information other than the translation wants to be detected.

Affine face tracker based on the eye position-This tracker is firstly initialized by the face detector based on the Viola-Jones method and then uses the template matching algorithm to found out the translation, rotation and scale factors of a frontal face very precisely. The only way to do so is tracking independently two or more points from the face, and according to how one of these moves with respect to the others it is possible to compute the affine motion of the face.

Affine transformations are used to move and transform images, or parts of them, along the two-dimensional spaces where they are represented.

Before giving a more technical definition of what an affine transformation is, it is necessary to define two other concepts: vector space and linear transformation. A vector space is defined as a system consisting of a set of generalized vectors and a field of scalars, having the same rules for vector addition and scalar multiplication as physical vectors and scalars. These vectors have to satisfy certain properties such as associativity, commutativity, identity element, inverse element and distributivity, among others.A linear transformation is a function between two vector spaces that preserves the operations of vector addition and scalar multiplication. When a translation, which is moving every point a constant distance in a specified direction, is added to a linear transformation, it causes what is known as an affine transformation. Hence, as the following equation shows, an affine transformation between two vector spaces consists in a linear transformation followed by a translation.

$$x \longrightarrow Ax + b.$$

In a finite-dimensional space, an affine transformation is given by a matrix A and a vector b, and preserves the co-linearity relation between points and the ratio of distances along a line.

homogeneous coordinates,As it has been just mentioned, an affine transformation is composed by a linear transformation and a translation. To represent such operations, ordinary vector algebra says that using matrix multiplication is possible to represent linear transformations, and for the translations vector addition is used. To represent both operations in just one, homogeneous coordinates are used. This representation requires that a "1" is added at the end of all vectors, and all matrices are augmented with an extra row of zeros at the bottom, an extra column, which is the translation vector, to the right, and a "1" in the lower right corner. Being A a matrix, the result will look like

$$\begin{bmatrix}\vec{y}\\1\end{bmatrix} = \begin{bmatrix}A & \vec{b}\\0,\dots,0 & 1\end{bmatrix}\begin{bmatrix}\vec{x}\\1\end{bmatrix} \quad (56)$$

which is equivalent to

$$\vec{y} = A\vec{x} + \vec{b}.$$

As it has been shown, the use of homogeneous coordinates makes possible to combine any number of affine transformations into one by multiplying matrices. This fact makes affine transformation very attractive. Among other advantages, it speeds up a lot its computational time.

shows a more specific example where a translation, t_x and t_y, is added to a given point.

$$\begin{bmatrix}x'\\y'\\1\end{bmatrix} = \begin{bmatrix}1 & 0 & t_x\\0 & 1 & t_y\\0 & 0 & 1\end{bmatrix}\begin{bmatrix}x\\y\\1\end{bmatrix} \quad (57)$$

which is equivalent to

$$x' = x + t_x$$
$$y' = y + t_y$$

In other words, each coordinate has been increased by its translation factor. Another example, now showing how to rotate ϵ degrees is shown below.

$$\begin{bmatrix}x'\\y'\\1\end{bmatrix} = \begin{bmatrix}cos\theta & sin\theta & 0\\-sin\theta & cos\theta & 0\\0 & 0 & 1\end{bmatrix}\begin{bmatrix}x\\y\\1\end{bmatrix} \quad (58)$$

Finally, a more complex example that shows how to integrate rotation, translation and scale in one single affine transformation.

$$\begin{bmatrix}x'\\y'\\1\end{bmatrix} = \begin{bmatrix}S_x.cos\theta & S_y.sin\theta & t_x\\-S_x.sin\theta & S_y.cos\theta & t_y\\0 & 0 & 1\end{bmatrix}\begin{bmatrix}x\\y\\1\end{bmatrix} \quad (59)$$

As in algorithm,As it has just been said, two or more points are required to detect the rotation and scale motion of any object in a video, and these points can be, for example, the eyes. If the initial position of the eyes is known, it is possible to compute the their initial slope, and if the eyes can be tracked, it will be always possible to compute their slope at any moment. Thus, the rotation of the face can be detected in any given frame.

The same idea can be applied to the scale factor. If the absolute position of each of the eyes can be computed, then their distance is also known. Depending on if this distance gets higher or lower, it means that the face is getting closer of farther. where a face is initially close to the camera and the distance between the eyes is dn_1, and in the following frame the face moved away from the camera and the new eyes distance is dn. Using affine transformations, the scale factor needed to go from frame d_{n-1} to frame n would be:

$$s = \frac{d_n}{d_{n-1}} \quad (60)$$

where, being p2(x; y) the center of the left eye and p1(x; y) the one of the right one, dn is defined as follows

$$d_n = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Once the scale, rotation and translation factors are known, it will be possible to apply the transformations that the face has been doing to the original square where the face was in the first frame. Hence, only detecting the first frontal face is enough to track the face, because this square will be modified using affine transformations along the time.

ALGORITHM

Step I - First frame to track, Go to next step.
Step II - Detect Face, Go to next step.
Step III - Detect Eyes area, Go to next step.
Step IV - If inside face area then detect right eye and go to step next
else
read next frame and go to step II.
Step IV - If inside eyes area then detect left eye and go to step next
else
read next frame and go to step II.
Step V - If on the left of right eye then set up a ROI for each eye , read next frame ,
Follows the following steps
Template matching algorithm for each eye, compute translation factor using the new eyes location, compute rotation factor using the new eyes slope, compute scale factor using the new eyes slope, set up matrix A, Transform initial face rectangle using matrix A plot new face location and set up ROI for each eye

else
read next frame and go to step II.
Advantages and Disadvantages of the above algorithm-This tracker is, in general, much more accurate than the matching template based one, , basically because this one gives information about the scale and rotation of the tracked face, and this is a very important feature for applications related with, for example, human computer interaction. Another advantage of this tracker is the eye detector and the eye tracker implemented in it, because this can lead to applications where there is interest in, for example, checking if the subject is falling sleep, or tracking his/her gaze.
But not everything is perfect; this tracker has also some important drawbacks. The most important one is its dependency on the good eye tracking by the template matching algorithm. If one of the eyes is not properly tracked, one of the points used to compute the slope and the rotation factors will not be correct, which will make the tracker to get lost.
Another important drawback is its dependency on tracking frontal faces, because the whole algorithm is based on affine transformations, which means that the tracked object has to have always the same information. If at some point the face turns to one side, there is not any affine transformation to guess how the face has moved because the face has changed its appearance. As the computation of the

Affine face tracker based on the optical Flow- All trackers showed so far were based on the template matching algorithm and, even though the previous tracker was able to detect the rotation and scale factors using the movements of the eyes, there are other more robust methods to detect the motion between two given frames. Computing the optical flow, method that was showed in the following, is another way to find the motion between two frames and, although it requires a more complex computation than the template matching algorithm, it gives a more robust and reliable performance.
Optical flow based ,Tracking consists in figuring out how the things are moving, and generally without any prior knowledge about the content of any given frame. Hence, detecting the motion between two frames is one of the requirements to develop a tracker. It is possible to associate some sort of velocity with every pixel in an image or, in other words, some displacement that represents the distance that a pixel has moved between the previous frame and the current frame, and this is exactly what dense optical flow means. Although the theory looks fantastic, in practice to calculate the dense optical flow is not easy. For example, besides template matching, there are plenty of other ways of tracking objects in a video sequence. In many of them the interest will be in finding parts, or even single pixels, from the previous frame that are recognizable in the present frame. The key questions here are two: which parts are easier to track and how they can be detected.
It is easy to realize that not all the points in a given frame are equally easy to track. For example, if a point on a large white wall is picked, it will be hard to track in the following frame because the whole wall looks the same. On the other hand, if the picked point is unique, as for example the edge of the wall could be, it might be not very hard to track in the following frame.
Thinking in a more technical way in how this unique points can be detected can lead to conclude that looking for points that have a significant change, for example a strong derivative, is a good idea. Indeed, this is a good start but not the definite solution. Usually, a point with a strong derivative belongs to a sort of edge in the image. However, finding the points of the edges is not enough because these points look very similar to each other. It will be thus necessarily to find the most relevant points among them: the corners.One of the most common definitions of what a corner is was defined by Harris Chris Harris et.al.(1988). In his paper Harris said that a unique point in any given picture has to be invariant to translation, rotation, scale and lighting. For this reason, he defined three kinds of regions: at, edge and corner. A at region does not present any change in any direction, an edge region does not change along the edge direction, and finally a corner region shows significant changes in all the directions. In the figure, arrows are green if some change happens when the window is moved in this directions and red otherwise.
In 1994, a few years after the Harris' publication Chris Harris et.al.(1988), Jianbo Shi and Carlo Tomasi Jianbo Shi et.al.(1994) found out a way to improve the method. Instead of using the Equation to compute the strength of a corner, they realized that it was enough comparing the small of the two eigenvalues λ1 and λ 2 with respect to a minimum threshold. The results using this new approach were not only sufficient but also much more accurate than the Harris one.
As it has been discussed above, not all the pixels in an image are equally difficult to track. Hence, compute the dense optical flow, which means take into account every single pixel, is a hard task. A possible solution is to apply an interpolation to the pixels that are hard to track, using the information from the ones that can be well tracked. This solution leads to a higher computational cost though.
The other solution is called sparse optical flow, and it relies in specifying the subset of points to be tracked before running the optical flow algorithm. This subset is composed by points that are good to track, such as the corners detected by the Harris or Shi and Tomasi methods. Even though it is not possible to work in real-time with dense optical flow because of its computational cost, in some context there is more interest in getting an excellent visual quality rather than a fast performance, for example in the movie production. One of the most dense flow methods used nowadays was published by Black and Anadan in 1993, but it is out of the focus of this project.
Lucas-Kanade method,The Lucas-Kanade algorithm has become one of the most important sparse optical flow techniques, mainly because it can be easily applied to a subset of points in the input image.This method relies only on the local information that comes from the surrounding area of each point of interest. The drawback of using such small windows is that in some situations large motions can move points outside of the local windows and they thus become impossible to track. To _x this problem, the pyramidal Lucas-Kanadealgorithm was developed, which tracks starting from low level detailed images and working down to higher detailed ones. Image pyramids allow that large motions can be detected by local windows.
The main idea of the Lucas-Kanad e algorithm is based on three assumptions:

- Brightness constancy. A pixel of an object from a video sequence does not change its appearance from frame to frame. In other words, for gray-scale images it is assumed that the brightness of a pixel does not change, which means that it keeps its value along the time.

Being I(x; t) the intensity of the pixel x at time t, the mathematical expression of this assumption is:

$$f(x,t) = I(x(t),t) = I(x(t+dt),t+dt) \quad (61)$$

which means, as Equation shows, that the tracked pixel intensity does not change over time.

$$\frac{\partial f(x)}{\partial t} = 0$$

- Temporal persistence. Also known as small movements", it assumes that the image motion of a surface patch changes slowly. It is possible to view this change as approximating a derivative of the intensity with respect to time. To better understand this assumption, firstly a simple one-dimensional case will be shown.

Using the brightness constancy assumption that has been just described, substituting the definition of brightness f(x; t) while taking into account the implicit dependence of x on t, x(x(t); t), and then applying the chain rule for partial differentiation showed in Equation (62),

$$\frac{dz}{dt} = \frac{\partial f}{\partial x}\frac{dx}{dt} + \frac{\partial f}{\partial y}\frac{dy}{dt} \quad (62)$$

where z = f(x; y), it yields to the following expression:

$$\frac{\partial I}{\partial x}\left|\frac{\partial x}{\partial t}+\frac{\partial I}{\partial t}\right|=0$$

where Ix is the spatial derivative across the first image, It is the derivative between images over time, and v is the velocity to be found. Hence, now it is possible to define a simple equation for the optical flow velocity for the one-dimensional case as follows:

$$v=-\frac{I_t}{I_x} \quad (63)$$

Now that the one-dimensional case has been discussed, it is time to move on to the two-dimensional one, because it is the one needed for representing images. Firstly another coordinate and its velocity,
The new equation looks as follows

$$I_x u + I_y v + I_t = 0$$

where u and v are the x and y components of the velocity, respectively. The problem of the above Equation is that it has two unknowns for any given pixel. This problem is called aperture problem and it occurs as a consequence of the ambiguity of one-dimensional motion of a simple striped pattern viewed through an aperture In order to solve this problem, the last optical flow assumption is used.

- Spatial coherence. It assumes that neighboring points that belong to the same surface have similar motion and project to nearby points on the image plane. In other words, if a local patch of pixels have the same motion, then it is possible to find the motion of the central pixel by using the surrounding ones. Taking this into account, now the above Equation can be solved.

The above equation can also be written as

$$\nabla I^T . u = -I_t$$

Where $u=\begin{bmatrix}u\\v\end{bmatrix}$ and $\nabla I=\begin{bmatrix}I_x\\I_y\end{bmatrix}$, and if, for example, a 5-by-5 pixels window is used around a given pixel to compute its motion, it is possible to set up 25 equations as follows.

$$\begin{bmatrix}I_x(p1) & I_y(p1)\\ I_x(p2) & I_y(p2)\\ \dots & \dots\end{bmatrix}\begin{bmatrix}u\\v\end{bmatrix}=-\begin{bmatrix}I_t(p1)\\ I_t(p2)\\ \dots\end{bmatrix} \quad (64)$$

This is an over-determined system of equations, and it can be solved using the least-square method, which will compute an approximated solution. Hence, to solve the equation the following expression is used

$$(A^T A)\, d = A^T b$$

which in this case will look as follows:

$$\begin{bmatrix}\sum I_x I_x & \sum I_x I_y\\ \sum I_x I_y & \sum I_x I_y\end{bmatrix}\begin{bmatrix}u\\v\end{bmatrix}=-\begin{bmatrix}\sum I_x I_t\\ \sum I_y I_t\end{bmatrix} \quad (65)$$

and which solution is:

$$\begin{bmatrix}u\\v\end{bmatrix}=(A^T A)\, d = A^T b \quad (66)$$

It is important to highlight that the above Equation has solution only when (ATA) is invertible, and this happens only when it has two large eigenvectors. Hence, it is important that the center of the tracking window is a corner, because, corners are the only regions of an image that fulfill such requirements.In other words, the subsets of pixels that are used to compute the optical flow are the ones found by the good features to track.
In algorithm, main idea is to compute how the most important pixels from the present frame move to the following one. If this motion can be found, then the affine transformation that gives the relation between these two frames can be also found. As in the affine tracker based on the eyes position, once the affine matrix between
any two given frames is known, it will be possible to bring the initial square where to face was, to the present location. In other words, the key idea is to run the face detector just in the initial frame, where the face is in a straight frontal position and can be easily detected, and bring the square around this initial location to wherever the face is in the present frame, in which maybe the face detector could not find the face due to, for example, its rotation.
Before giving further details about how this tracker works, there are a few considerations that have to be taken into account. As there is only interest in tracking the face, this area is the only part of the whole frame that will be used to compute the optical flow. Otherwise, if something in the background is also moving, this motion would be also detected and used to compute the average flow.
Advantages and Disadvantages of the above,This is a much more complicated technique, compared with the other trackers previously discussed. One of the more complex steps to do, which that requires a lot of computational effort, is warping the current frame back to almost the original position. This is done using an interpolation which takes too long in high resolution images. Furthermore, as this tracker works with affine transformations, it is also only able to track frontal faces. Regarding the good points of this tracker, the more important one is its ability to keep tracking a face even when small occlusions occur. Such situation can be handled because it is possible to compute the standard deviation of the length of all the vectors that draw the optical flow. If one of these vectors is too long with respect to all the others, it is possible to a form that its corresponding feature has not been properly tracked, which can be caused for example by an occlusion. Thus, if most of the good features can be correctly tracked, but some of them can not due to an occlusion, it will be still possible to track the face.Face tracker based on the mean face The performance of this tracker exceeds the one of the template matching based tracker, where the template used was just the last face found. That method had an important drawback: when an occlusion occurs the template to match gets corrupted with such occlusion, thus, in the following frame, if the occlusion is gone, the algorithm will not be able to match the object.
A simple way to sort out this handicap is to compute the mean of the object to track, for example, in the last 100 frames. In other words, to learn how the object looks like most of the time. Then, when a occlusion occurs, perhaps the matching template algorithm will not found any good match using the mean face, but when such occlusion disappears the tracker will automatically recover because the mean of the last 100 frames will still look good.
Algorithm,The initialization process is very similar to the one of the tracker, running the template matching algorithm until finding a face, and setting up a region of interest around it. A buffer of the last 100 faces found is created to compute a mean face in every iteration. Of course, during the first 100 frames the mean

face is computed only by the total faces detected so far. To check how good is the best match between the mean face and the present frame, the difference between them is computed and compared to a certain threshold.

- If the difference is higher than the threshold. It means either that an occlusion is happening or that the face was not properly tracked and that best match does not thus correspond to any face. In this particular case, the region of interest around that best match is set up bigger than the normal one.
- If the difference is lower than the threshold. It means that the face has been properly tracked and the best match corresponds to a face. The region of interest is set up around the new face location.

ALGORITHM

Step I- First Frame to track
Step II-Run Face Detector
Step III- If Face Found then go to step IV
else
Read next frame and go to step II.
Step IV-If more than one face then select bigger face and go to next step V
else
go to step V.
Step V-Face=template and set ROI around face region, Read next frame, Run template matching algorithm inside ROI (go to step VI) and Add found face to faces buffer.
Step VI-if Face found too different than mean face then set ROI double than the current size and read next frame in step V
else
set up normal ROI and go to Step V for read next frame.
: Algorithm of the template matching face tracker based on the mean face.
Advantages and Disadvantages for the above algorithm,The main advantage of this tracker is its ability to automatically recover when it loses the face due to dramatic movements or occlusions. This makes the tracker a very reliable and robust system because, at some point, it will automatically find again the face.
About the drawbacks, the more important one is the lack of information about the scale and rotation factors.

Non-affine eye tracker, Since most of the trackers discussed so far are based in the use of affine transformation, they are not able to deal with pose changes. This tracker shows a very simple approach of how to deal with objects that disappear from the image in a certain frame, as the eyes do when the subject turns his face to one side.
This algorithm is based on the template matching method, with which the eyes are going to be individually tracked frame by frame. Initially, the eyes can be either manually selected by clicking its center with the mouse pointer, or automatically detected using cascade classifiers trained to detect eyes, method that has been already discussed in the initialization part of the affine tracker based on the eyes position. Once the eyes have been initialized, the algorithm creates a patch for each of them. This patch will be used to track the eyes along the sequence, basically using the template matching method.The main innovation of this tracking method relies on how the algorithm detects that a tracked area, any of the eyes in this particular case, disappears from the view of the camera. In every single frame, when the template matching algorithm has found the best match for each of the patches, the new coordinates have to fulfill a list of requirements. If they do not pass them, it means that the new position that has been found is not correct and the corresponding eye is considered lost. This requirements list consists of a set of situations that can never happen in a human face. For instance, if the distance between the corners of the eye gets smaller and smaller, until it is less than 0.5 cm, it means that the subject is turning his face to one side and therefore, one eye is lost. Other requirements are related with the slope between the eyes, as it has to be the same for any given pair of eyes' corners.
When any of the eyes gets lost, the tracker keeps looking for the last correct template found in both the last position where was detected and in its original position. If the eye is lost because the subject turned his face to one side, it is assumed that he will turn back to a frontal position again. When this happens, the tracker will detect again a good match between the last good eye patch found and the current eye appearance and the eye will be tracked again.

FLOWCHART

Step I- First Frame to track, Go to next step
Step II- Detect Face and Go to next step.
Step III- Detect Eye Areas, go to next step.
Step IV- If inside face area then detect right eye corners (Go to step V)
else
read next frame and go to step II .
Step V- if inside eye area then detect left eye corners (Go to step VI)
else
Read next frames and go to step II.
Step VI- if on the left of the right eye then set up a ROI for each eye corner , read next frames and template matching algorithm for each eye corner(Go to step next)
else
Read next frames and go to step II.
Step VII -if is the best match in a possible location then Best match=new template and new location, plot best match and set up ROI for each eye corner
else
Keep the same location and template ***and set up ROI for each eye corner.***
Advantages and Disadvantages of this tracker is just a simple approach to show an easy way to keep tracking parts of the face that at some point get hidden along the sequence, but then show up again. As it does not work using affine transformations, it does not compute neither the scale or the rotation factors, but they can be easily implemented in future improvements.

CONCLUSION

Here we give the complete survey of 3D Face tracking methods. We conclude that three-dimensional Face tracking needs better algorithms. Here, better means more tolerant of real-world variety factors. At the same time, better Also means less computationally demanding. Three-dimensional Face tracking in general seems to require much more computational effort per match than does 2D face modeling. Face tracking is an important problem for a number of applications, like video surveillance, biometrics, video communications, etc. A number of methods have been described that work reasonably well under moderate changes of pose, lighting and scale. The main challenge that future research should address is robustness to changing environmental conditions, facial expressions, occlusions, clutter and resolution.

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AN EMPIRICAL EVALUATION OF INVESTORS INCLINATION ON ULIP INSURANCE PRODUCTS WITH REFERENCE TO DELHI CITY

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ABSTRACT

This project is a study on the insurance product pattern and consumers preference for ULIP life insurance products with reference to Delhi city /N C R. The main objective of this study is to find out the insurance product patterns and to find out how much the consumers in Delhi city prefer for ULIP life insurance. The research design used in this survey is interview method and descriptive type from all the segments of the people. Questionnaire method was used for the data collection. The data collected was analyzed by using simple percentage analysis, weighted average method, ranking method, analysis of variance, chi-square, F-test and correlation. Based on these analyses, findings are made and it is found out that most of the customers are satisfied with ULIP and enjoys an excellent perception of brand value.

KEYWORDS

Insurance Policies, Investors, Awareness, ANOVA, Chi-Square, Weighted Average

INTRODUCTION TO LIFE INSURANCE

Life insurance or life assurance is a contract between the policy owners and the insurer, where the insurer agrees to pay a sum of money upon the occurrence of the insured individual's or individuals' death or when the policy matures. In return the policy owner agrees to pay a stipulated amount called a premium at regular intervals or in lump sum. To be a life policy the insured event must be based upon the life of the people named in the policy.

Life policies are legal contracts and the terms of the contract describe the limitations of the insured events. Life insurance based contracts tend to fall into two major categories.

Protection Policies - It is designed to provide a benefit in the case of a specified event, typically a lump sum payment. A common form of this design is term insurance.

Investment Policies - The main objective of investment policy is to facilitate the growth of capital by regular or single premiums

OBJECTIVES OF THE STUDY

- To find out the consumer awareness and preferences for ULIP life insurance products.
- To know the extent of amount the investor like to invest and on what basis they select the ULIP life insurance products.
- To find out the consumer's preferences towards competitor's life insurance products.

RESEARCH METHODOLOGY

This study is mainly based on Descriptive research. The sample size taken for the research is 200. The sample of 10 respondents was selected and the questionnaire was pre-tested and necessary modifications were made by the researcher. Structured questionnaire was prepared for the purpose of collection of data. The secondary data for the study has been extracted from textbooks, reports and magazines and through websites. Statistical tools were used to find the inference between the variables and analyzing the results.

LIMITATIONS OF THE STUDY

- The sample sizes are restricted only 200 customers, due to the time constraints.
- The respondents' responses were not representative in nature.
- Since the study was restricted to only one place, only limited information was obtained.
- The sampling method used for the study has its own limitations like being biased or unsatisfactory.

INSURANCE INDUSTRY PROFILE

The life insurance industry has become a major job spinner. Since the time the sector opened up in 2000, there are 16 players in the business now including the state owned Life Insurance Corporation (LIC). All of them put together employ over 200,000 people. According to the Life Insurance Council, from approximately 4 lakh agents in 1999-2000 (before liberalization of the sector), today these companies employ more than 16 lakh agents - representing a growth of 300%. All life insurance companies in India have to comply with the strict regulations laid out by Insurance Regulatory and Development Authority of India (IRDA). Therefore there is no risk in going in for private insurance players.

PERCENTAGE ANALYSIS

TABLE 1 – SIMPLE PERCENTAGE ANALYSIS

S.No	Options	Respondents' size	(%)	S.No	Options	Respondents' size	(%)
Age				**Occupation**			
1.	18-20	15	7	1.	Business	65	32
2.	20-30	35	18	2.	Retired	35	18
3.	30-40	40	20	3.	Employee	60	30
4.	40-50	60	30	4.	Professional	40	20
5.	Above 50	50	25	**Monthly Income**			
Gender				1.	Below 20,000	15	7
1.	Male	120	60	2.	20,000 - 30,000	30	15
2.	Female	80	40	3.	30,000 - 40,000	35	18
Marital Status				4.	40,000 - 50,000	50	25
1.	Single	110	55	5.	Above 50,000	70	35
2.	Married	90	45	**Number of Dependents**			
Educational Qualification				1.	1-2	60	30
1.	+2	20	10	2.	2-4	110	55
2.	Graduate	60	30	3.	4-6	30	15
3.	Post graduate	80	40	**Recommendation to Friends**			
4.	Professional	40	20	1.	Yes	160	80
SOURCE: Primary Data Collection				2.	No	40	20

From the simple percentage analysis table it is inferred that half of the respondents belongs to the age group of 30-40 & 40-50. Gender and Marital status difference proportion exist most likely 3:2. Majority of the respondents are graduates. Respondents' occupation shows that less people belongs to retired category. Opinion is collected from respondents belongs to various monthly income group level. In majority of the respondents' home, the number of dependents size is limited1-2 to 2-4. Most of the respondents are ready to recommend to their friends.

WEIGHTED AVERAGE

TABLE 2 – WEIGHTED AVERAGE ANALYSIS

S. No	Options	No of respondents	Weighted average	Rank
Investors Preference For Various Investment Avenues				
1.	Shares	40	160	2
2.	Mutual funds	60	180	1
3.	Bank deposits	48	96	3
4.	Insurance policies	52	52	4
Investors Preference for Various Insurance Companies				
1.	ICICI	74	296	1
2.	HDFC	36	108	2
3.	Bajaj	22	44	4
4.	ULIP	68	68	3
Source of Awareness about ULIP Life Insurance Products				
1.	Agents	38	152	2
2.	Advertisement	84	252	1
3.	Tele callers	58	116	3
4.	Friends	20	20	4
Preference for Future Investments in Various ULIP Life Insurance Plans				
1.	Risks	38	152	1
2.	Savings	44	132	3
3.	Unit linked	68	136	2
4.	Pensions	50	50	4
Preference for ULIP Life Insurance Plans				
1.	Risk coverage	82	328	1
2.	Rider benefits	28	84	3
3.	Flexibility	44	88	2
4.	Maturity benefits	46	46	4
Preference for Competitors Products				
1.	Unit gain plus gold (Bajaj)	24	96	2
2.	Life time plus (ICICI)	90	270	1
3.	Unit linked endowment plus (HDFC)	30	60	3
4.	Automatic investment plan(RELIANCE)	56	56	4
Preference for ULIP Whole Life Plan				
1.	Maturity benefits	62	248	1
2.	Life cover benefits	56	168	2
3.	Rider benefits	38	76	3
4.	Choices to extend	44	44	4
Respondents Selection of Group Leave Encashment Fund Options				
1.	Money market fund	86	344	1
2.	GILT fund	22	66	3
3.	Corporate bond fund	40	80	2
4.	Equity fund	52	52	4
Respondents Selection of ULIP Connect 2 Life Plan				
1.	No medicals	32	128	1
2.	No hassles	42	126	2
3.	High sum rebate	46	92	3
4.	Loan against policy	10	10	4
Most Attractive Feature of ULIP Golden Years Plan				
1.	Flexibility	44	176	2
2.	Switching of funds	60	180	1
3.	Tax free commutations	78	156	3
4.	Vesting age	18	18	4

SOURCE: Primary Data Collection

From the weighted average analysis table it is inferred that, the respondents' first preference in the investment avenues is mutual funds. ICICI life insurance holds the first place among the selected private insurance companies. The respondents came to know the ULIP life insurance Plans mainly through the Advertisements. While determining the future investment much importance given to risk coverage. Among the competitors policy ICICI life insurance plans stands at first. In ULIP Whole Life Insurance Plan selection Maturity benefits criteria holds the first place. Money market fund reserves the first place in the selection of Group Leave encashment fund option. Respondents' preference in the connct2 life insurance plan is no medical scheme. Switching of funds features is considered to be most attractive feature of ULIP Golden Years Plan.

RANKING METHOD

TABLE 3 - RANKING ANALYSIS

S.No	Options	No of respondents	Rank
Level of investment in ULIP life Insurance			
1.	10,000-50,000	24	4
2.	50,000 – 1,00,000	68	1
3.	1,00,000 – 2,00,000	64	2
4.	2,00,000 – 3,00,000	44	3
Expected Rate of Return from ULIP Life Insurance			
1.	10-15%	68	1
2.	15-20%	34	4
3.	20-25%	56	3
4.	25-30%	62	2
Expected Rate of Return From ULIP			
1.	10-15%	84	1
2.	15-20%	32	3
3.	20-25%	22	4
4.	25-30%	60	2
Selection of Group Leave Encashment Plan			
1.	Flexible design	88	1
2.	Switching benefits	74	2
3.	Discontinuance	38	3
Selection of ULIP Endowment Plans			
1.	Survival benefits	78	1
2.	Maturity benefits	80	2
3.	Life cover benefits	42	3

Source: Primary Data Collection

From the ranking analysis it is inferred that respondent's preferable choice on the level of investment in ULIP life Insurance Policy is 50,000-1,00,000. Most of the respondents expected rate of return in ULIP Life Insurance and ULIP is 10-15%, it indicates that less risk level preference. Flexible design policy stands at first in the selection of group leave encashment plan and likely survival benefits holds the first rank in the selection of ULIP Endowment plan.

ANALYSIS OF VARIANCE

SELECTION OF ULIP LIFE INSURANCE BASED ON THE AMOUNT OF INVESTMENT

H_0: There is no significant relationship between the amount they would like to invest and the basis they select ULIP life insurance products.

TABLE 4 – ANOVA

Amount of investment Selection of ULIP Life Insurance	Number of respondents				Total
	Risk cover	Rider benefits	Flexibility	Maturity benefits	
10000-50000	9	4	6	5	24
50000-100000	28	9	15	16	68
100000-200000	26	9	14	15	64
200000-300000	19	6	9	10	44
TOTAL	82	28	44	46	200
Source of variation	**SS**	**DOF**	**Variance**	**F ratio**	**TV@1%**
Between columns	390	4-1=3	390/3=130	F=130/6.89=18.87	F(3,9)
Between rows	308	4-1=3	308/3=102.67	F=102.67/6.89=14.90	= 6.99
Residual	62	3*3=9	62/9=6.89		

Source: Primary Data collection

From the analysis of variance table, it is inferred that calculated value is greater than the table value, therefore reject the null hypothesis .i.e. there is a significant relationship between the amount they would like to invest and the basis they select ULIP life insurance products.

SATISFACTORY LEVEL BASED ON THE OCCUPATION OF THE RESPONDENTS

H_0: There is no significant relationship between the satisfactory level and the occupation of the respondents.

TABLE 5 – ANOVA

Occupation & Satisfaction Level	Number of respondents					Total
	HS	S	MOD	DS	HDS	
Business	20	26	7	7	5	65
Retired	10	14	5	4	2	35
Employee	18	24	7	6	5	**60**
Professional	12	16	5	3	4	**40**
Total	60	80	24	20	16	200
Source of variation	**SS**	**DOF**	**Variance**	**F ratio**	**TV @1%**	**Result**
Between columns	808	5-1=3	808/4=202	F= 202/12.8 =15.78	F(4,15) = 4.89	CV>TV Reject H0
Within column	192	20-5=15	192/15=12.8			
Total	1000	20-1=19				

Source: Primary Data Collection

From the analysis of variance table, it is inferred that calculated value is greater than table value; therefore reject the null hypothesis .i.e. there is a significant relationship between the satisfactory level and the occupation of the respondents

TAILOR MADE INVESTMENT PLANS IN ULIP MARKET RETURN PLAN BASED ON QUALIFICATION

H_0: There is no significant relationship between the tailor made investment plans in ULIP market return plan and qualification.

TABLE 6 – ANOVA

Educational Qualification & Tailor Made Investment Plan	Number of respondents				Total
	Capital fund	Balance fund	Growth fund	Equity fund	
+2	9	27	4	3	20
Graduate	27	12	12	9	60
Post graduate	36	16	16	12	80
Professional	18	8	8	6	40
Total	90	40	40	30	200
Source of variation	**SS**	**DOF**	**MS**	**F ratio**	**TV @1%**
Between columns	550	4-1=3	550/3=183.33	183.33/50.83 =3.60	F(3,12) = 5.95
Within column	610	16-4=12	610/12=50.83		
Total	1160	16-1=15			

Source: Primary Data Collection

From the analysis of variance table, it is inferred that calculated value is greater than the table value, hence reject the null hypothesis .i.e. there is a significant relationship between the education qualification and tailor made investment plans in ULIP market return plan.

CHI-SQUARE ANALYSIS

H_0: There is no significant relationship between the gender and the recommendation of ULIP life insurance products to friends and relatives.

H_0: There is no significant relationship between the selections of group leave encashment on the basis of their educational qualification.

H_0: There is no significant relationship between the expected rate of return and occupation.

TABLE 7 – CHI-SQUARE ANALYSIS

Factor1	Factor2	CV	TV @5%	Criteria	Remarks
Gender	Recommendation to others	3.16	3.841	CV<TV	Not significant
Educational Qualification	Selection of Group Leave Encashment Plan	0.16	16.919	CV<TV	Not significant
Occupation	Expected Rate of Return	2.53	16.919	CV<TV	Not significant

Source: Primary Data Collection

From the chi-square table it is inferred that for all the factors taken for the study the calculated value is lesser than the table value. Therefore the null hypothesis gets accepted. Nevertheless of gender the respondents are ready to recommend the ULIP Life Insurance products to their friends and relatives. Education qualification is not the major influence on the selection of Group leave encashment plan. Expected rate of return is not varied due to the respondents' occupation.

F-TEST

H_0: There is no significant relationship between the selection of ULIP health + wealth plan and monthly income.

H_0: There is no significant relationship between the investors' preference for various investment avenues and age group.

H_0: There is no significant relationship between the unique flexibility of ULIP golden years plan and occupation.

TABLE 8 – F-TEST

Factor1	Factor2	CV	TV	Criteria	Remarks
Monthly income	ULIP Health Plus Wealth Plan	$S2^2/S1^2$ = 624/ 437.5 = 1.42	6.59	CV<TV	Not significant
Age group	Preference for Investment Avenues	$S2^2/S1^2$ = 287.5/ 202.6 = 1.41	9.12	CV<TV	Not significant
Occupation	Selection of Golden Years Plan	$S2^2/S1^2$ = 648/ 216.66 =2.99	9.28	CV<TV	Not significant

Source: Primary Data Collection

From the F test analysis it is inferred that calculated value is lesser than the table value for all the factors. Therefore accept the null hypothesis. Monthly Income is not making any influence in the selection of ULIP Health and Wealth Plan. Preference of investment avenues is not based on the age level of the respondents. Occupation is playing meager role in the selection of golden years plan.

COEFFICIENT OF CORRELATION

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{n\sum x^2 - (\sum x)^2}\sqrt{n\sum y^2 - (\sum y)^2}}$$

H_0: There is no positive correlation between the selection of insurance companies and the occupation of the respondents.

H_0: There is no positive correlation between the return from ULIP and the qualification of the respondents.

H_0: There is no positive correlation between the preference for ULIP endowment plan and the no of family members.

TABLE 9 – CALCULATION OF COEFFICIENT OF CORRELATION

Factor1	Factor2	r Value	r Type	Result
Selection of Insurance Companies	Occupation	0.027	Positive	Reject H0
Return from ULIP Policy	Qualification	-1.07	Negative	Accept H0
Preference for Endowment Plan	Number of Dependents	0.809	Positive	Reject H0

Source: Primary Data Collection

Karl Pearson's coefficient of correlation shows a very low degree of positive correlation between the selection of insurance companies and occupation. Therefore we reject the null hypothesis. Moreover it shows negative correlation between the return from ULIP and qualification. Therefore we accept the null hypothesis that qualification is not the major criteria which determines the return from ULIP policy. Very low degree of positive correlation exists between the preference for endowment plans and number of family members. Therefore we reject the null hypothesis and we conclude that number of family dependents is considered to be the very important factor while selecting the endowment plan.

FINDINGS

- From the simple percentage analysis table it is inferred that half of the respondents belongs to the age group of 30-40 & 40-50. Gender and Marital status difference proportion exist most likely 3:2. Majority of the respondents are graduates. Respondents' occupation shows that less people belongs to retired

category. Opinion is collected from respondents belongs to various monthly income group level. In majority of the respondents' home, the number of dependents size is limited1-2 to 2-4. Most of the respondents are ready to recommend to their friends.

- From the weighted average analysis table it is inferred that, the respondents' first preference in the investment avenues is mutual funds. ICICI life insurance holds the first place among the selected private insurance companies. The respondents came to know the ULIP life insurance Plans mainly through the Advertisements. While determining the future investment much importance given to risk coverage. Among the competitors policy ICICI life insurance plans stands at first. In ULIP Whole Life Insurance Plan selection Maturity benefits criteria holds the first place. Money market fund reserves the first place in the selection of Group Leave encashment fund option. Respondents' preference in the connct2 life insurance plan is no medical scheme. Switching of funds features is considered to be most attractive feature of ULIP Golden Years Plan.
- From the ranking analysis it is inferred that respondents preferable choice on the level of investment in ULIP life Insurance Policy is 50,000-1, 00,000. Most of the respondents expected rate of return in ULIP Life Insurance and ULIP is 10-15%, it indicates that less risk level preference. Flexible design policy stands at first in the selection of group leave encashment plan and likely survival benefits holds the first rank in the selection of ULIP Endowment plan.
- From the analysis of variance table, it is inferred that calculated value is greater than the table value, therefore reject the null hypothesis .i.e. there is a significant relationship between the amount they would like to invest and the basis they select ULIP life insurance products and there is a significant relationship between the satisfactory level and the occupation of the respondents. Moreover it is concluded that there is a significant relationship between the education qualification and tailor made investment plans in ULIP market return plan.
- From the chi-square table it is inferred that for all the factors taken for the study the calculated value is lesser than the table value. Therefore the null hypothesis gets accepted. Nevertheless of gender the respondents are ready to recommend the ULIP Life Insurance products to their friends and relatives. Education qualification is not the major influence on the selection of Group leave encashment plan. Expected rate of return is not varied due to the respondents' occupation.
- From the F test analysis it is inferred that calculated value is lesser than the table value for all the factors. Therefore accept the null hypothesis. Monthly Income is not making any influence in the selection of ULIP Health and Wealth Plan. Preference of investment avenues is not based on the age level of the respondents. Occupation is playing meager role in the selection of golden years plan.
- Karl Pearson's coefficient of correlation shows a very low degree of positive correlation between the selection of insurance companies and occupation. Therefore we reject the null hypothesis. Moreover it shows negative correlation between the return from ULIP and qualification. Therefore we accept the null hypothesis that qualification is not the major criteria which determines the return from ULIP policy. Very low degree of positive correlation exists between the preference for endowment plans and number of family members. Therefore we reject the null hypothesis and we conclude that number of family dependents is considered to be the very important factor while selecting the endowment plan.

SUGGESTIONS

- ULIP Life Insurance Company must concentrate more on the age group of below 30 categories. The company can mainly concentrate on the advertisement area as the main source of creating awareness to the people. The competitors for the ULIP Life Insurance are the reputed companies, so the competition can be overcome through by launching new products and new strategies like policy covering Female segments.
- The company can develop some plans to attract the retired group segment. Proper incentives and commission can be provided to the customers those who are recommend ULIP Life Insurance products to their friends and relatives circle.
- Least preference was given to insurance policies in the investment avenue. Company must take some initiative steps to make the insurance as the main source of Investment Avenue.
- Only a certain percentage of the respondents know about ULIP life insurance through friends and tele-calling. So it is necessary to improve and concentrate more on its tele-calling activities.

CONCLUSION

The study on ULIP life insurance is to find out the insurance product pattern and consumers preference towards ULIP life insurance products. The survey was conducted with the consumers, for getting a clear picture of the market towards different aspects of ULIP life insurance products. ULIP life insurance is a reputed brand and it faces severe competition from other life insurance companies. In order to face competition in a professional way, the company must change its strategies and make efforts to improve its position in the market. By adopting better advertisement, recruitment of skilled executives etc ULIP can achieve a very good position in the market. So with these views in mind, the company should go in future.

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A STUDY ON THE TRAFFIC PROBLEMS WITH SPECIAL REFERENCE TO NELLORE DISTRICT

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ABSTRACT

Unorganized traffic on the roads creates traffic jams and inconvenience to the people. The present study is aimed to identify various factors that influence the perceptions of different sections of people and the association of perception scores with the personal characteristics of people. Factor analysis technique has been applied for the analysis of perceptions of the people. The results of factor analysis shows that traffic rules are the most important factor followed by movement of vehicles, organization of roads, role of traffic police, road safety, role of vehicle drivers, and the role of passengers. The findings of the Pearson's Chi-square test show that gender, age and occupation have not shown any significant association with the perception scores of people. There are not many published results on traffic problems to confirm or compare the results of the perceptions of the people. The factors developed require further development and empirical testing.

KEYWORDS

Movement of vehicles, organization of roads, perceptions, role of vehicle drivers, traffic rules.

INTRODUCTION

Traffic on roads may consist of pedestrians, ridden or herded animals, vehicles, streetcars and other conveyances, either singly or together. Today's competitive environment forces the automobile and car manufacturers to introduce a new model of their bike or car, keeping the youth in mind. These manufacturers know the purchasing power of the youth and hence, new trendy, fuel efficient and peppy models came on roads. With each passing day a new model adds to the number of vehicles present on the congested streets. It is also a fact that the population has also increased manifold beyond horizon.

As a result of using the public roads for various purposes of travel, heavy and unorganized traffic is possible on the roads causing traffic jams and hence, inconvenience to the people. An organized traffic generally follows traffic laws, which are the laws to govern traffic and regulate vehicles that may have developed over time to facilitate the orderly and timely flow of traffic. An organized traffic has well-established priorities, lanes, right-of-way, and traffic control at intersections. It is formally organized in many jurisdictions, with marked lanes, junctions, intersections, interchanges, traffic signals, or signs.

In the absence of lane markings and traffic control signals on roads, drivers tend to keep to the appropriate side, if the road is wide enough and they frequently overtake others causing uncontrolled traffic problems, and these obstructions are quite common now a days. At the intersection of two perpendicular roads, a traffic jam may result if four vehicles face each other side-on. People face many problems due to the uncontrolled traffic. Except at a few junctions, many of the major junctions with heavy traffic do not ensure pedestrian crossing and traffic signals. This leaves them helplessly running across the road even when vehicles are approaching them from another side. Pedestrians' lives must be cared for, if the government has to encourage more to take to walking instead of zip up swanky vehicles

Traffic is often classified by type: heavy motor vehicle (e.g., car, truck); other vehicle (e.g., moped, auto, bicycle); and pedestrian. Different classes may share speed limits and easement, or may be segregated. Some jurisdictions may have very detailed and complex rules of the road while others rely more on drivers' common sense and willingness to cooperate. To handle this situation we have a limited number of traffic policemen and it becomes virtually impossible for the traffic department to check all vehicles manually whether they are moving as per rules or not.

Nellore is one of the recently developing towns in Andhra Pradesh, also facing the traffic problem. The people in the town are often complaining about traffic problems at various locations and the time they lost and inconvenience they faced during the traffic jams. As against this back ground a survey has been conducted to know the various factors behind the traffic problems. The present survey will help the authorities to develop more appropriate plans to reduce the traffic problems, and these could be incorporated into a well designed set of traffic rules for better performance of traffic.

SIGNIFICANCE OF THE STUDY

The traffic problem is one of the important problems everyone is facing in the present environment, and it is not an exception to the management phase. The free flow of vehicular traffic on the roads gives the feeling of satisfaction with which the people as individuals and as groups get easy and comfortable transportation. It is a state of healthy balance wherein the public make their respective contributions to follow the rules set by the traffic police. With the government policy of privatization and liberalization, a large number of private transport vehicles are entered into the market in addition to individual mode of transportation. Because of the increased income levels of various kinds of people and easy availability of loans from the banks, the demand for individual mode of transport is still on the increasing side. As a result of various modes of transportation, the traffic also increased. The trend in the introducing of various models of new vehicles is still showing an uptrend. In a competitive environment every vehicle manufacturer is interested to improve his position by creating a strong base for its survival. All these factors create a traffic problem to the public. Hence a study has been made to know the factors that are responsible for the effective management of traffic. To study the traffic management and the factors responsible for it, various factors which are directly or indirectly related to the traffic were considered. The need for the study is to ascertain specific problems of travelling public and to find out the ways to overcome them. The present study will helps to develop more appropriate strategies to minimize the traffic problems of the people, and these could be incorporated into a well designed set of rules and regulations, further this study also helps as one of the source for the secondary data for future research on this related area.

OBJECTIVES OF THE STUDY

The purpose of this study is to investigate the perceptions of travelling people towards an effective traffic management. The study may give important factors in managing the traffic at different places. The following are the research objectives formulated to guide the study.

1. To find out the factors affecting the perceptions of people towards traffic management, and
2. To investigate the relationship of perceptions with personal variables of customers.

HYPOTHESIS

This study infers that there is no difference between the perceptions and gender as well as age and occupation of passengers. Against this background, the statement of hypothesis is as follows.

1. $H_0$1: There is no significant association between perceptions and gender of the respondents.
2. $H_0$2: There is no significant association between perceptions and age of the respondents.
3. $H_0$3: There is no significant association between perceptions and occupation of the respondents.

METHODOLOGY

INSTRUMENT DEVELOPMENT

The instrument used in this study consists of three parts. The first part deals with the demographic profile such as gender, age, and occupation of the respondents. Part two deals with a questionnaire prepared for exploring the perceptions of the travelling public towards traffic management. It consists of 20 questions, each of which is measured on four point Likert's scale, in which, 1 indicated "strongly disagree", 2 indicated "disagree",3 indicated "agree", and 4 indicated 'strongly agree". Contents and validity of the statements were established by experts consisting of top officials and other important persons on traffic management. Each of the experts on the panel was asked to verify the instrument for clarity, wording, overall appearance and meaning in addition to content and validity. The instrument was pilot tested with a group of people, not included in the sample.

DATA COLLECTION

Personnel interview method was adopted to collect data from the respondents. Data were collected from various occupations of respondents passing on the roads in and around Nellore District in India. A total of 250 respondents were selected randomly and questionnaires were delivered to them. The data were systematically collected during the period between April 2011 and May 2011. Nearly 10 numbers of responses received were with incomplete answers i.e. not answered properly. Hence they were treated as unusable responses and thus eliminated from the study.Thus,a total of 240 responses were received.

ANALYSIS OF DATA

The primary data collected have been sorted, classified and tabulated in a format and analyzed by using statistical package for social sciences (SPSS16.0). Appropriate statistical procedures like Factor analysis, Chi-square tests and averages have been used for analysis and inference. The factor analysis allows for defining the factors affecting the perceptions of people towards traffic management and Chi-square test is applied to find the association between perceptions and personal characteristics of the people.

RESULTS AND ANALYSIS

PROFILE OF THE RESPONDENTS

Of those responding to the questionnaire, it was found that 60.4percent (145**)** were male while 39.6 percent (95) were female (Table 1). The table further shows that the respondents selected for the study are male dominated. Out of which 15 percent (36) of the respondents are below 25 years of age, 34.16 percent (82) are in the age group of 25 to 35 years, 28.76 percent (69) are in the age group of 35 to 45 years and 22.08 percent (53) respondents are with above 45 years of age. An analysis of the age of the respondents reveals that majority of the respondents are in the age group of 25 to 35 years. Similarly, 27.08 percent (65) of the respondents belongs to students stream, 30.83 percent (74) belongs to employees, 20.43 percent (49) belongs to farmers, 12.5 percent (30) belongs to labour and the remaining 9.16 percent (22) of the respondents belongs to others stream.

TABLE 1: DEMOGRAPHIC PROFILE OF RESPONDENTS

1.Gender	No of Respondents	Percentage
a) Male	145	60.4
b) Female	95	39.6
Total	**240**	**100**
2.Age		
(a) Less than 25 Years	36	15.00
(b) 25-35 Years	82	34.16
(c) 35-45 Years	69	28.76
(d) Above 45 Years.	53	22.08
Total	**240**	**100**
3. Occupation of Respondents		
(a) Student	65	27.08
(b) Employee	74	30.83
(c) Farmer	49	20.43
(d) Labour.	30	12.5
(e) others	22	9.16
Total	**240**	**100**

RELIABILITY

The internal reliability of various items of the questionnaire was verified by calculating Cronbach's alpha. Cronbach's alpha is used to measure the reliability of the instrument that ranges from 0 to 1, with values of 0.6 as lower level of acceptability (Hair et al.1998 & Nunnaly, 1978). The Cronbach's alpha estimated in the present study for computing the perceptions of passengers was 0.712, which is much higher than the acceptable level, the constructs were therefore deemed to have adequate reliability.

FACTOR ANALYSIS

The basic reason for applying factor analysis is to group the variables that are highly correlated. The factor analysis involves extraction of factors from a correlation matrix, deciding how many factors to be interrupted and finally rotating the retained factors. (Alias Radam et al, 2010). The adequacy of data for applying factor analysis has been verified by Kaiser-Meyer-Oklin (KMO) test. Generally, a value greater than 0.5, indicates that the factor analysis is appropriate. (Naresh Malhotra,2009). In the present study the KMO test value is 0.641shows that sample selected for the study is adequate and is statistically significant for factor analysis. Data were subjected to factor analysis and the factors were generated using principle component analysis and varimax rotation. The principal component analysis in data extraction extracted seven factors with Eigen values above 1.0. The Table 2 shows the factor analysis of results.

TABLE 2: FACTOR ANALYSIS RESULTS

Factor 1(Traffic rules)		Loadings	Mean scores	Eigen value =3.402 Percentage of variance =17.904
S3	Everyone is following the traffic signals	0.702	2.52	
S15	Traffic awareness programme is to be provided to the public	0.811	2.67	
Factor 2(Movement of vehicles)				
S9	More problem with auto rickshaws	0.661	3.73	Eigen value =2.746 Percentage of variance =14.453
S10	Heavy vehicles cause traffic problems	0.785	3.57	
S14	Share autos cause many problems	0.596	3.86	
Factor 3(Organization of roads)				
S4	White lines at the signals marked	0.835	2.07	Eigen value =2.039 Percentage of variance =10.730
S5	Pedestrian lines are marked	0.838	2.04	
S16	Proper organization of road route exists	0.663	2.65	
Factor 4(Role of traffic police)				
S7	Traffic police is available at signals	0.816	2.81	Eigen value =1.619 Percentage of variance =8.523
S17	Need for alternative roads exists	0.521	3.23	
S18	At the cross roads and junctions traffic maintained properly	0.426	2.56	
S19	The traffic police is doing duty honestly	0.635	2.25	
Factor 5(Road safety)				
S11	Road dividers exists	0.655	2.78	Eigen value =1.243 Percentage of variance =6.543
S12	Sufficient number of speed breakers exist	0.831	2.72	
Factor 6(Role of vehicle drivers)				
S8	Vehicle drivers are not aware of the traffic	0.504	3.13	Eigen value =1.080 Percentage of variance =5.684
S13	Buses pick or drop passengers at the Bus stop only	0.844	2.98	
Factor 7(Role of public)				
S1	Traffic signals are functioning well	0.642	3.14	Eigen value =1.005 Percentage of variance =5.288
S6	Customers follow the traffic rules	0.795	2.49	
Total Percentage of Variance = 69.125				

The seven factors are namely, traffic rules, movements of vehicles, organization of roads, role of traffic police, road safety, role of vehicle drivers, role of passengers, and the total variance explained is 69.125 percent. According to Hair et al (1998), the sum of square of the factor loadings of each variable on a factor represents the total variance explained by the factor. And, so Eigen values greater than 1.0 are considered significant and a total variance greater than 60 percent is also considered satisfactory. Further, the percentage of variance explained is a summary measure indicating how much of the total variance of all variables the factor represents and the percentage of variance explained statistically useful in evaluating and interpreting the factor (Aaker et al., 2001).

As per the analysis, the most important factor accounting for 17.904 percent of variance is Traffic rules. The statements of this factor are related to awareness about the traffic rules. This factor consists of two variables namely, everyone is following the traffic signals and traffic awareness programmes are to be provided to the public. The item loadings for the statements are 0.702 and 0.811 and the mean values are 2.52 and 2.77 respectively. The mean scores of the factors indicated that customers are more inclined towards 'agree'.

The second factor named,' movements of vehicles' explained a total variance of 14.453%. It consists of three statements and the items are loaded from 0.596 to 0.785. The mean values of the variables showed that customers are somehow strongly agreed with the statements regarding more problems with auto rickshaws (3.73), heavy vehicles cause traffic problems (3.57), and share autos cause many problems (3.86).

The third factor is the 'organization of roads' recorded 10.730% of total variance and it consists of three statements. These items are loaded from 0.663 to 0.838. The mean values of the statements are white lines at the signals marked (2.07), pedestrian lines are marked (2.04), proper organization of road route exists (2.65). The analysis of the overall mean value of the factor shows that the respondents are more inclined towards 'disagree'.

The role of traffic police being the fourth factor recorded 8.523 % of total variance. This factor consists of four statements and their factor loadings are ranging from 0.406 to 0.816. The mean values of the statements are traffic police is available at signals (2.81), need for alternative roads exists (3.23), at the cross roads and junctions traffic maintained properly (2.56), the traffic police is doing duty honestly (2.25). The analysis of the overall mean value of this factor shows that the respondents are more inclined towards 'agree'.

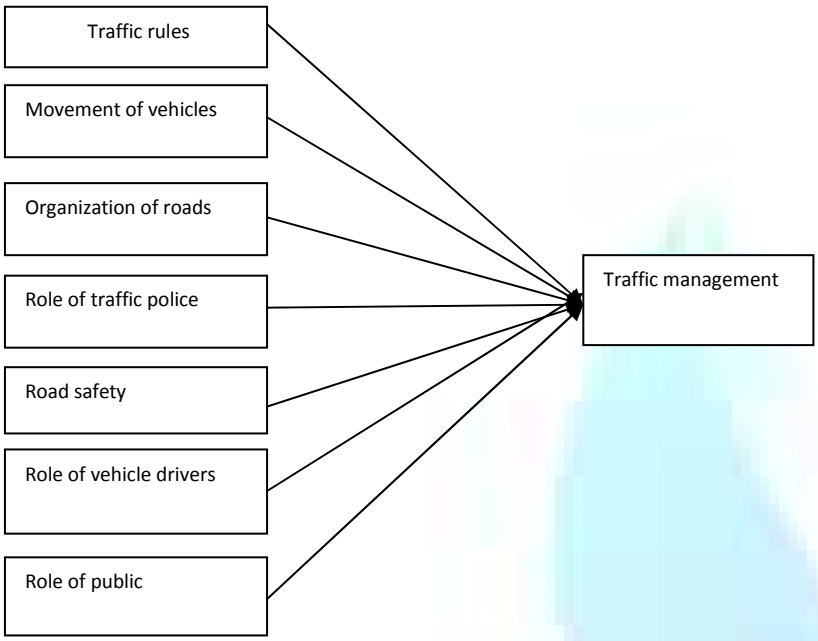
The fifth factor named road safety recorded 6.543 % of total variance. This factor consists of the statements such as road dividers exist and sufficient number of speed breakers exists. The factor loadings of the two statements are 0.655 and 0.831 and the corresponding mean values are 2.78 and 2.72 respectively. The overall mean value of this factor is more inclined towards 'agree'.

The sixth factor is the role played by the vehicle drivers. This factor recorded a total variance of 5.684 %. This factor consists of two statements such as Vehicle drivers are not aware of the traffic and buses pick or drop passengers at the bus stop only. The factor loadings of the two statements are 0.504 and 0.844 and the corresponding mean values are 3.13 and 2.98 respectively. The overall mean value of this factor is more inclined towards 'agree'.

The seventh factor named role of public recorded a total variance of 5.288 %. This factor also consists of two statements such as traffic signals are functioning well and customers follow the traffic rules. The factor loadings of the two statements are 0.642 and 0.844 and the corresponding mean values are 3.14 and 2.49 respectively. The overall mean value of this factor is also inclined towards 'agree'. This factor is the least important factor explaining only 5.288 % of total variance. The overall mean score of the factors shows that movement of vehicles on the roads ranked the first response. Similarly, the role played by the vehicle drivers and the role of the customers are the other factors occupied second and third best responses.

SCHEMATIC DIAGRAM OF TRAFFIC MANAGEMENT

FIG 1: THEORETICAL FRAME WORK OF TRAFFIC MANAGEMENT



A theoretical frame work for the solutions to traffic problems is developed based on the objectives of the study. The model is developed in consistence with the various factors that represent the traffic related problems. The development of this model will provide a sound base and will helps in further examination as to what extent can these factors influence the solutions to traffic problems.

TEST OF HYPOTHESIS

To satisfy the one of the objectives of the study and to test the association between the perceptions and the personal characteristics of the respondents, such as gender, age and occupation, Pearson's Chi-square test has been applied. Based on the data obtained from the respondents, the perception scores have been calculated.

The perceptions of the customers may be Low or Normal or High. The highest possible score by the individual is 80 and the lowest possible score is 20. On the basis of the perceptions of the sample respondents, they were divided into three groups i.e. Low, Normal and, High (Table.3). Those who scored between 20 and 40 are identified as having Low perception, between 41 and 60 are identified as having Normal perception, and between 61 and 80 are identified as having perception at High level.

TABLE 3: PERCEPTION SCORES OF SAMPLE RESPONDENTS

Perception	No of Respondents	Percentage
Low (20-40)	55	22.91
Normal (41-60)	123	51.25
High (61-80)	62	25.84
Total	240	100.0

It is clear from Table.3, that the majority of respondents i.e., 51.25 percent are having normal perception about the traffic, followed by 25.84 percent of the respondents with high perception and 22.91 percent of the respondents with low perception.

TESTING OF HYPOTHESIS 1

Null hypothesis: There is no significant association between perceptions and gender of the respondents.

Alternative hypothesis: There is a significant association between perceptions and gender of the respondents.

TABLE 4: GENDER AND PERCEPTIONS OF RESPONDENTS

Perception Scores	Gender		Total
	Male	Female	
Low	31	24	55
Normal	75	48	123
High	39	23	62
Total	145	95	240
Df = (r-1)(c-1) =2.		Chi Square value is 0.7728	

Interpretation 1: For 2 degrees of freedom, Chi square value at 5 % level of significance is 5.9915. The calculated value of Chi square is 0.9317, which is less than the table value. Therefore the association between gender and the perception is not significant. Thus, the null hypothesis is accepted.

TESTING OF HYPOTHESIS 2

Null hypothesis: There is no significant association between perceptions and age of the respondents

Alternative hypothesis: There is a significant association between perceptions and age of the respondents

TABLE 5: AGE AND PERCEPTIONS OF RESPONDENTS

Perception Scores	Age				Total
	Less than25	25-35	35-45	Above 45	
Low	10	15	15	15	55
Normal	12	44	37	30	123
High	14	23	17	8	62
Total	36	82	69	53	240
Df = (r-1)(c-1) =6.				Chi Square value is 9.5065	

Interpretation 2: For 6 degrees of freedom, Chi square value at 5 % level of significance is 12.592. The calculated value of Chi square is 9.5065, which is less than the table value. Therefore the association between age and the perception is not significant. Thus, the null hypothesis is accepted.

TESTING OF HYPOTHESIS 3

Null hypothesis: There is no significant association between perceptions and occupation of the respondents

Alternative hypothesis: There is a significant association between perceptions and occupation of the respondents

TABLE 6: OCCUPATION AND PERCEPTIONS OF RESPONDENTS

Perception Scores	Occupation					Total
	Students	Employees	Farmers	Labors	Others	
Low	16	16	11	5	7	55
Normal	32	38	25	16	12	123
High	17	20	13	9	3	62
Total	65	74	49	30	22	240
Df = (r-1)(c-1) =8.					Chi Square value is 3.0606	

Interpretation 3: For 8 degrees of freedom, Chi square value at 5 % level of significance is 15.507. The calculated value of Chi square is 3.0606, which is less than the table value. Therefore the association between age and the perception is not significant. Thus, the null hypothesis is accepted.

CONCLUSION

The customer's perceptions towards traffic problems have been studied to determine a solution to the traffic problem. The results of factor analysis technique shows that traffic rules is the most important factor followed by movement of vehicles, organization of roads, role of traffic police, road safety, role of vehicle drivers and role of public. Therefore traffic management authorities must give utmost importance to these factors to overcome the traffic problems faced by them as all these factors contribute to the positive perceptions of customers towards traffic management.

Chi-square test has been used to study the relation of perception scores and the personal characteristics of the respondents. The results of Chi-square test show that there is no significant relation with gender, age and occupation of the respondents. Factors mean score values indicate that traffic rules recorded the lowest response among other factors. The reason for the poorest response may be due to non awareness about the traffic rules and absence of proper follow up. Organization of roads is the next lowest response factor. The reason for getting dissatisfaction on this factor may be due to absence of white lines at the signals points and no pedestrian lines. The next poorest response is related to the role of traffic police. It may be due to non availability and dishonest on the working of police people at the traffic areas. On the other hand, the respondents have given first response to vehicles movement factor. The reason may be due to more disturbances faced by the customers with auto movers and sudden stopping of their vehicles at different traffic areas. The next best response factors are the role played by the vehicle drivers, followed by the role of public, shows that the attitude of the vehicle drivers and public plays a majority role in minimizing the traffic problem.

The analysis of this research paper and the results obtained will provide a strong base to the traffic control authorities on various factors to be taken into consideration, to minimize the traffic problems and to focus attention on the factors for the effective management of the same.

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A STUDY ON LEAN MANAGEMENT IN CHENNAI PORT

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ABSTRACT

In the present scenario of the fast moving world, every operational functions in any industry requires to be effective and efficient in order to sustain in the competitive world. When every body things about improving the efficiency through improving the effectiveness of the operation, the lean management concept things differently. Where the focus is placed on reducing or eliminating the unwanted activities involved in the process. The Chennai port trust has the problem of having more idle hours with reference to vessels. The cargo operations were affected due to the idle hours. Hence a study aimed to analyze the factors contributing to Idle time in Cargo Handling, to identify the port related factors which leads to cargo operations delay, to find out the non-port related factors which leads to cargo operations delay and to determine the idle hours of vessels at Chennai port was carried out.. Various statistical tools like Value Stream Mapping, pert analysis was used to identify the idle time happening in the cargo area. This paper summarizes the findings of the analysis and also the application of lean concept to reduce the lead time of the cargo handling process.

KEYWORDS
Chennai Port, Lean management, Value stream mapping

INTRODUCTION

Lean management is the process of analyzing the flow of information and materials in an environment and continuously improving the process to achieve enhanced value for the enterprise. Lean management concepts were developed over the last five to six decades, primarily in Japan, particularly for the Toyota production system. These concepts met various tests for many years and passed the test of time very easily. Lean manufacturing revolutionaries the manufacturing process. It was not a fine tuning of the existing manufacturing processes. These manufacturing techniques are conceptually different from the traditional process. For an example, traditional manufacturing works based on inventory. But lean manufacturing questions the role of inventory and defines as a waste itself and also as the reflector of the imperfections a system has. The aim of Lean Management is the elimination of waste in every area of production including customer relations, product design, supplier networks, and factory management. Its goal is to incorporate less human effort, less inventory, less time to develop products, and less space to become highly responsive to customer demand while producing top quality products in the most efficient and economical manner possible. . Essentially, a "waste" is anything that the customer is not willing to pay for. Typically the types of waste considered in a lean management system include, over production, waiting, work in progress, transportation, processing waste, excess motion, defected products, underutilization of employees etc. It reducing costs by eliminating waste in the overall production process, in operations within that process, and in the utilization of production labor. The focus is on making the entire process flow, not the improvement of one or more individual operations. All the tools in lean management aim to identify and remove wastes from the system continuously. There are four steps in implementing lean management.

1. Identifying the fact that there are wastes to be removed
2. Analyzing the wastes and finding the root causes for these wastes
3. Finding the solution for these root causes
4. Application of these solutions and achieving the objective

INDIAN PORT

India has a long coastline, spanning 7600 kilometres, forming one of the biggest peninsulas in the world. It is serviced by 13 major ports (12 government and 1 corporate) and 187 notified minor and intermediate ports. The latest addition to major ports is Port Blair on June 2010, the 13th port in the country. Ports play a pivotal role in stimulating economic activity in their surroundings and hinterland through the promotion of seaborne trade. In India, they handle 95per cent of the country's international trade cargo by volume and 70 per cent by value. The sector is broadly categorized into major and non-major ports. Various types of Export & Import cargoes are handled at each Port for International Trade as well as Coastal Trade. The Export Cargoes are those cargoes which are loaded in a ship and go out of the Port and or to the country. The Import Cargoes are the incoming cargo from outside the country and are generally unloaded at the Port. Cargo is goods or produce transported, generally for commercial gain, by ship, aircraft, train, van or truck. In modern times, containers are used in most long-haul cargo transport. The volume of cargo handled at the Indian ports has witnessed 10.67% in the last five years. Total cargo handled at the 12 Major Ports is 423.34 million tonnes in 2005-06 against 383.7 million tonnes handled in 2004-05. Cargo handling is projected to grow at 7.7% until 2013-14. It takes an average of 21 days to clear import cargo in India compared to just three in Singapore. There are also 7 shipyards under the control of the central government of India, 2 shipyards controlled by state governments, and 19 privately owned shipyards. Chennai Port is the second largest port of India, behind the Mumbai Port. It is over 125 years old. It is a substantial reason for the economic growth of Tamil Nadu, especially for the manufacturing boom in South India. Its container traffic crossed 1 million TEUs for the first time in 2008. It is currently ranked the 91st largest container port and is expanding in the coming years. In 2009-10, the port handled 61.06 million tonnes of cargo against 57.49 million tonnes in 2008-09 marking an increase of 6.20 per cent and has set a target to handle 75 million tonnes in 2011-12 and 100 million tonnes in 2015-16.

STATEMENT OF THE PROBLEM

The Chennai port trust has the problem of having more idle hours with reference to vessels. The cargo operations were affected due to the idle hours. The study was a necessity urging to find the factors contributing to idle time of cargo handling in Chennai port trust. The study was a timely document required for the Chennai port trust in order to know the idle hours in cargo handling is important for the port users. Hence, to reduce the idle hours and to improve the cargo handling in Chennai port trust,. Lean Management was applied to Chennai port trust.

OBJECTIVE OF THE STUDY

- To analyze the factors contributing to Idle time in Cargo Handling
- To identify the port related factors which lead to cargo operations delay.
- To find out the non-port related factors which leads to cargo operations delay.
- To determine the idle hours of vessels at Chennai port.

SCOPE OF THE STUDY

Following are the issues were this study cover broadly:

- Idle time types
- Idle time for ten vessels
  - General cargo vessels
  - Granite vessels
  - Steel vessels
  - Project cargo vessels
- Details of Idle time for vessel vise
- Total hours and idle time for the vessels

RESEARCH DESIGN

The researcher done this study based on *Analytical Research Design*. The researcher has used secondary data only. The secondary data collected from the administration report and Indian port authority profile. The statistical tools like Pert Analysis, Weighted Average Analysis, Percentage Analysis and Value Stream Mapping (VSM) were used for analysis.

DATA ANALYSIS

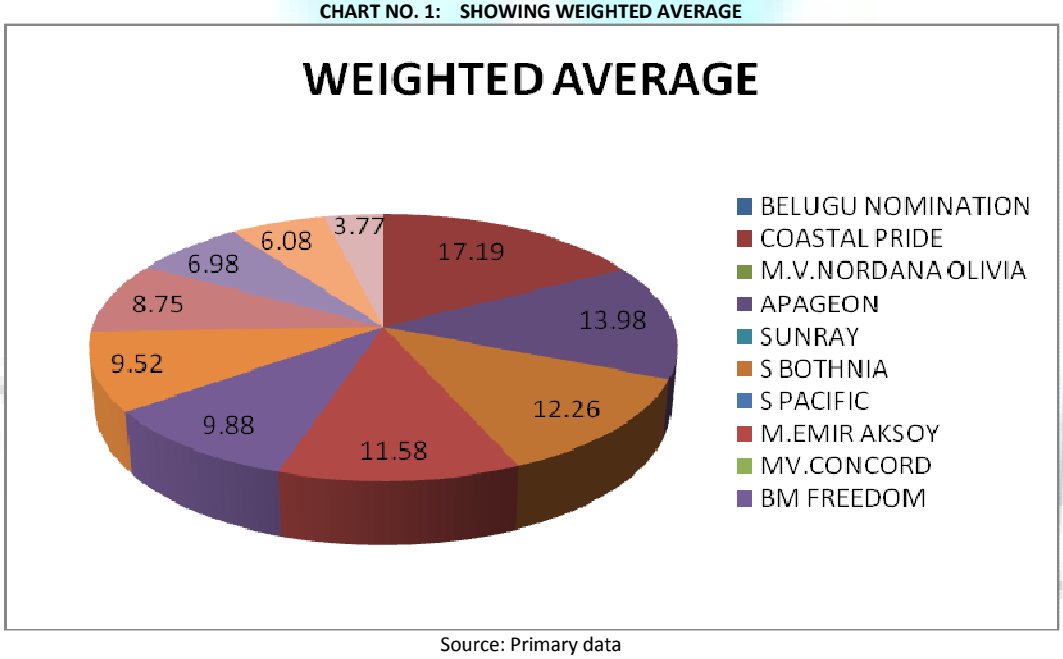
TABLE NO. 1: SHOWING THE IDLE HOURS OF VARIOUS VESSEL

VESSEL	TOTAL WORKING HOURS	EFFECTIVE HOURS	NON-WORKING HOURS
BELUGU NOMINATION	68.05	18.55	49.5
COASTAL PRIDE	178.25	138	40.25
M.V.NORDANA OLIVIA	175.5	140.2	35.3
APAGEON	101.15	68.15	33.35
SUNRAY	61.35	33.3	28.45
S BOTHNIA	72.35	45.35	27.4
S PACIFIC	46.3	21.1	25.2
M.EMIR AKSOY	86.5	66.4	20.1
MV.CONCORD	128	110.5	17.5
BM FREEDOM	39.4	27.35	12.05

Source: Primary data

The table explains working hours of 10 vessels of Chennai port. The M.V.Nordana Olivia vessel has maximum effective working hour (140.2), followed M.V. Concord with 110.5. The belgru has the maximum non effective hours ie 49.5, followed by Coastal Pride.

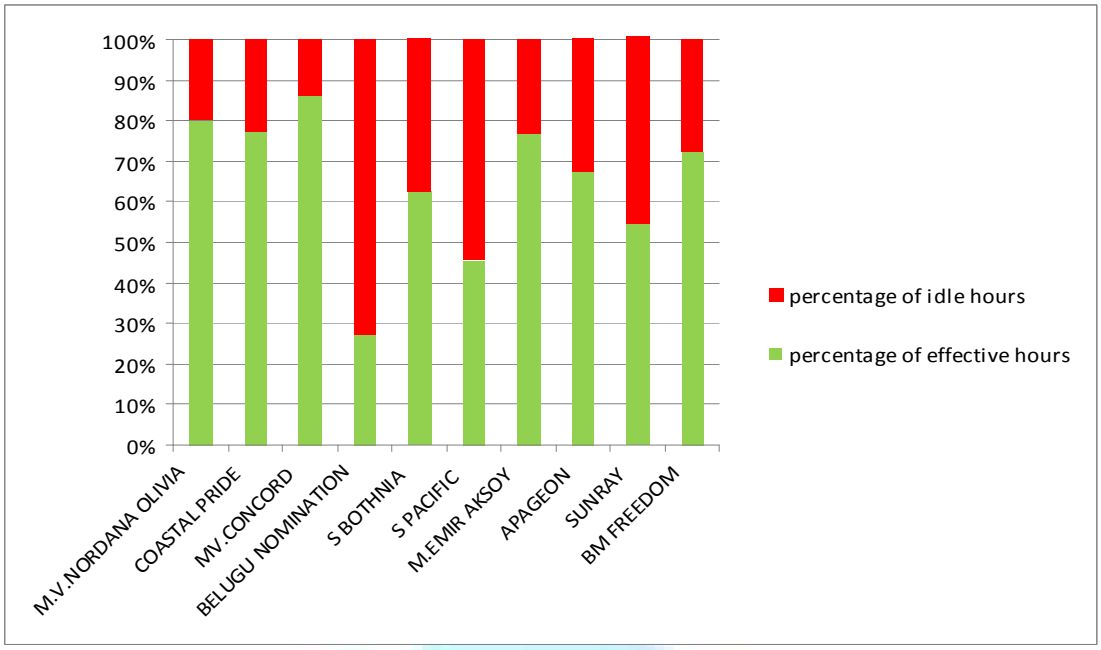
CHART NO. 1: SHOWING WEIGHTED AVERAGE



Source: Primary data

From the above graph it is inferred that Belugu nomination has more weightage of 17.19 where as BN freedom has the least of 3.77.

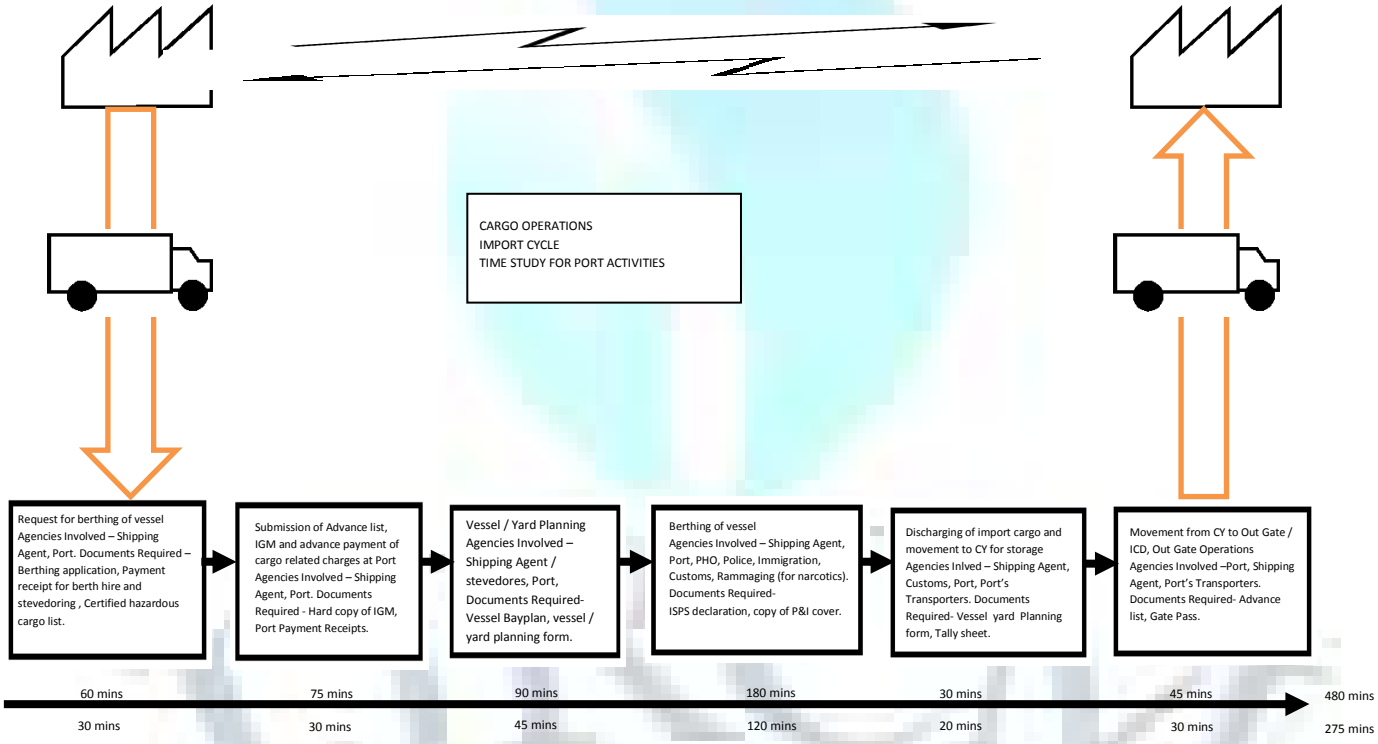
CHART NO. 2: SHOWING THE IDLE HOURS OF VARIOUS VESSEL



Source: Primary data

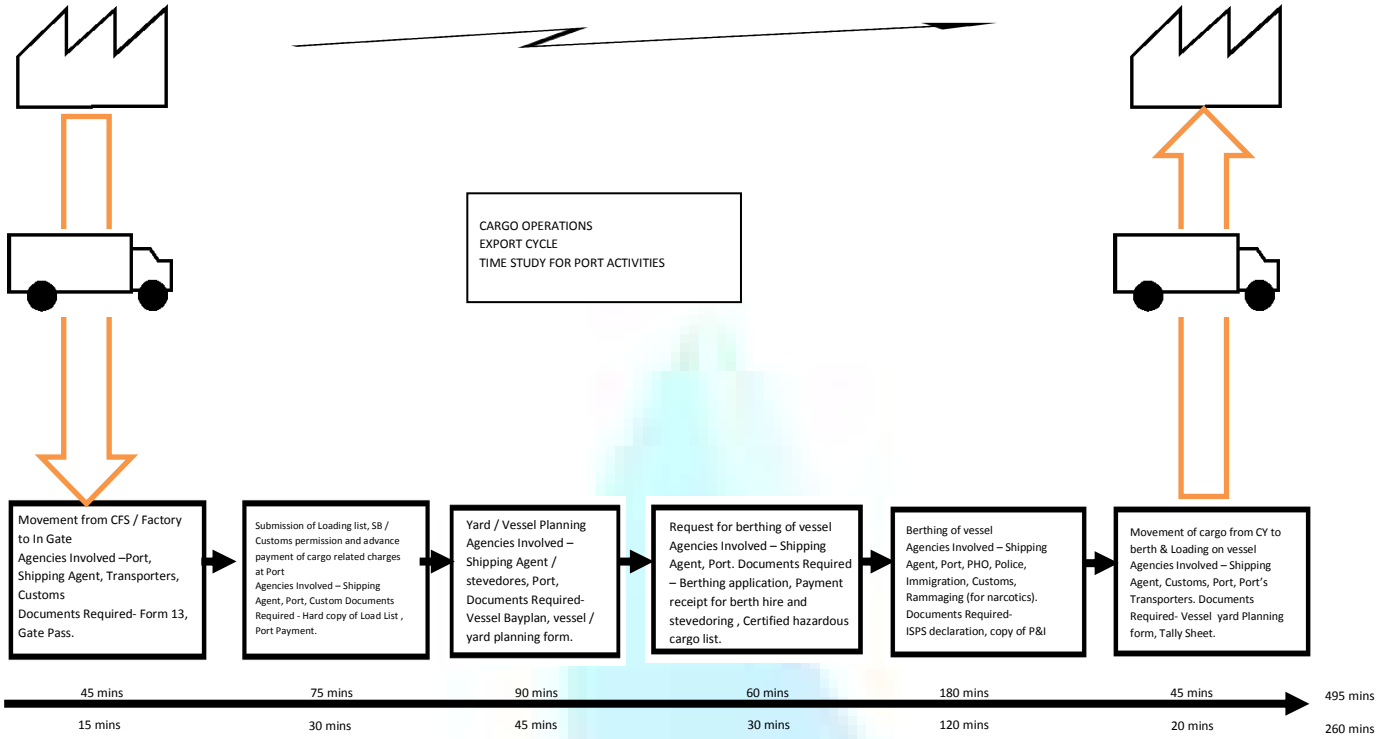
The above graph shows that the Belugu nomination Vessel has 73% of idle hours and M.V.Concord has 14% of idle hours.

FIGURE 1: SHOWING VALUE STREAM MAPPING – IMPORT CARGO OPERATIONS



The above figure explains import process in 6 major steps. The time study of port activities for import cycle is explained very clearly for each step. The first step ie requesting for berthing of vessel & payment actually takes 60 mins in Chennai port which is 30 minus more than standard time. The second step which involves the payment of fees takes 75 minus, which is 30 minus greater than standard time. In third step the process like vessel / yard planning takes 90 minus, which is 40 minus more than standard time. The fourth step berthing activities takes180 minus compared to standard time 120 minus. In the fifth step the major activities involved discharging of import cargo takes 30 minus, only 10 minus more than standard time. The last step basically out gate operation takes only 45 minus ie 15 minus more than standard time. It is inferred that the standard time for cargo operations of import cycle are 275 minutes, but 480 minutes is the actual time and the time difference 205 minutes is the non working time. Hence there is a lot of idle time in cargo operation of import cycle.

FIGURE 2: SHOWING VALUE STREAM MAPPING – EXPORT CARGO OPERATION



The above figure explains export process in 6 major steps. The time study of port activities for export cycle is explained very clearly for each step. The first step ie. movement of goods inside the gate, processing form 13, gate pass etc actually takes 45 mins in Chennai port which is 30 minus more than standard time. The second step which involves submission of documents takes 75 minus, which is 45 minus greater than standard time. In third step the process like vessel / yard planning takes 90 minus, which is 45 minus more than standard time. The fourth step the request for berthing of vessel activities takes 60 minus compared to standard time 30 minus. In the fifth step the major activities involved berthing of cargoes takes 180 minus which is 60 minus more than standard time. The last step movement of cargo inside vessel takes only 45 minus ie 25 minus more than standard time. From the above figure, it is inferred that the standard time for cargo operations of export cycle are 260 minutes, but actually it takes 495 minutes and the time difference is found to be 235 minutes, which is the non working time.

FINDINGS

- From the pert calculations it was inferred that the major factors contributing to idle time in cargo handling are as follows
  - Early Break up/ Late Reporting of DLB/Port Labour
  - Want of Pilot after completion
  - Others on Non-Port Account
  - For Want of Cargo
  - For Customs Formalities
  - For Unloading/Loading Instructions
  - Shed Congestion / Poor Clearance
  - Want of Wagons/Lorries/Trailers
  - Non-Readiness by Ship/Stoppages at Masters Agent / Shippers option
  - Holiday / Recess
  - For Sailing Instruction
  - Others
  - Breakdown of shore cargo handling equipment
  - Power failure
- From the pert calculations it was inferred that the port related factors contributing to idle time in cargo handling are as follows
  - Early Break up/ Late Reporting of DLB/Port Labour
  - Breakdown of shore cargo handling equipment
- From the pert calculations it was inferred that the non-port related factors contributing to idle time in cargo handling are as follows
  - Want of Pilot after completion
  - Others on Non-Port Account
  - For Want of Cargo
  - For Customs Formalities
  - For Unloading/Loading Instructions
  - Shed Congestion / Poor Clearance
  - Want of Wagons/Lorries/Trailers
  - Non-Readiness by Ship/Stoppages at Masters Agent / Shippers option
  - Holiday / Recess
  - For Sailing Instruction
  - Others
  - Power failure
- From the weighted average analysis it was inferred that
  - Belugu nomination is having the highest idle time i.e.17.19 followed by
  - Coastal Pride is having the second highest idle time i.e.13.98 followed by

- M.V.Nordana Olivia is having the third highest idle time i.e.12.26 followed by
- Apageon is having the fourth highest idle time i.e. 11.58 followed by
- Sunray is having the fifth highest idle time i.e. 9.88 followed by
- S Bothnia is having the sixth highest idle time i.e.9.52 followed by
- S Pacific is having the seventh highest idle time i.e.8.75 followed by
- M.Emir Aksoy is having the eight highest idle time i.e.6.98 followed by
- Mv.Concord is having the nineth highest idle time i.e.6.08 hollowed by
- Bm Freedom is having the least idle time i.e.3.77.

- From the percentage analysis it was inferred that
  - The percentage of idle hours for vessel M.V.Nordana Olivia is 20% which is 35.3hrs.
  - The percentage of idle hours for vessel coastal pride is 23% which is 40.25hrs.
  - The percentage of idle hours for vessel Mv Concord is 14% which is 17.5hrs.
  - The percentage of idle hours for vessel Belugu nomination is 73% which is 49.5hrs.
  - The percentage of idle hours for vessel s Bothnia is 37% which is 27.4hrs.
  - The percentage of idle hours for vessel s pacific is 54% which is 25.2hrs.
  - The percentage of idle hours for vessel M.Emir Aksoy is 23% which is 20.1hrs.
  - The percentage of idle hours for vessel Apageon is 33% which is 33.35hrs.
  - The percentage of idle hours for vessel Sunray is 46% which is 28.45hrs.
  - The percentage of idle hours for vessel Bm Freedom is 28% which is 12.05hrs.
- It was found that from the value stream mapping of importing cargo operations, time consumed is 480 minutes which is more than the standard time specified i.e. 275 mins. Hence, it was found that the idle time is 205 minutes.
- It was found that from the value stream mapping of exporting cargo operations, time consumed is 495 minutes which is more than the standard time specified i.e. 260 mins. Hence, it was found that the idle time is 235 minutes.

SUGGESTIONS

- The late reporting of port labours can be reduced by collecting fines.
- The berthing charges for the vessels can be raised double if the pilot not available after the completion of the process.
- The machines and equipments of the port broke down frequently which reduces vessel and cargo handling rate. At present break down maintenance is followed in ports so it is recommended to follow preventive maintenance policy.
- Time duration of the procedures for customs clearance can be fixed a time margin so that the waiting time may be reduced.
- Upgraded equipments should be installed as soon as possible.
- The port should increase the storage capacity for cargo, which enables the trade to reduce the handling cost as well as idle time cargo.
- Heavy axle wagons and multi axle trucks to be introduced in the transportation sector. This will improve the Turn Round of trucks and enhance the carrying capacity of vehicles to facilitate expedition evacuation of cargo.
- In the servicing of vessel and handling of cargo especially loading and unloading from vessels, lack of state of art equipments affect the rate of handling thereby leading to high turn round time of vessels and high dwell time of cargo. It is therefore necessary to procure more sophisticated and efficient equipments to achieve enhanced efficiency in cargo handling.
- The Chennai port is efficient in import handling only, so they should improve their efficiency in export cargo handling also getting proper training through experience port officials.

CONCLUSION

The study on lean management in the Chennai port trust has exactly doesn't find any lucid conclusion as the lean concept is based on continuous improvement. Even Toyota which is considered to be the pioneer in applying lean concepts for last four decades is also looking for improvement in all its operational areas. This study is aimed at giving an attempt to apply the core concept of Lean Management in Chennai port in handling the cargo operations which is nothing but reduction of waste activities which is not know in broad picture. The study aims at reduction of lead time between in cargo area, by reducing the idle time occurring in the cargo operations. As initial step in the study identify the entire process flow in the port area and identified the causes for the idle time. The identification of process of causes of idle time is done by wearing a Lean Spectacles, where activities are classified as Value Adding and non-Value adding. Thus each process is grouped under the above mentioned area. Thus Chennai port can improve its performance by reducing the non-working hours or the idle time in cargo operations by applying the lean concepts.

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CONSUMER PREFERENCE FOR COSMETICS AMONG COLLEGE GIRLS IN TIRUNELVELI AND THOOTHUKUDI DISTRICTS

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ABSTRACT

The present paper aims to focus on the consumer preference for cosmetics among college girls in the districts of Tirunelveli and Tuticourin.A sample of 150 girls students were selected on basis of stratified random sampling method as respondents. The result of the analysis showed that consumers differed in preference for cosmetics. The preference of the majority of the girl students are: Lux toilet soap, Ponds Sandal powder, Fair and Lovely face cream, Parachute hair oil, Eva body Spray, Eyetex thilak, Ponds sunscreen and Clinic All clear Shampoo.

KEYWORDS
Brand Preferrence, Cosmetics, Dazzler.

INTRODUCTION

This Article aims at analyzing the brand preference of cosmetics among girl students in the colleges of Tirunelveli and Thoothukudi districts. The success of any industry offering either services or a product depends upon customer satisfaction. Customer preference also keeps changing and business firms find it a must to update themselves according to the tastes of the customers.

IMPORTANCE OF THE STUDY

Cosmetics are substances used to enhance or protect the appearance or order of the human skin. It is also intended to adorn or beautify the body. Even though cosmetics have been in use for thousands of years, during the 20th century, the popularity of cosmetics increased rapidly. The ways and means of looking beautiful have never been the same throughout the centuries. Especially among young ladies, the use of cosmetics has become an unavoidable one. The passion for cosmetics among college girls is growing day by day.

STATEMENT OF THE PROBLEM

Through this study, the researchers aim at analyzing the brand preference for cosmetics such as bathing soap, face powder, shampoo, Hair oil, face cream, nail polish, perfume, body cream and Thilak. Hence, the researchers are interested in finding out as to which brand, attracts more, the satisfaction level, the availability and the agreement on pride of the brands.

OBJECTIVES OF THE STUDY

The following are the broad objectives of the study.

1. To find out the consumer preference for cosmetics among college girls with reference to Tirunelveli and Thoothukudi districts.
2. To find out the popular brand of cosmetics used by majority of the college girls with reference to the districts of Tirunelveli and Tuticorin.
3. To study and understand whether the brand is available in many retail shops with reference to Tirunelveli and Thoothukudi Districts.
4. To find out whether the college girls are satisfied with the brands available at present.
5. To analyze and understand whether they are satisfied with the present price of cosmetics.
6. To give suggestions so as to meet the solution of problems faced by the respondents.

AREA OF STUDY

This study has been undertaken in six colleges covering Thoothukudi and Tirunelveli Districts. The colleges that were selected for study are Sara Tucker college for women, Saradha college for women, Sri Parasakthi College For women, A.P.C Mahalakshmi College for Women, St. Mary's College and G.U. Pope college at Tirunelveli and Tuticorin Districts.

SCOPE OF THE STUDY

This study analyses brand preferences for cosmetics among girl students in selected six colleges from Tirunelveli and Tuticorin Districts. This study covers about nine items of cosmetics normally used by college girls.

PERIOD OF STUDY

The study has been undertaken during a period of seven months from January to July 2009.

SOURCES OF DATA

The required information for the study has been collected both from primary and secondary sources. The primary data has been collected from the respondents by survey method through the issue of questionnaire in addition interview technique and informal talks were held for collecting first hand information. The secondary data has been collected from books, magazines, journals and from dealers.

SAMPLING DESIGN

A sample of 300 college girls from selected colleges have been chosen as respondents on the basis of stratified random sampling method. The details of sample are depicted in table1

TABLE 1: RESPONDENTS COLLEGE-WISE

S.NO	DISTRICT	NAME OF THE COLLEGE	ARTS	SCIENCE	TOTAL
1.	Tirunelveli	a) Sarah Tucker	25	25	50
		b) Saradha	25	25	50
		c) Sriparasakthi	25	25	50
2.	Thoothukudi	a) St. Mary's	25	25	50
		b) G.U. Pope	25	25	50
		c) APC Mahalakshmi	25	25	50
TOTAL			**150**	**150**	**300**

TOOLS USED FOR COLLECTION OF DATA

To collect the required primary data, the researchers have used a structured, close-ended questionnaire. The questionnaire consisted of 24 questions in all. In addition informal talk and interview technique were also used for collection of data.

TOOLS USED FOR ANALYSIS AND INTERPRETATION

Simple statistical tools such as averages, percentages, weighted average, tables, diagrams and likert's five point scale have been used for analysis and interpretation of the data collected.

SCHEME OF REPORTING

The study has been reported through five chapters. The introductory chapter is devoted to deal with the importance of the study and research methods followed. The second chapter deals with review of literature. The profile of the cosmetic industry is discussed in the third chapter. The fourth chapter is devoted to analyze and interpret the data collected. The fifth chapter being the concluding chapter is devoted to summaries the findings of the study. A few suggestions have been offered for solution of the problems faced by the respondents.

CONSUMER PREFERENCE FOR COSMETICS

The analysis of the data collected have been summarized below.

The analysis shows that out of 150 respondents 122 are below 20 years and the remaining 28 are between the ages of 20 and 30. Table 2 shows that 54% of the respondents have been using cosmetics for more than 10 years. About 13% of the respondents have used cosmetics for more than 15 years.

ITEMS OF COSMETICS

About nine items of cosmetics that are normally used by college girls have been selected for the study. They are:

1. Bathing Soap
2. Face Power
3. Shampoo
4. Hair Oil
5. Face Cream
6. Nail Polish
7. Perfume
8. Sun Screen
9. Thilak

EXPENDITURE ON COSMETICS

Table 2 shows the details of the expenditure incurred by the respondents per month.

TABLE 2: EXPENDITURE ON COSMETICS

S.NO	OPTIONS RS.	NO OF RESPONDENTS	PERCENTAGE
1.	Below 500	118	79
2.	500 – 1000	20	13
3.	Above 1000	12	08
Total		**150**	**100**

Source: Computed from primary data

Table 2 indicates that above 79% of the respondents spend up to Rs.500 per month. It is also seen in the table that about 13% of the respondents spend Rs. 500 to 1000 per month and only a meare 8% of the respondents spend above Rs 1000 per month for cosmetics.

PREFERENCE FOR COSMETICS

The Preference for different cosmetics by the respondents have been analyzed one after another. Table 3 shows the preference for bathing soap.

TABLE 3: PREFERENCE FOR BATHING SOAP

S.NO	OPTIONS	NO OF RESPONDENTS	PERCENTAGE
1	Lux toilet Soap	62	41
2	Mysore Sandal	23	15
3	Hamam	30	20
4	Lifebuoy	16	11
5	Dove Soap	07	05
6	Cinthol	08	05
7	Other Soaps	04	03
TOTAL		**150**	**100**

Source: Computed from primary data

Table 3 shows that about 62 respondents covering 41% prefer Lux toilet soap. HamamSoap preferred next by 23 respondents and Mysore sandal ranks third in preference.

PREFERENCE FOR TALCUM POWDER

The analysis shows that a majority of 55% of the respondents preferred to use ponds sandal. The next preference is for cuticura (18%) followed by Gokul sandal (14%). Yardley has been preferred by only one respondent. These things have been displayed in Table4.

TABLE 4: PREFERENCE FOR TALCUM POWDER

S.No	Preference	No of Respondents	Percentage
1	Ponds-Sandal	82	55
2	Cuticura	26	18
3	Spinz	14	09
4	Gokul Sandal	21	14
5	Yardley	02	01
6	Others	05	03
TOTAL		**150**	**100**

Source: Calculated from primary data

PREFERENCE FOR SHAMPOO

Table 5 shows the details of preference for shampoo by the respondents. A perusal of the table will show that sunsilk is preferred by 54 respondents covering 36% followed by clinic All Clear and Pantene in second and third place respectively.

TABLE 5: PREFERENCE FOR SHAMPOO

S.NO	PREFERENCE	NO OF RESPONDENTS	PERCENTAGE
1	Clinic All Clear	52	35
2	Sunsilk	54	36
3	Chick	04	03
4	Pantene	20	13
5	Garnier	03	02
6	Meera Shampoo	16	10
7	Others	01	01
TOTAL		**150**	**100**

Source: Computed from primary data

PREFERENCE FOR FACE CREAM

Majority of the respondents expressed that they prefer Fair and lovely followed by Fair Ever and Vicco. Table 6 shows the details.

TABLE 6: PREFERENCE FOR FACE CREAM

S.NO	PREFERENCE	NO OF RESPONDENTS	PERCENTAGE
1	Fair & Lovely	68	45
2	Fair Ever	56	37
3	Vicco	16	11
4	Nivea	06	04
5	Others	04	03
TOTAL		**150**	**100**

Source: Calculated from primary data

PREFERENCE FOR HAIR OIL

Enquiry showed that about 66 respondents covering 44% preferred parachute coconut hair oil followed by VVD (39%) and Vatika (08%). Table 7 shows the details for different hair oils used by girl students in colleges.

TABLE 7: PREFERENCE FOR HAIR OIL

S.No	Preference	No of Respondents	Percentage
1	Parachute	66	44
2	VVD coconut oil	58	39
3	Vatika	12	08
4	Dhatri	06	04
5	Dabur	05	03
6	Others	03	02
Total		**150**	**100**

Source: Prepared from primary data

PREFERENCE FOR BODY SPRAY / PERFUME

The study shows that about 40 respondents covering 27% preferred 'Eva' followed by 'Fa' 34% and Yardly 20%. These details are exhibited by table 8.

TABLE 8: PREFERENCE FOR BODY SPRAY

S.NO	OPTIONS	NO OF RESPONDENTS	PERCENTAGE
1	Eva	40	27
2	Fa	36	24
3	Spinz	12	08
4	Nivea	09	06
5	Yardly	30	20
6	Charhi	05	03
7	Others	02	01
8	N.A	16	11
TOTAL		**150**	**100**

Source: Computed from primary data

PREFERENCE FOR "THILAK" BRAND

The study shows that about 41% of the respondents prefer to use Eyetex brand as thilak. About 30% prefer sringar. Table 9 shows the details.

TABLE 9: PREFERENCE FOR THILAK BRANDS

S.NO	PREFERENCE	NO OF RESPONDENTS	PERCENTAGE
1	Eyetex	62	41
2	Sringar	44	30
3	Others	20	13
4	NA	24	16
Total		**150**	**100**

PREFERENCE FOR SUNSCREEN

Table 10 shows the details of different creams used as sunscreen by the girl students.

TABLE 10: PREFERENCE FOR SUNSCREEN

S.NO	OPTIONS	NO OF RESPONDENTS	PERCENTAGE
1	Ponds	62	42
2	Himalaya	31	21
3	Lakme	26	17
4	Vaseline	09	06
5	Nivea	02	01
6	Garnier	04	03
7	Ayur	06	04
8	Others	02	01
9	No Answer (N.A)	08	05
Total		**150**	**100**

Source: Computed from primary data

Even though turmeric is a good germicide, no girl student seems to use it as a face cream.

FACTORS FOR BRAND PREFERENCE

The students expressed the following factors that have influenced them to prefer a particular item of cosmetics. The factors have been depicted in table 11.

TABLE 11: PREFERENCE FOR BRAND PREFERENCE

S.No	Options	No of Respondents	Percentage
1	Quality	62	41
2	Price	30	20
3	Utility	02	01
4	Brand Name	18	12
5	Package	05	04
6	Promotions	03	22
7	Advertisements	30	20
TOTAL		**150**	**100**

SATISFACTION LEVEL

The satisfaction level of the respondents have been measured by the liker's five point's scale such as Highly satisfied (HS), satisfied, Neutral dissatisfied and highly dissatisfied. Table 12 shows that the overall satisfaction is high dissatisfied. Table 12 shows that the overall satisfaction is high for hair oil, thilak and shampoo.

TABLE 12: SATISFACTION LEVEL

S.NO	COSMETICS	HS	SAT	NEUTRAL	DS	HDS	ROWTOTAL	WEIGHT AVERAGE
1	Bath Soap	165	248	117	10	11	551	3.673333
2	Face Powder	140	88	213	48	05	494	3.293333
3	Shampoo	315	132	93	22	12	574	3.826667
4	Hair oil	400	80	114	20	02	616	4.106617
5	Face Cream	105	48	234	68	05	460	3.066667
6	Nail Polish	165	272	84	30	06	557	3.713333
7	Perfume	205	92	258	0	0	555	3.7
8	Sunscreen	215	48	264	14	0	541	3.606667
9	Thilak	360	132	57	36	08	593	3.953333

Source: Weighted average computed from primary data

It is evident from the analysis that the overall satisfaction is high for hair oil, thilak and shampoo.

BRAND PREFERENCES

The analysis of the data collected shows the following as the preferences shown by majority of the respondents.

TABLE 13: BRAND PREFERENCE

S.NO	PREFERENCE	NO OF RESPONDENTS	PERCENTAGE
1. Soap	Lux	51	34
2. Talcum	Ponds	79	53
3. Shampoo	Sunsilk	62	41
4. Hair oil	Parachute	58	39
5. Face Cream	Fair & Lovely	52	35
6. Nail Polish	Dazzler	61	41
7. Perfume	Eva	41	27
8.Sunscreen	Himalayas	23	15
9.Thilak	Eyetex	61	41

FINDINGS OF THE STUDY

The following are the main findings of the study.

1. Majority of the respondents are spending less than Rs.500 per month on cosmetics.
2. Lux is most preferred bathing soap by majority of the respondents.
3. Ponds is most preferred talcum powder by more than average number of respondents.
4. Sunsilk and clinic plus shampoo are preferred more or less equally by average number of respondents.
5. Fair and lovely is the most preferred face cream by average number of respondents.
6. Parachute and VVD hair oil are preferred more or less equally by average number of respondents.
7. Dazzler is most preferred nail polish among college girls.
8. Eva and Fa perfumes are preferred more or less by majority of the respondents.
9. Eyetax is the most preferred thilak loved by majority of respondents.
10. Ponds is most preferred sunscreen lotion by majority of the respondents.
11. Quality is preferred factor for brand preference by majority of the respondents.

SUGGESTIONS

1. The satisfaction level of respondents is very low on the cosmetic products. Hence it is suggested that the manufactures should identify the reasons behind this and then provide them with the requirements.
2. The respondents feel that the prices of cosmetics are comparatively higher. Hence, it is suggested that manufacturers should concentrate on product changes and diversification in the cosmetics, through which they can reduce the prices.
3. Girl students may be influenced to use turmeric as face cream. The medical benefits of using turmeric must be brought to the notice of girls.

CONCLUSION

Cosmetic is a preparation extremely applied to change or enhance the beauty of skin, hair, nail, lips and eyes. Every exposable part of the human anatomy is subject to cosmetic attraction. So cosmetics have been used from ancient times to modern times. It is not only used by females but also by males. Mushroom growth of beauty parlors is the testimony for the importance of cosmetics. If the findings and suggestions of this study carried out, no doubt the projection that studying pattern of cosmetics will hold good not only in the area selected for study but also in other districts of Tamilnadu.

Cosmetics have been defined by the Indian Drugs and cosmetics Act, 1940 as “articles meant to be rubbed, poured, sprinkled or sprayed or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance. Cosmetics generate beauty, fragrance, pleasant look and love as well. In the service sector, more and more opportunities and avenues are open to ladies for starting beauty parlors and earn a lot of income.

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MANAGING NON PERFORMING ASSETS: A STUDY OF INDIAN COMMERCIAL BANKS

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ABSTRACT

The reform in the banking sector which has followed the guidelines issued by Basel-II recommendations has brought many positive changes in the Indian banking sector. The present capital adequacy of Indian banks is comparable to those at international level. There has been a marked improvement in the asset quality. The reform measures have also resulted in an improvement in the profitability of banks. The promulgation of SARFAESI Act, 2002 has been a benchmark reform in the Indian banking sector. This act has given much needed power to the banks to tackle the Non Performing Loans particularly those bad loans which arise due to willful default of the borrowers. This paper tries to study the effectiveness of various NPA recovery mechanisms for the period 2004-08. The paper also tries to examine how fruitful this act has been in providing real improvement in the quality of assets. It is being seen that after the implementation of SARFAESI Act 2002, banks have got much needed power to tackle the non performing loans. The activities of Asset Reconstruction Companies have increased over the years. The popularity of SARFAESI is welcomed but with some apprehensions by the economists particularly after the sub-prime crisis in United States of America. The paper is aimed to examine all these issues.

KEYWORDS
NPA, NPA Recovery Mechanism, SARFAESI.

INTRODUCTION

Defaults in the payments of interests and principal amount by the borrowers pose a very serious problem for the health of banking sector. Non-recovery of installments as also interest on the loan portfolio negates the effectiveness of the process of the credit cycle. Non recovery of the dues affects the profitability of the banks. Banks are forced to maintain reserves and provisions against the non-performing loans.

The main objective of banking sector reforms was to promote a diversified, efficient and competitive financial system with the ultimate goal of improving the allocative efficiency of resources through operational flexibility, improved financial viability and institutional strengthening. Special emphasis was placed on building up the risk management capabilities of Indian banks while measures were initiated to ensure flexibility, operational autonomy and competition in the banking sector. Second, active steps were taken to improve the institutional arrangements including the legal framework and technological system (Mohan, 2007).

The banking sector as a whole and particularly the public sector banks still suffer from considerable NPAs, but the situation has improved over time. New legal developments like the SARFAESI (Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests) Act provide new options to banks in their struggle against NPAs (Chakrabarti, 2004). Muniappan (2002) points out that till 2001, DRTs reached a decision in less than 23% of the cases with them involving less than 13% and even in those cases, the recovery rate was below 30%.

There are broadly two ways to financially restructure a banking system out of the NPA situation. One can either follow the Asset (Management/Reconstruction) Company (AMC/ARC) approach to clean the balance sheet of banks of their NPAs (at a discount) and use the greater efficiency of the (government-funded) specialized AMCs in realizing the bad debts. Alternatively one could follow the creditor-led reconstruction approach. Both channels have been tried out by countries around the world with mixed results Mukherjee (2003). He further argues that given the illiquid nature of securities backing the NPAs and the level of development of the legal system and financial markets, the Indian situation is more amenable to the second approach.

Various measures have been taken by the regulatory bodies in India to provide more power to creditors and ensure their rights. Some of these are (Mohan, 2007):

- Setting up of Lok Adalats (people's courts), Debt Recovery Tribunals, Asset Reconstruction Companies, and Settlement Advisory Committee, Corporate Debt Restructuring Mechanism etc. for quicker recovery and or restructuring.
- Promulgation of Securitization and Reconstruction of Financial Assets and Enforcement of Securities Interest (SARFAESI) Act, 2002 and its subsequent amendments to ensure creditors rights. It is aimed to develop a market for securitized assets in the country.

SARFAESI Act, 2002 mainly has two objectives:

a) Providing banks and financial institutions a summary procedure for recovery of their secured dues which have been classified as non-performing assets on their books.
b) Setting up of Securitization Company or Reconstruction Company (SCRC) for taking over the defaulted loans of banks and financial institutions and recovery thereof.

Under this act the Debt Recovery Tribunals (DRTs) now have the role of the court of first appeal under section 17 and the debts recovery appellate Tribunals have the role of the court of the second appeal under section 18. There is no recourse to the civil courts including the High Courts and the Supreme Courts (Chatterjee, 2003).

This paper tries to review the development and effectiveness of these regulatory measures in the Indian Banking Sector for the period 2003-04 to 2007-08. NPA recovery mechanisms like Lok Adalat, Debt Recovery Tribunals (DRTs) and SARFAESI Act are analyzed in detail. Details of financial assets acquired by ARCIL have also been studied in the paper. A comparative study has been done over the above mentioned period and the effectiveness and popularity of various mechanisms has been studied.

The paper is divided into four sections. Section I has introduced the topic, Section II points out the data sources and the ways with which the data has been analyzed. Section III discusses the findings of the research and section IV concludes the things with conclusions and suggestions.

RESEARCH METHODOLOGY

Considering definitions and analyzing the utility of research methods to the present research study, analytical research or exploratory research has been considered fit for the research analysis.

To achieve the above stated objective and after reviewing the related literature the study has been carried out in the following way:

Data Collection: Data collection has mainly been derived from the official website of Reserve Bank of India. Annual Reports of all the scheduled commercial banks are submitted to the RBI, and RBI present various trend and progress of commercial banks year after year, thus the major source of information has been the official website of RBI. The data for the period 2003-04 to 2007-08 has been compiled to deduce the findings. Data is collected starting financial year 2003-04 assuming that SARFAESI Act 2002 would have started showing its effect with this financial year. Moreover the balance sheets of the banks have also started disclosing the various NPA recovery mechanisms with this financial year.

Data Analysis: The statistical analysis for this study is descriptive analysis. Mainly the time series analyses have been done over the period of the study. The trend patterns have been drawn for various dimensions of the study.

The following trend patterns are visible with respect to NPA recovery mechanism:

FINDINGS

A. NPAs recovered by scheduled Commercial banks through One-Time Settlement/ Compromise Schemes

Table 1 recognizes the data for the NPAs recovered through one time settlement/ compromise scheme for the period 2004 to 2008.

TABLE 1: NPAS RECOVERED BY SCHEDULED COMMERCIAL BANKS THROUGH VARIOUS CHANNELS- ONE-TIME SETTLEMENT/COMPROMISE SCHEMES

Year	No of Cases Referred	Amount Involved (Rs. Crore)	Amount Recovered (Rs. Crore)
2003-04	139562	1510	617
2004-05	132781	1332	880
2005-06	10262	772	608
2006-07	nil	nil	nil
2007-08	nil	nil	nil

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

It is evident that with the time and implementation of new changes has really undermined the compromising scheme which was the popular course of action in the initial years. Though the popularity has come down with the years but it is still considered to be a good way out to resolve the matter amicably if the defaulters are sincere towards their loan obligations.

B. NPAs recovered by Scheduled Commercial Banks through other channels

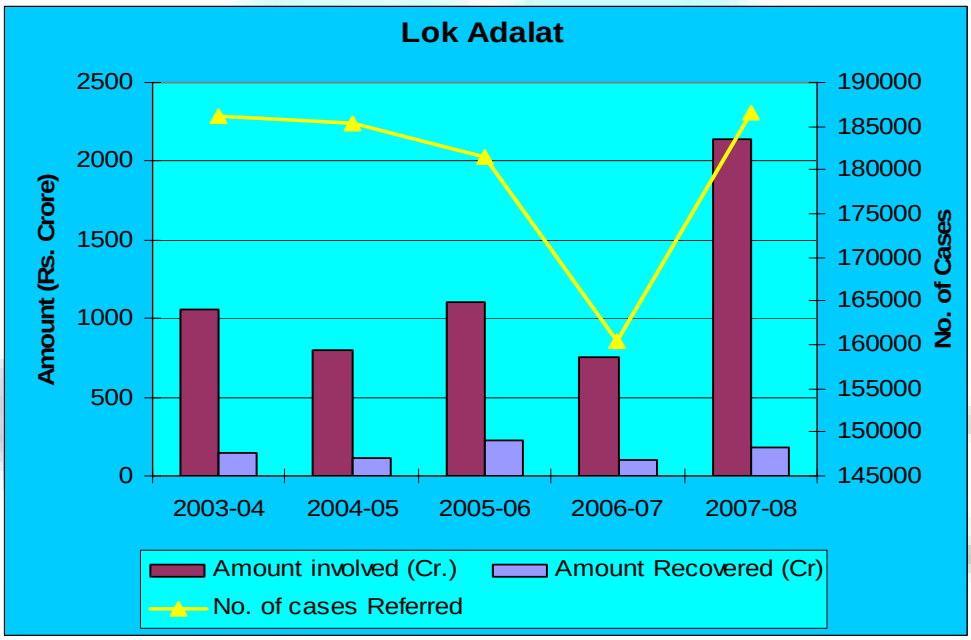
Through Lok Adalat: Table 2 shows the data regarding the NPAs recovery through Lok Adalat. It is seen that many cases have come for the recovery through Lok Adalat. Amount recovered in comparison to the amount involved is not very promising stating the problems in recovery of NPA through this channel.

TABLE 2: NPAS RECOVERED BY SCHEDULED COMMERCIAL BANKS THROUGH OTHER CHANNELS- THROUGH LOK ADALAT

Year	No of cases Referred	Amount Involved (Rs. Crore)	Amount Recovered (Rs. Crore)
2003-04	186100	1063	149
2004-05	185395	801	113
2005-06	181547	1101	223
2006-07	160368	758	106
2007-08	186535	2142	176

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

FIGURE 1: NPA RECOVERY OF SCBS THROUGH LOK ADALAT



Source: Report on trend and Progress of Banking in India, Various Issues; RBI

Figure 1 shows the trend line regarding the utility of Lok Adalat as the recovery mechanism for the period 2004 to 2008. It is visible that with time the popularity of Lok Adalat has come down as number of cases referred has decreased during the period 2004 to 2007. But in the last year of study it has again become one of the important mechanisms to resolve the issues. But the amount recovered through this channel is not much promising.

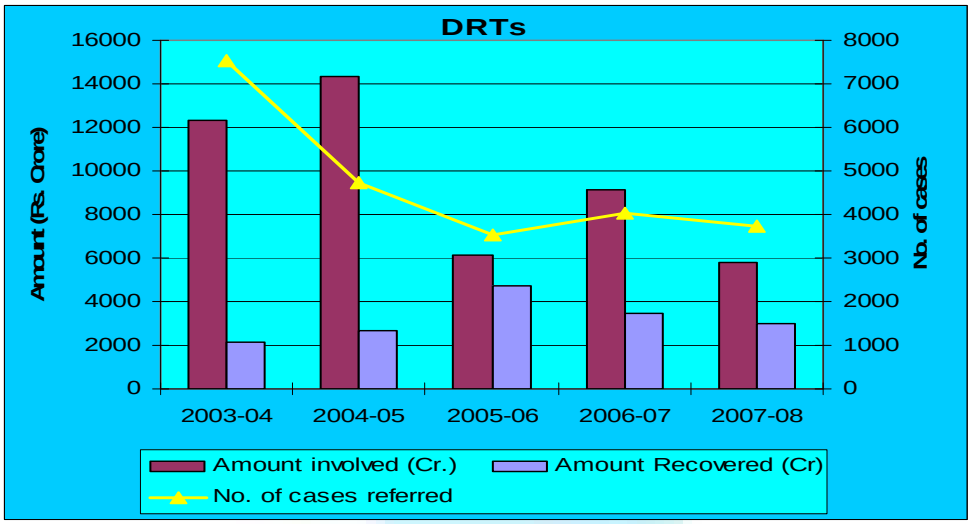
Through Debt Recovery Tribunals: Table 3 compiles data of the NPAs cases referred to DRTs and amount recovered for the period 2004 to 2008. Analysis of data suggests that the amount of NPAs recovered has gone up with the passage of time. The efficiency of DRTs has been quite encouraging as recoveries as compared to the no of cases referred have increased with time. It seems that DRTs are able to accomplish to recover NPAs.

TABLE 3: NPAS RECOVERED BY SCHEDULED COMMERCIAL BANKS THROUGH OTHER CHANNELS- THROUGH DEBT RECOVERY TRIBUNALS

Year	No of cases Referred	Amount Involved (Rs. Crore)	Amount Recovered (Rs. Crore)
2003-04	7544	12305	2117
2004-05	4744	14317	2688
2005-06	3524	6123	4710
2006-07	4028	9156	3463
2007-08	3728	5819	3020

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

FIGURE 2: NPA RECOVERY OF SCB THROUGH DEBT RECOVERY TRIBUNALS



Source: Report on trend and Progress of Banking in India, Various Issues; RBI

Figure 2 draws the pattern of performance of DRTs over the time. It is seen that number of cases referred to DRTs have come down since year 2004 to year 2006. Number of referred cases again takes increasing trend in the year 2006-07, after this it again decreases marginally. It is also noticed that the amount of NPAs recovered with compared to amount of cases referred has gone up in the last phase of study, the best performance being in the year 2005-06.

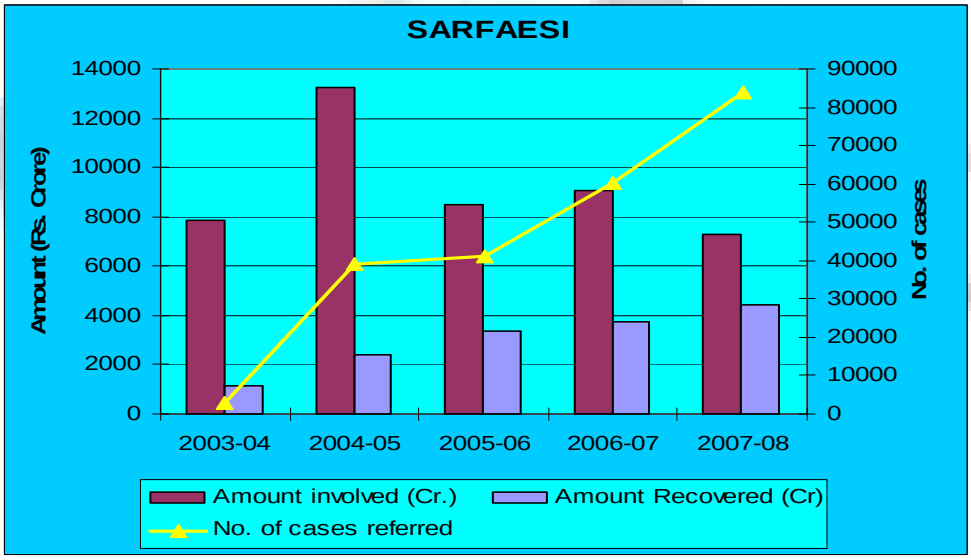
Through SARFAESI: Table 4 compiles the data for the amount of NPAs recovered through SARFAESI. Analysis of data shows that number of cases that are referred to SARFAESI has increased magnificently. The number of cases referred was 26661 in 2003-04 and it has gone up to 83942 in 2008. Similarly the amount recovered has also gone up. It was Rs1156 crore in 2004 and gone up to Rs.4429 in 2008. It seems that after the implementation of SARFAESI Act in 2002, banking sector has started using this scheme to their benefits.

TABLE 4: NPAS RECOVERED BY SCHEDULED COMMERCIAL BANKS THROUGH OTHER CHANNELS- THROUGH SARFAESI

Year	No of cases Referred	Amount Involved (Rs. Crore)	Amount Recovered (Rs. Crore)
2003-04	2661	7847	1156
2004-05	39288	13224	2391
2005-06	41180	8517	3363
2006-07	60178	9058	3749
2007-08	83942	7263	4429

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

FIGURE 3: NPA RECOVERY OF SCB THROUGH SARFAESI



Source: Report on trend and Progress of Banking in India, Various Issues; RBI

Figure 3 depicts clearly the increasing trend in the number of cases referred under SARFAESI since inception. Amount involved have also increased gradually with time, exception being 2004-05 where it is too high. Amount recovered through this act has also increasing trend suggesting its efficiency in handling the NPA management.

Detail of Financial Assets acquired by ARCIL:

Detail of financial Assets acquired by ARCIL has been compiled for the two financial years 2004-2005 and 2005-2006 in the Table 5. The data show the increasing trend of each factor under consideration in the table for each bank categories. Operation of ARCIL in India is picking up as the purchase of dues by these companies has increasing trend.

TABLE 5: DETAIL OF FINANCIAL ASSET ACQUIRED BY ARCIL- SCB (As at end March)

Year	Factors	Public Sector Banks	Old Pvt. Sector Banks	New Pvt. Sector Banks	Financial Institution	Total
2005	**No of Cases**	314	11	132	12	368
2006	**No of Cases**	599	34	152	51	559
2005	**Principal Debt Acquired (Crore)**	2584	153	4436	386	7559
2006	**Principal Debt Acquired (Crore)**	3638	186	5037	1460	10321
2005	**Interest & Other Charges (Crore)**	2920	84	4329	450	7783
2006	**Interest and Other Charges (Cr.)**	3917	150	4727	2011	10805
2005	**Total Dues Purchased (Crore)**	5504	237	8765	837	15343
2006	**Total Dues Purchased (Crore)**	7555	336	9764	3471	21126

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

Table 6 collects the details of financial assets securitized by SCs/RCs as on June 30, 2007 and 2008. It is clear that new act and new policies are aimed at providing banks some power to manage their NPAs with the help of such companies and laws. The increasing importance of ARCIL can also be judged by the following examples. During the last financial year, SR investment by banks in Arcil was close to Rs1, 500 crore; this year too a similar level of investment is expected (Acharya, 2009). United Bank of India which has identified about Rs300 crore of bad assets for sale in the coming quarters, sold about Rs200 crore of NPA last year (Acharya, 2009).

TABLE 6: DETAILS OF FINANCIAL ASSETS SECURITIZED BY SCS/RCS- SCB (As on June 30)

Sr. No.	Item	Amount (in Rs. cr) 2007	Amount (in Rs. cr) 2008
1	Book Value of Assets Acquired	28544	41414
2	Security Receipts issued	7436	10658
3	Security Receipts subscribed by		
	(a) Banks	6894	8319
	(b) SCs/RCs	408	1647
	(c) FIIs	--	--
	(d) Others	134	692
4	Amount of Security Receipts completely redeemed	660	1299

Source: Report on trend and Progress of Banking in India, Various Issues; RBI

The Reserve Bank as at the end of June 2007 had issued certificate of registration (CoR) to six securitization companies/reconstruction companies (SCs/ RCs), of which three had commenced their operations. As at end of June 2008, RBI issued CoR to eleven Scs/RCs of which of which six have commenced their operations. At end-June 2007, the book value of total amount of assets acquired by SCs/RCs registered with the Reserve Bank stood at Rs.28,544 crore which went up to 41414 in 2008 showing an increase of 45.1 percent during the year. The security receipts subscribed to by banks amounted to Rs.6, 894 crore (June 2007) and Rs.8319 crore in June 2008. The security receipts redeemed amounted to Rs.660 crore which increased to Rs. 1299 crore in June 2008.

SUGGESTIONS AND CONCLUSIONS

SARFAESI Act has given much needed teeth to the Indian Banking Sector. It has indeed helped banks in their management of NPAs. Government needs to overview existing regulation and implement amendments so that these measures can be more effective. "Legislative amendments are necessary to give a legal status to securitization n transaction. At present, transfer of property is regulated by a law that is more than 100 years old. Also since the securitized assets could be in various states, the incidence of stamp duty would be different across states. A new legislation is required to address all these issues" says M.R Umarji, legal advisor to Indian Banks' Association (as quoted by Shetty, 2009).

Some amendments are also needed at ARC front. ARCs are allowed to do restructuring activities provided that such an ARC holds 75% in value of the loan assets. But the present regulation does not treat ARC as Financial Institutions and prohibit one ARC to acquire assets from other ARC. Amendment can be enacted to remove these anomalies.

Further some apprehensions have also been placed as securitization is seen to have facilitated the spread of the sub-prime crisis across the world (Shetty, 2009). It is also the area of concern that the Indian financial sector had begun securitizing personal loans of all kinds. As the US experience had shown, this tends to slacken diligence when offering credit, since risk does not stay with those originating retail loans (Chandrashekhar, 2008)

The same views are echoed by Ram Mohan (2009), "Rampant securitization is seen as one of the causes of the sub-prime crisis. Banks had no qualms about originating large volumes of low quality loans because they know they were not going to have these on their own books for long. The loans would be palmed off to other investors through securitization".

Securitization if not regulated strongly can lead to the dilution of loan appraisal norms and diligence by the lenders.

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EMPOWERMENT OF RURAL ODISHA THROUGH CONNECTIVITY
(WITH SPECIAL REFERENCE TO KHURDA DISTRICT OF ODISHA)

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ABSTRACT

The present paper makes an attempt to study the implementation of Prime Minister's Gram Sadak Yojana (PMGSY) in rural area and its impact on the life line of the people. For this direction various hypothesis have been identified and questionaire distributed. In our study we found that the PMGSY have made significant contribution in the life of the rural people. It changed the life style of the people and a rural people able to find new markets for their products. At the same time the basic medical and education facilities now with in the reach of the rural mass. Our experience concluded that it has significant contribution in the study area.

KEYWORDS
PMGSY, Total Score, Idial Score and Least score

INTRODUCTION

Rural connectivity is a key component of Rural Development in India. Rural connectivity incrised the agricultural income and productivity, employment opportunity, along side promotional services. However, eventodya only 60% of the villages/ Habitations in the country are connected. In recognition of the cardinal linkage between development and poverty allevation in rural areas with the availability of a well laid infrastructure a 100% Centrally sponsored scheme namely Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched in December 2000 with the objective of providing connectivity by all weather roads to about 1.60 lakh unconnected habitations with population of 500 persons and above (250 persons and above in respect of hill states, the tribal and desert areas) through good all-weather roads in the rural areas by the end of the Tenth Plan Period at an estimated cost of about Rs 60,000 crore.
1,66,938 habitations wee eligible for coverage under the programme, out of which 31,502 habitations have been reported either connected under other schemes or not feasible. Therefore, 1,35,436 habittions were targeted for providing road connectivity under PMGSY. The programme also has an upgradation component with a target to upgrade 3.68 lakh k.m of existing rural roads (including 40% renewal of rural roads to be funded by the states) in order to ensure full farm-to- market connectivity. After launching the programme and experience of the first 3 years with the average cost of construction of PMGSY roads, the cost of the programme was revised in 2003-04 to Rs 1,32,000 crore (as against Rs60,000 crore projected initially.)

OBJECTIVE OF THE STUDY

- To know the impact of PMGSY in rural area
- To know the ground reality of the implemetation of the programme
- To know the perception level of the participants under the study area

LIMITATIONS OF THE STUDY

- The sample size is limtied, it may not represent the view of all the people of rural area
- The period of study is for 3 months i.e February 2011 to April 2011.
- The study is restricted to Khurda District of Odisha

SAMPLING PLAN

In support of the objective of the research there is a primary research questionaire admistration method in the field through stratified random sampling method covering the Khurda district through regional, geographical, economic, cultural, lingual and settlement wise. Total 400 questionaires served and 228 response received.

Particulars	Questionaire served	Response received	%
Rural Male below 40 years	100	62	27.19
Rural Female below 40 years	100	46	20.18
Rural Male above 40 years	100	59	25.88
Rural Female above 40 years	100	61	26.75
Total	400	228	100

RESPONDENTS' PERCEPTION WITH REGARD TO PRIME MINISTER'S GRAM SADAK YOJANA (PMGSY)

Toe measure the perception level of the participants with regard to PMGSY the various variables identified as knowledge of PMGSY, development work carried out, project completed as per schedule, connectivity of rural area with the urban area, life line for the rural population, change in the standard of living , employment opportunity, access to the urban culture, reduction of illiteracy, creation of opportunity for the new market, better medical facilities, reduction of gap between urban and rural area, opportunity to sell the product in shor span of time and over all improvement of rural area. In this regard we have been assigned as +3, +2,+1, 0 and -1 for the response of the respondents " Completely agree", "Agree", " Neutral", " Disagree" and Completely Disagree"respectively. Final score for each featue are calculated by multiplying the number of response by the weights of the corrosponding response.

CALCULATION OF RESPONDENTS' PERCEPTION: IDEAL AND LEAST SCORES

Ideal scores are calculated by multiplying the number of respondents in each category with +3 and product with total number of attributes. Least scores calculated by multiplying the number of respondents in each category with (-1) and the product with number of attributes in the questionaires.

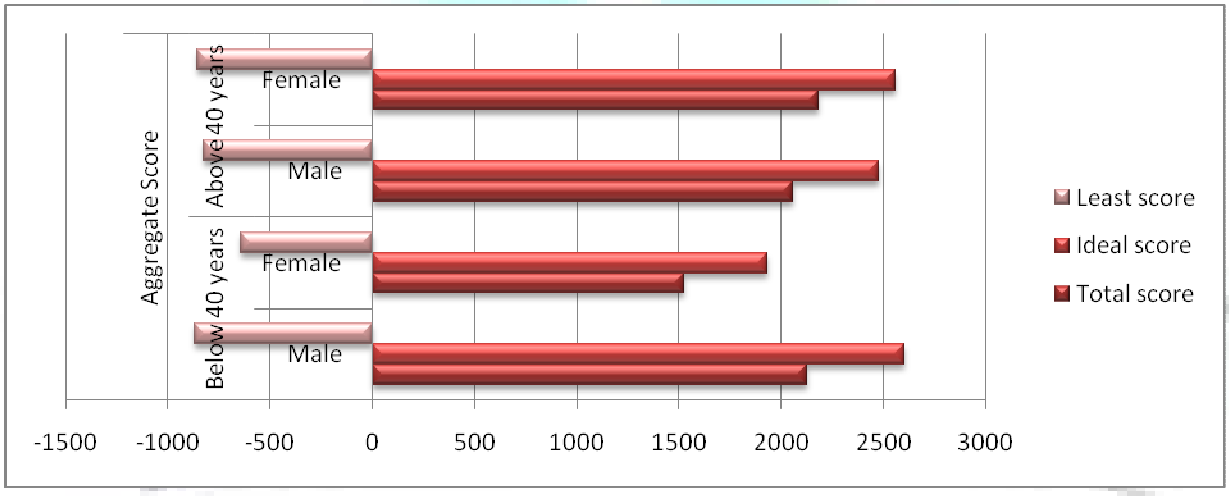
Category	Equation	Ideal score	Equation	Least score
Rural Male below 40 years	14x62x3	2604	14x62x-1	-868
Rural Female below 40 years	14x46x3	1932	14x46x-1	-644
Rural Male above 40 years	14x59x3	2478	14x59x-1	-826
Rural Female above 40 years	14x61x3	2562	14x61x-1	-854

FINDINGS OF THE STUDY

Findings of the study are as under

Attributes	**Aggregate Score**			
	Below 40 years		**Above 40 years**	
	Male	**Female**	**Male**	**Female**
Knowledge of PMGSY	145	105	142	166
The project compelted as per schedule	144	102	149	160
The development work carried out in the rural area under PMGSY	135	107	159	174
PMGSY connected the rural area to the urban area	132	107	134	143
PMGSY plays life line for the rural population	162	100	140	147
Change in the standard of living in rural area with the project	168	108	167	145
Project helped to generate employment opportunity	161	108	133	138
The project helped in accessing the urban culture by the rural population	152	102	148	138
The project helped in reducing the illiteracy in the rural area because of better connectivity to education institutes	156	100	154	166
It created opportunity for new market for different products	139	106	150	168
It helped in providing better medical facilities to the rural mass	135	116	138	175
It helped in reducing the gap between urban and rural area	162	121	135	155
It created opportunity to the farmers to sell their products in the market in short span of time	169	121	146	159
It helped in improving the overall development of rural area	169	123	161	152
Total score	**2129**	**1526**	**2056**	**2186**
Ideal score	**2604**	**1932**	**2478**	**2562**
Least score	**-868**	**-644**	**-826**	**-854**
No of respondents	**62**	**46**	**59**	**61**

Source: Annexure A, B, C & D



INTREPRETATION

The total scores are 2129, 1526, 2056 and 2186 for the rural male and female below 40 years and above 40 years respectively. The ideal scores for the same are 2604, 1932, 2478 and 2562. The percentages of total score to ideal score are 81.76, 79, 82.97 and 85.32 and the average for all the participants taken togather it is 82.26. This reflects that the all the hypothesis considered for the research survey considered to be holds good. In no case the total score touches or near by the least score.

CONCLUDING NOTE

The Prime Minister's Gram Sadak Yojana initiated with an objective to connect the rural India with the urban India. In our paper we tried to understand the ground reality and life style of the rural people after the completetion of PMGSY in our study area. Especially in the Khurda district the area which we covered

found to be lot of transformation in the life of the people. However it is not necessarily the entire Khurda district got the benefit out of this programme. In certain areas till today the basic human needs are not available. During our study we had also experienced that most of the people benefited by the PMGSY at the same time some people need to change the mind set to derive the benefits out of this programme. The PMGSY is only a stage, setup specially for rural Odisha , now it is upto the inhabitants to shape their life style and derive the benefits out of it. There is lot of research scope for the KBK (Koraput, Bolangir and Kalahandi) area also in this context. May be as the Khurda district is in the capital region of Odisha the implementation of programme is sucessful and rest of Odisha need for further research before conclusion of sucessful of PMGSY in entire state of Odisha.

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ANNEXURES

ANNEXURE –A (62)

Attributes	Opinion of rural male below 40 years					
	Completely agree	Agree	Neutral	Disagree	Comletely disgree	Score
	+3	+2	+1	0	-1	
Knowledge of PMGSY	43	8	4	3	4	145
The project compelted as per schedule	41	9	6	3	3	144
The development work carried out in the rural area under PMGSY	38	10	5	5	4	135
PMGSY connected the rural area to the urban area	37	9	8	3	5	132
PMGSY plays life line for the rural population	50	6	2	2	2	162
Change in the standard of living in rural area with the project	52	5	3	1	1	168
Project helped to generate employment opportunity	51	4	2	3	2	161
The project helped in accessing the urban culture by the rural population	46	7	3	3	3	152
The project helped in reducing the illiteracy in the rural area because of better connectivity to education institutes	47	5	5	5	0	156
It created opportunity for new market for different products	42	6	6	3	5	139
It helped in providing better medical facilities to the rural mass	40	4	10	5	3	135
It helped in reducing the gap between urban and rural area	53	2	2	2	3	162
It created opportunity to the farmers to sell their products in the market in short span of time	54	3	2	2	1	169
It helped in improving the overall development of rural area	55	2	1	3	1	169

Source: Compiled from field survey

ANNEXURE –B (46)

Attributes	Opinion of rural female below 40 years					
	Completely agree	Agree	Neutral	Disagree	Comletely disgree	Score
	+3	+2	+1	0	-1	
Knowledge of PMGSY	30	8	2	3	3	105
The project compelted as per schedule	29	8	3	2	4	102
The development work carried out in the rural area under PMGSY	33	5	2	2	4	107
PMGSY connected the rural area to the urban area	31	6	4	3	2	107
PMGSY plays life line for the rural population	28	7	5	3	3	100
Change in the standard of living in rural area with the project	32	4	6	2	2	108
Project helped to generate employment opportunity	34	3	3	3	3	108
The project helped in accessing the urban culture by the rural population	27	8	7	2	2	102
The project helped in reducing the illiteracy in the rural area because of better connectivity to education institutes	26	9	6	3	2	100
It created opportunity for new market for different products	29	10	2	2	3	106
It helped in providing better medical facilities to the rural mass	33	9	1	1	2	116
It helped in reducing the gap between urban and rural area	35	8	1	1	1	121
It created opportunity to the farmers to sell their products in the market in short span of time	36	7	1	2	0	121
It helped in improving the overall development of rural area	38	5	1	0	2	123

Source: Compiled from field survey

ANNEXURE –C (59)

Attributes	Opinion of rural male above 40 years					
	Completely agree	Agree	Neutral	Disagree	Comletely disgree	Score
	+3	+2	+1	0	-1	
Knowledge of PMGSY	42	8	3	3	3	142
The project compelted as per schedule	46	6	2	2	3	149
The development work carried out in the rural area under PMGSY	48	7	2	1	1	159
PMGSY connected the rural area to the urban area	41	5	5	4	4	134
PMGSY plays life line for the rural population	40	9	4	4	2	140
Change in the standard of living in rural area with the project	50	8	1	0	0	167
Project helped to generate employment opportunity	41	7	2	3	6	133
The project helped in accessing the urban culture by the rural population	45	6	3	3	2	148
The project helped in reducing the illiteracy in the rural area because of better connectivity to education institutes	48	5	2	2	2	154
It created opportunity for new market for different products	47	4	3	3	2	150
It helped in providing better medical facilities to the rural mass	39	9	5	4	2	138
It helped in reducing the gap between urban and rural area	42	6	2	4	5	135
It created opportunity to the farmers to sell their products in the market in short span of time	46	4	3	3	3	146
It helped in improving the overall development of rural area	52	3	1	1	2	161

Source: Compiled from field survey

ANNEXURE –D (61)

Attributes	Opinion of rural female above 40 years					
	Completely agree	Agree	Neutral	Disagree	Comletely disgree	Score
	+3	+2	+1	0	-1	
Knowledge of PMGSY	51	6	2	1	1	166
The project compelted as per schedule	48	7	3	2	1	160
The development work carried out in the rural area under PMGSY	54	5	2	0	0	174
PMGSY connected the rural area to the urban area	46	4	3	2	6	143
PMGSY plays life line for the rural population	43	8	5	2	3	147
Change in the standard of living in rural area with the project	42	7	7	3	2	145
Project helped to generate employment opportunity	40	6	9	3	3	138
The project helped in accessing the urban culture by the rural population	38	10	8	1	4	138
The project helped in reducing the illiteracy in the rural area because of better connectivity to education institutes	51	5	4	0	1	166
It created opportunity for new market for different products	54	3	2	0	2	168
It helped in providing better medical facilities to the rural mass	53	8	0	0	0	175
It helped in reducing the gap between urban and rural area	47	6	4	2	2	155
It created opportunity to the farmers to sell their products in the market in short span of time	49	5	4	1	2	159
It helped in improving the overall development of rural area	48	2	6	3	2	152

Source: Compiled from field survey

CHOICE OF CAPITAL STRUCTURE MODEL: AN EMPIRICAL ANALYSIS WITH REFERENCE TO STATIC TRADE-OFF VS PECKING ORDER THEORIES IN BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

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ABSTRACT

*This study attempts to determine the predictors of capital structure (**CS**) in the beverage and alcohol industry in India and also enhance the study to find out the approach followed by these firms to decide their **CS**. To rationalize this, two controversial theories namely static trade-off theory (**STT**) and pecking order theory (**POT**) are tested based on the earlier empirical finding supporting the theories. Correlation and regression are used to find the relation between various independent variables and leverage (**LEV**). The findings support the **POT** model, emphasizing that a pecking hierarchy is followed in beverage and alcohol industry in India. Collateral asset and profitability are found to be the major determinants of **CS**.*

KEYWORDS

Capital structure; static trade off theory; pecking order theory; leverage; *beverage and alcohol*

JEL CLASSIFICATION

G32; G11; G17

INTRODUCTION

Capital structure (***CS***) theory is one of the most enigmatic fields in finance. It deals with the firm's choice of the types of securities to issue. There are different views on how ***CS*** influences the value of the firm however; optimal ***CS*** is a question, which the managers themselves find difficult to answer. The earlier empirical works concentrated on exploring the determinants of optimal ***CS***. The work of **Modigilani and Miller (1958)**[1] has analyzed if debt is a vital part of ***CS***. The advantages from having debt capital in the ***CS*** of the firm has led to many researches in the field but still have left it unexplored with hopes for further research. *Static trade-off theory* (***STT***) and *pecking order theory* (***POT***) are two controversial approaches explaining the firm's behavior in deciding the share of debt capital in their ***CS. STT*** explains how trade-off between the benefits and cost leads to well-defined target debt ratios, while ***POT*** gives a pecking hierarchy those mangers follow in funding ***CS.*** Hence, this study attempts to study the model followed in beverage and alcohol industry in India.

BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

India is the world's second largest producer of food next to China, and has the potential of being the biggest with the food and agricultural sector. It is one of the fastest growing economies today and among the world's leading agricultural producers. Agriculture and allied sectors accounted for 15.7% of the GDP in 2009–10.The total food production in India is likely to double in the next ten years and there is an opportunity for large investments in food and food processing technologies, skills and equipment, especially in areas of canning, dairy and food processing, specialty processing, packaging, frozen food/refrigeration and thermo processing. Although India is one of the world's major food producers it accounts for less than 1.5 per cent of international food trade, which indicated a vast scope for both investors and exporters. Consumer expenditure on food, beverages and tobacco in India is forecasted to grow at a CAGR of 12.2% during 2007 to 2011. India is the world's largest market for whisky will also remain as major global spirits market in the coming years. The alcoholic drink value growth for the year 2010 is 16.9% and is forecasted to increase to 81.6% by 2015 while the soft drink volume growth for 2010 is 9.3% and forecasted to grow as 51.7% by 2015 (**India Food and Drink Report Q1 2011)**.

CONCEPTS AND LITERATURE REVIEW

STATIC TRADE-OFF THEORY (STT)

Static trade-off theory ***(STT)*** elucidates that a firm follows a target debt-equity ratio and then behaves accordingly. The benefits and costs associated with the debt option sets this target ratio (**SyedTahir Hijazi and Yasir Bin Tariq 2006)** [2]. In a ***STT*** framework the firm is viewed as setting a target debt to value ratio and gradually moving towards it **(Myers 1984)**[3]. The benefits from debt tax shield are thus adjusted against cost of financial distress, agency cost, informational asymmetry and transaction cost. The optimal debt level is attained when the marginal value of the benefits associated with debt issues exactly offsets the increase in the present value of the costs associated with issuing more debt **(Myers 2001)** [4].

PECKING ORDER THEORY (POT)

The pecking order theory ***(POT)***, on the other hand, gives a behavioural explanation of why certain companies follow a hierarchy in financing their ***CS***. This theory also reflects on some rationale arguments, such as asymmetric information and signaling, as well as with flotation costs which are not explicated by the ***STT***. The ***STT*** fails to predict the wide degree of cross-sectional and time variation of observed debt ratios which resulted in ***POT*** **Myers (1984)** [5]. Under the pecking hierarchy, firms prefer internal finance and when external finance is required, firms issue the safest security first. They start with debt, then possible hybrid securities such as convertible bonds then perhaps equity as a last resort. The ***POT*** explains why the bulk of external financing comes from debt and is consistent with the observation that the most profitable companies within an industry tend to have the least amount of leverage (***LEV)***. This ***POT*** suits to large firms with high ***P*** and which has enough internal funds in the form of retained earnings and depreciation.

THEORIES IN THE LIGHT OF VARIOUS INDEPENDENT VARIABLES

A number of empirical studies viz., **Harris and Raviv, (1991) [6], Titman and Wessels, (1988) [7]; Rajan and Zingales, (1995) [8]; Bevan and Danbolt (2002) [9]; Mary Hany A.K. Dawood El-Sayeda I. Moustafa and Mohamed S. El-Hennawi (2011) [10]; and Ali Mustafa Abdullah Al-Quda (2011) [11]** have identified firm-level characteristics such as size of the firm ***(SIZ)***, asset structure ***(COLASS)***, profitability ***(P)***, growth ***(GROW),*** volatility ***(VOL)*** and non-debt tax shield ***(NDTXSH)*** as variables influencing the ***CS*** of firms. These studies also considered these variables as the predictor variables determining the ***LEV*** of the firm.

(a) PROFITABILITY

TT predicts that, large profit earning firms should have debt capital to get the benefit of tax shield to mitigate the other cost incurred and therefore there exists a positive relation between ***P*** and ***LEV***. And companies with high profit render high level of borrowing capacity, thus resulted in positive relationship of the variables. On the contrary, ***POT*** elucidates that, highly profitable firms, which have large internal funds available with them, choose to utilize their internal funds first and if external capital is required they choose to issue debt funds to avoid informational asymmetry. Therefore ***LEV*** decreases with increase in ***P*** (**Kester, C. W. (1986) [12], Titman, S. *et al.* (1988) [13], Barton, S. L. *et al.* (1988) [14], Pinegar, M. J. *et al.* (1989) [15], Harris, M. *et al.* (1991) [16], Harries, F. H. De B. (1994) [17], Rajan and Zingales (1995) [18], Jonson, S. A. (1998) [19], Simerly, R. L. *et al.* (2000) [20], Booth, L. *et al.* (2001) [21],** and **Fama and French (2002)) [22].**

(b) GROWTH

According to ***STT***, companies with high ***GROW*** have more risk and higher financial distress costs, thus growth has an inverse relationship with debt level. The ***POT*** predicts that high-growth firms, typically with large financing needs, will end up with high debt ratios because of the managers' reluctance to issue equity. **Smith and Watts (1992) [23] and Fama, E.F., and K. R. French (2002) [24]** also suggested that high-growth firms consistently use less debt in their ***CS***. Therefore, the theory insists on a positive relation between ***GROW*** and ***P***.

(c) COLLATERAL ASSETS

STT argued that higher level of fixed assets serve as collateral ***COLASS*** for debt financing and this will help the firms to easily access thus give a positive relationship between ***COLASS*** and debt level. **Myers (1984) [25]** also suggested that issuing debt secured by ***COLASS*** may reduce the asymmetric information related costs in financing. However, in the view of ***POT***, as argued by **Harris and Raviv (1991) [26],** small firms with low level of fixed assets would have more problems of asymmetric information, making them issue more debt, since equity issues could be possible only by under pricing them. On the other hand, firms with higher level of ***COLASS*** are generally larger firms that can issue equity at fair prices and need no debt finance, therefore there exists a negative relation between ***COLASS*** and ***LEV.***

(d) SIZE

Larger firms have diversified business and therefore have lower possibility of experiencing financial distress **(Titman and Wessels 1988) [27]**, which causes for positive relationship between firm size (***SIZ***) and debt level in ***STT*** approach. **Frank and Goyal (2003) [28]**, and **Rajan and Zingales (1995) [29]** argued that larger firms have lesser problem of asymmetrical information, reducing the chances of undervaluation of the new equity issue which encourages large firms to use equity financing, therefore there exists a negative relation between ***SIZ*** and ***LEV***. The work of **Titman and Wessels (1988) [30]** also states that if there is a ***SIZ*** effect to debt, it will be higher for small firms.

(e) NON-Debt TAX SHIELD

Firms having higher non-debt tax shield (***NDTXSH***), such as R&D expenses or depreciation which reduce total taxable income, rarely introduce new debt into system since ***NDTXSH*** is more beneficial than tax-shield benefit derived from debt financing which increases the cost of financial distress **Huson Joher Ali Ahmed and Nazrul Hisham 2009) [31]**. **Bradley, Jarrell and Kim, (1984) [32] , and Harris and Raviv (1991) [33]** found empirical evidence of positive relation between ***NDTXSH*** and debt. **MacKie-Mason (1990) [34]** argument indicates that this relation is positive for profitable firms and negative for highly distressed firms.

(f) VOLATILITY

Bradley, *et al*. (1984) [35], Kester (1986) [36], and Titman and Wessels (1988) [37] proved that leverage increases with fixed assets, ***NDTXSH***, growth opportunities, and firm size and decreases with volatility ***(VOL).*** Since firms with high earnings volatility have a higher probability of default, investors are less likely to provide financing to such firms.

OBJECTIVES OF THE STUDY AND HYPOTHESES DEVELOPMENT

With the controversial views in respect of the two different ***CS*** models, it is essential to study the determinants of ***CS*** in Beverage and Alcohol industry and to analyze the models that suit to the industry. Keeping this point in view, the following objectives are set.

- To study the determinants of ***LEV*** in beverage and alcohol industry in India.
- To analyze the relation between various determinants and ***LEV*** in beverage and alcohol industry in India.
- To find out the capital structure theory model that applies to beverage and alcohol industry in India.

HYPOTHESES

The hypotheses, for the purpose of testing the models applied in the industry are as follows:

(a) HYPOTHESES FOR TESTING STT

H_o^1: There is no significant relation between leverage and size in Beverage and Alcohol industry in India.

H_o^2: There is no significant relation between leverage and collateral asset in Beverage and Alcohol industry in India.

H_o^3: There is no significant relation between leverage and non debt tax shield in Beverage and Alcohol industry in India.

(b) HYPOTHESES FOR TESTING POT

H_o^4: There is no significant relation between leverage and profitability of Beverage and Alcohol industry in India.

H_o^5: There is no significant relation between leverage and growth of Beverage and Alcohol industry in India.

H_o^6: There is no significant relation between leverage and volatility of Beverage and Alcohol industry in India.

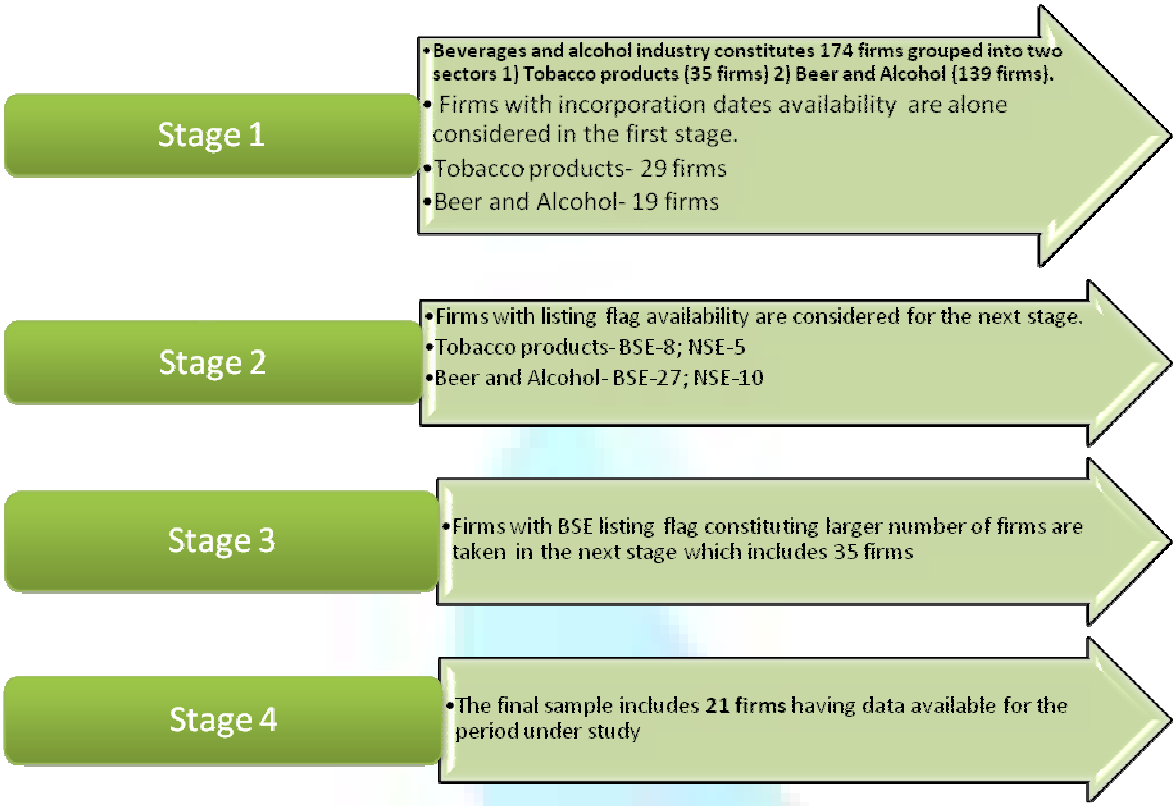
SOURCES OF DATA AND PERIOD OF THE STUDY

The study is based on secondary data, which are collected from Centre for Monitoring Indian Economy **(CMIE)** Prowess package for a period of 10 years on year to year basis ranging from 2000-2001 to 2009-2010 updated as on 7th April 2011.

SAMPLING DESIGN

Multistage sampling technique is used and the different stages followed are shown below:

CHART A: MULTISTAGE SAMPLING TECHNIQUE



Source: Computed results based on compiled data collected from CMIE prowess Pvt. Ltd.

RESEARCH METHODS FOR ANALYSIS

Descriptive statistics such as mean, median and standard deviation are used to neutralize the fluctuation in the value of explained as well as explaining variables. Correlation co-efficient is extensively used to study one-to-one relationship between variables. Multiple regression is also used to determine the various variables that influence the ***LEV*** in the firms. Appropriate ratios as stated below are used to calculate individual relative properties of the selected variables.

TABLE 1: DESCRIPTION OF MEASURES (RATIOS) USED

Variables	Description	Inference
LEV	Long term debt/Book value of equity	A high value denotes high leverage in terms of long term debt and vice versa
P	PBITD/Fixed Assets	A high value denotes higher profitability in terms of fixed assets
NDTXSH	Ratio of the sum of depreciation and amortization / Total Assets	A high value denotes a higher non debt tax shield and vice versa
COLASS	Ratio of Property, Plant and Equipment / Total Assets.	A high value denotes higher share of fixed asset to total asset, which implies greater share of assets is invested for increasing earning and vice versa
SIZ	Logarithm of Sales over Years	Turnover adjusted for fluctuation over years
GROW	Compounded annual growth rate (CAGR) of total assets	The growth of total asset over years
VOL	Standard deviation of earnings before interest, taxes and depreciation (EBITD) / Total Assets	A high value denotes greater volatility in earnings from the assets invested and vice versa

REGRESSION EQUATION

Titman and Wessels (1988), who measured ***CS*** simultaneously by the ratios of long-term debt, short-term debt, and convertible debt to the market value of equity found that long-term debt is the most important proxy of capital structure, followed by short-term debt, and then convertible debt. Therefore, this study assumes long-term debt to equity capital as proxy for ***LEV***.

EQUATION

$$LEV = \alpha + \beta_1 VOL + \beta 2\, COL\, ASS + \beta_3 NDT\, XSH + \beta_4 P + \beta_5 SIZ + \beta_6 GROW + \epsilon$$

INDUSTRY ANALYSIS AND FINDINGS

The various explaining variables, the expected sign indicating the kind of relation with ***LEV*** and the theory supporting the relation between independent and dependent variables are shown in *table 2* which forms the basis for the results of analysis to be compared.

TABLE 2: PREDICTOR VARIABLES, EXPECTED SIGN AND SUPPORTING THEORY

Variables	Expected sign	Theory	Proxy
VOL	Negative	Pecking order	Standard deviation of earnings before interest, taxes and depreciation (EBITD) / Total Assets
COLASS	Positive	Static trade-off	Ratio of Property, Plant and Equipment / Total Assets
NDTXSH	Positive	Static trade-off	Ratio of the sum of depreciation and amortization / Total Assets
P	Negative	Pecking order	PBITD/Fixed Assets
SIZ	Positive	Static trade-off	Logarithm of Sales over Years
GROW	Positive	Pecking order	Compounded annual growth rate (CAGR) of total assets

The descriptive statistics show that *(see table 3)* there is negative sign in the minimum value of ***P***, indicating that firms incurring loss are also included in the sample size. ***LEV*** shows the highest standard deviation (5.145) proving that there are varied level of leveraging policy followed by the firms belonging to

beverage and alcohol industry. The ***SIZ*** show the next highest level of mean value (2.166) and the standard deviation (.807) is also high, indicating that the firms vary in their turnover size.

TABLE 3: DESCRIPTIVE STATISTICS OF BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

Variables	N	Minimum	Maximum	Mean	Std. Deviation
LEV	21	.350	16.330	5.171	5.145
VOL	21	.016	.318	.066	.066
COLASS	21	.165	.752	.395	.176
NDTXSH	21	.007	.062	.029	.015
P	21	-.134	.740	.283	.234
SIZ	21	.777	4.208	2.166	.807
GROW	21	-.125	.418	.084	.129

Source: Computed results based on compiled data collected from CMIE prowess Pvt. Ltd.

The correlation results show that *(see table 4)* ***GROW*** alone has significant (at 5%) positive correlation (.544*) with ***LEV***, supporting the ***POT***. Therefore, growing firms have insufficient internal funds to finance their opportunities and depend on debt funds, which is the next choice in the pecking hierarchy to avoid informational asymmetry. The hypothesis "H_o^5: there is no significant relation between leverage and growth" is rejected. Hence, there is a significant relation between ***LEV*** and ***GROW*** of Beverage and Alcohol industry in India.

TABLE 4: CORRELATIONS OF DETERMINANTS OF *CS* OF BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

Variables	LEV	VOL	COLASS	NDTXSH	P	SIZ	GROW
LEV	1						
VOL	.068 .771	1					
COLASS	-.421 .057	-.233 .309	1				
NDTXSH	-.151 .514	-.155 .502	.724** .000	1			
P	.181 .431	-.180 .435	-.565** .008	-.519* .016	1		
SIZ	.339 .133	-.411 .064	-.202 .379	-.295 .194	.655** .001	1	
GROW	.544* .011	-.168 .465	-.413 .063	-.350 .120	.574** .006	.488* .025	1

Source: Computed results based on compiled data collected from CMIE prowess Pvt. Ltd.

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

The regression results show that *(see table 5)* ***COLASS*** (-20.758) and ***P*** (-14.016) have significant (at 5% level) negative co-efficient with ***LEV***, supporting the ***POT***. The profitable firms choose to use their internal funds rather than opting for borrowing through equity capital which reduces the value of equity. The results coincide with the findings of **Harris and Raviv (1991).** Firms with higher levels of ***COLASS*** are large firms that can issue equity at fair prices and need no debt finance. Therefore, there exists a negative relation between ***COLASS*** and ***LEV.*** The hypotheses H_o^2 and H_o^4 are rejected in support of ***POT***.

SIZ (3.464) and ***GROW*** (20.694) have significant positive co-efficient with ***LEV***. Thus growing firms rely on debt capital when their internal funds get exhausted supporting ***POT***. ***SIZ***, on the contrary, shows a positive relation supporting the ***STT***. The firms having higher turnover have lesser problem of financial distress and so have more debt capital. This relation can be better explained with the argument of **Titman and Wessels (1989)**, who stated that the relation of ***SIZ*** to debt will be higher for small firms. Therefore, H_o^5 is rejected in support of ***POT*** while H_o^1 is rejected in support of ***STT. NDTXSH*** and ***VOL*** have insignificant role in determining the ***LEV***. Hence, H_o^3 and H_o^6 are accepted. The R^2 (0.601) value is over 60%, indicating that the regression model determines over 60% of variance in ***LEV*** while the remaining 40% is determined by other variables. The F stat value (3.508) is also significant at 5% level, indicating that the variance in the dependent variable is explained by variance in independent variables.

TABLE 5: REGRESSION EQUATION ON *LEV* OF BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

Variables	Coefficients	Std. Error	t value	p value
(Constant)	3.398	5.058	.672	.513
VOL	12.578	15.760	.798	.438
COLASS	-20.758*	8.245	-2.518	.025
NDTXSH	134.065	84.883	1.579	.137
P	-14.016*	6.263	-2.238	.042
SIZ	3.464*	1.613	2.148	.050
GROW	20.694*	8.560	2.418	.030
R^2	0.601			
Adj-R^2	0.429			
F Stat	3.508* (0.025)			

Source: Computed results based on compiled data collected from CMIE prowess Pvt. Ltd.

DISCUSSION ON RESULTS

The *table 6* indicates that ***POT*** is the model supported with regard to ***COLASS, P*** and ***GROW*** and the positive relation between ***SIZ*** and ***LEV*** supports ***STT*** as justified by **Titman and Wessels (1988)**. But, the firms showing greater turnover are growing firms with upcoming opportunities and therefore have to rely on

debt capital rather than equity capital supporting in real the ***POT***. The significant positive relation between ***SIZ*** and ***GROW*** (*see table 4*) also supports this inference about the positive relation between ***SIZ*** and ***LEV***. In general, the ***POT*** model is followed by firms in beverage and alcohol industry in India.

TABLE 6: THEORY SUPPORTED BY VARIOUS FINANCIAL VARIABLES IN BEVERAGE AND ALCOHOL INDUSTRY IN INDIA

Variables	Expected sign	Observed sign	Theory supported
VOL	Negative	Positive	-
COLASS	Positive	Negative*	Pecking order
NDTXSH	Positive	Positive	-
P	Negative	Negative*	Pecking order
SIZ	Positive	Positive*	Pecking order
GROW	Positive	Positive*	Pecking order

CONCLUSION

India, being the largest producer of world's whisky market and with the forecasted growth rate of 12.2% during 2007 to 2011 in consumer expenditure on food, beverages and tobacco, the study of their ***CS*** has put forth interesting results about their leveraging policy. The two controversial approaches (***STT*** and ***POT***) to ***CS*** are discussed in this study to find out the model that is significantly applied in Indian beverage and alcohol industry. It has been found that the firms follow ***POT*** model and therefore follow the pecking hierarchy of **Myers (1984)** in financing their ***CS***. Debt capital is given more importance to avail the tax benefit and to avoid the information asymmetry problem. They do not fix a target optimal level of debt equity ratio and try to reach it, thus ***STT*** fails in the Indian perspective. ***COLASS*** followed by ***P*** are considered as important determinants of ***LEV*** as they have comparatively large't' values, however ***NDTXSH*** and ***VOL*** are found to be insignificant in determining ***LEV***.

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EFFECTIVE MARKETING STRATEGY FOR SMALL SCALE PLASTIC PROCESSING UNITS IN M. I. D. C., JALGAON

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ABSTRACT

Indian Plastic processing industry has made significance achievement in last 50 years with more than 30,000 units spread over India. The capacities built in most segments of this industry coupled with inherent capabilities have made us capable of servicing the overseas market. The demand for plastics was ever growing. Mid 1990s came with the need to organize Indian plastics sectors as much as to consolidate and cater to the global market requirements. The economic reforms launched in India since 1991, have added further fillip to the Indian plastic industry. Maharashtra Industrial Development Corporation Jalgaon is well known for its Plastic industries, Particularly for Polypropylene mats and Polyvinyl Chloride Pipes. The market share of Polypropylene mats of Maharashtra Industrial Development Corporation Jalgaon is more than 80% of the Polypropylene mat Production in Maharashtra. But it has been observed that during previous 10 years the prices of Polypropylene mats has gradually decreased and profit margin for manufacturer has reached at break even point. Similar trends have been observed in Polyvinyl Chloride pipes and allied plastic products as well. This present situation is due to consequences of number of factors including improper marketing strategies, cut practices, improper and flexible pricing. The maximum small scale plastic processing units in MIDC, Jalgaon are now working at break even level. To cope up with present problems of industry and for progress, the strategic marketing management is mandatory for these units. Researcher has analyzed the situation and suggests several strategic alternatives to the industry.

KEYWORD
Globalization, Strategic Alternatives, Strategic Marketing.

INTRODUCTION

The Plastics Industry in India has made significant achievements ever since it made a modest but promising beginning by commencing production of Polystyrene in 1957. The plastic processing sector comprises of over 30,000 units involved in producing a variety of items through injection moulding, blow moulding, extrusion and calendaring. The capacities built in most segments of this industry coupled with inherent capabilities have made us capable of servicing the overseas markets.

The demand for plastics was ever growing. Mid 1990s came with the need to organize Indian plastics sectors as much as to consolidate and cater to the global market requirements. The Indian plastics industry faced intense competition from companies that were globally consolidated. Indian plastic industry needed technological advancements to compete the existing players in terms of product quality, cost and quantity. The economic reforms launched in India since 1991, have added further fillip to the Indian plastic industry. Joint ventures, foreign investments, easier access to technology from developed countries etc have opened up new vistas to further facilitate the growth of this industry.

Maharashtra Industrial Development Corporation (MIDC) has set up Industrial Estate at Jalgaon in 1983 which occupies 646 Hectors of land having approximately 1757 Industrial plots and more than 1000 small scale Industries in operating conditions. Maharashtra Industrial Development Corporation Jalgaon is mainly known as pulses, pipes & mats Industry. There are more than 200 pulse mills, 150 Polyvinyl Chloride pipe industries, 100 Polypropylene mats & Granules small scale Industries. Maharashtra Industrial Development Corporation Jalgaon also includes 68 large scale Industries having Rs.1728 Crore investment. The overall employment generated by Maharashtra Industrial Development Corporation Jalgaon is more than 28000 in numbers. Further Total investment in small scale Industries is Rs. 277 Crore.

The Plastic Industries in Maharashtra Industrial Development Corporation Jalgaon mainly includes Polypropylene mats & Polyvinyl Chloride Pipe production units. The Jalgaon Pipes & Polypropylene mats has captured the huge market share across the nation. Jalgaon PP mats manufacturing industry are the largest mats manufacturing industry not only in Maharashtra but also in the Country too. Pipes from Jalgaon are also distributed and used all over India. Jain Irrigation Systems Ltd. Jalgaon is the milestone Company in the field of Pipe Manufacturing in India.

MARKETING STRATEGY: THEORETICAL APPROACH

ORIGIN, HISTORY, DEFINITION

The word "Strategy," derived from the ancient Greek, means, "the art of the general," Till recently its use was confined to the military. Encyclopedia Britannica defines strategy as "the art of projecting and directing campaigns… a prelude to the battlefield." Strategy is the corner-stone of military command. The general is responsible for divising the key idea by which his forces are expected to reach the goal.

From the business point of view, strategy may be defined as "the schemes whereby a firm's resources and advantages are managed in order to surprise and surpass competitions or to exploit opportunities." Marketing strategy connotes a broad set of determinations that would direct the entire marketing planning process." According to Philip Kotler, "marketing strategy is the basic approach that the business unit will use to achieve its objectives and it consists of broad decisions on target markets, marketing positioning and mix and marketing expenditures levels,". David W. Cravens says "marketing strategy encompasses the design, implementation and management overtime of the total marketing efforts as it relates to the product, channels of distribution, price, advertising and sale force". Sir Philip Kotler also says, Marketing Strategy is "A set of objectives, policies and rules that guide over time firm's marketing efforts." It is a policy to maintain the concern's competitive position in the market. Management gives it a shape with strategies for each product, its distribution, promotion and pricing. It tries to balance the controllable with uncontrollable and thus shapes the market needs and wants and fulfils company goals. For this he combines product market distribution, promotion and pricing strategies into a single overall marketing strategy.

MARKETING DECISION IN A COMPETITIVE SETTING

Skilled in planning and using the controllable on individual the marketer has an opportunity to win the buying preferences of certain market segments on a more or less permanent basis. In monopolistic situation the actions of one marketing manager have no effect upon that of the other while their skill makes major contenders in their industries and those lacking in skill fall back. Every marketer has to consider the moves of competitors and their reactions to his own marketing decisions. Marketing decisions in a competitive setting are influenced by the following factors :

1. **THE PRODUCT:** Whether the marketer is an inventor or a follower to market his product successfully, he must be careful about the competitor's timings of actions. By the actions of the competitors many products have slipped below the status and disappeared.
2. **DISTRIBUTION (MARKETING CHANNELS):** A successful product must reach the central buying places. It must follow the customary channel. The concern should offer a better product, a lower price, a more effective promotional programme or some other combination of other factors.

3. **PHYSICAL DISTRIBUTION:** Marketers want to have the right resource at the right place and at the right time. They care for reasonable costs. As competitors' actions and operations influence physical distribution decisions, the marketing manager must try to send his goods at the required place at the time when needed.
4. **PROMOTION:** The methods applied by the marketer to stimulate market demand are very important. He should spend sufficient amount on advertising giving the knowledge of qualities of his product and a comparison with competitors' products in the market.
5. **PRICE:** The price must coincide with the customer's evaluation of the items. Superior quality brands may be marketed to defeat the competitors. Marketers use aggressive market strategies when they use the other means of controllables.

PREPARING OVERALL MARKETING STRATEGY

In order to achieve careful integration of all dimensions of the marketing efforts, the marketers should determine whether or not the combination of inputs going into the overall marketing strategy is optimal. It involves evaluating of the possible inputs to the overall marketing strategy in terms of the likely outputs. The marketer should make selections from the various inputs in such a way that the combination is the best he can devise for achieving the desired outputs.

FACTORS AFFECTING OVERALL MARKETING STRATEGY

1. **COMPETITORS' COUNTER-MOVES:** These differ with various marketing inputs. Though most competitors can easily and quickly match or otherwise adjust to price changes, they often find it difficult to follow or to retaliate against product innovations. This explains why many marketers seek to gain differential advantage over their competitors by varying product characteristics as altering promotion than prices.
2. **SYNERGISTIC POTENTIAL:** Marketing inputs are capable of being mutually reinforcing or having synergistic potential. The marketer should consider this working towards an optimum overall marketing strategy. Displays and advertisements can be made mutually reinforcing since the display repeats the advertising efforts message at a time when the consumer is in an outlet where the product is on sale. Product inputs and marketing channel inputs can be mutually reinforcing, depending upon the effectiveness with which they are integrated.
3. **SUBSTITUTABILITY:** The selection of marketing inputs is also affected by their degree of substitutability. Substitutability is the extent to which one type of input can be substituted for another type in as much as the nature of marketing objectives such as that of retaining a certain level of profit presents a decision-maker from making unlimited use of all inputs. Consideration of substitutability helps in determining which inputs to include and which to emphasize in the overall marketing strategy.
4. **DIVERSITY IN PRODUCTIVITY LEVELS OF VARIOUS MARKETING INPUTS:** The marketers should recognize that all inputs do not have equal productivity. Some inputs need a minimum level of use before they begin to have measurable effects. An advertising message must often be repeated several times before consumers become aware of it. The lower cost per consumer, contact through radio, magazines and billboards often make it possible to present a much stronger impact on consumer with a limited budget.
5. **ELASTICITY OF MARKETING INPUTS:** Different marketing inputs are elastic. They influence the demand of the product. The marketing manager must recognize that effect on the product. For example, a manufacturer determines different prices for different customers or for different areas on the basis of varying elasticity of demand. The prices for wholesalers, retailers and consumers are different in almost all market.

While formulating the overall marketing strategy the marketing manager must consider all the above factors. The strategy must be so elastic as to incorporate all the strategic factors of the competitors as and when required.

FORMULATING THE MARKETING STRATEGY

Basically, formulation of marketing strategy consists of three main tasks i.e. Selecting the target market, positioning the offer & assembling the marketing mix. This implies that the essence of the marketing strategy of a firm for a given product/brand can be grasped from the target market chosen, the way it is positioned and how the marketing mix is organized. The target market shows the whom the unit intends to sell the products; positioning and marketing mix together show how and using what uniqueness or distinction, the unit intends to sell. The three together constitute the marketing strategy platform of the given product.

1. SELECTING THE TARGET MARKET: To say that target market selection is a part of marketing strategy development is just stating the obvious. It does not fully bring out the import of the inseparable linkage between the two. When the selection of the target market is over, an important part of the marketing strategy of the product is determined, defined and expressed.

2. POSITIONING: The next major dimension of marketing strategy relates to positioning of the offer. The firm has already selected the target market and decided its basic offer. Now, what is the conjunction between these two entities? How do they get connected? What is the interface? In other words, what is the locus the firm seeks among the customers in the chosen target market with its offering? How would the firm want the consumer to view and receive the offer?

3. ASSEMBLING THE MARKETING MIX: The marketing mix means assembling the four Ps of marketing in the best possible combination. Involved in this process are the choice of the appropriate marketing activities and the allocation of the appropriate marketing effort / resources to each one of them. The firm has to find out how it can generate the targeted sales and profit. It considers different marketing mixes with varying levels of expenditure on each marketing activity and tries to figure out the effectiveness of different combinations in terms of the possible sales and profits. It then chooses the combination / mix of product, price, place and promotion that is best according to its judgment.

a. Mix has to be worked out for every brand
b. Deciding the Weightage for each P
c. Marketing Mix has to take its Cue from Customers / Markets
d. Marketing Mix cannot be Static
e. Marketing Mix is the Visible Part of Marketing Strategy
f. Marketing Strategy of Any Firm can be stated in Terms of its Target Market, Positioning and Marketing Mix

OBJECTIVES OF THE STUDY

1) To study overall marketing strategy adopted by small-scale plastic industries.
2) To study various new worldwide marketing techniques available in the field of plastic industries.
3) To study various allied marketing management strategies adopted by small-scale plastic industries.
4) To suggest long term measures to small-scale plastic industries for sustaining in globalize economy.
5) To evaluate the impact of globalization on marketing strategies of small-scale plastic industries.

RESEARCH METHODOLOGY

(a) HYPOTHESIS:

Hypotheses of the proposed research work are as under

1) Rational marketing management strategies lead to increased sale of plastic products, which in turn increases overall profitability.
2) The Small-scale plastic units in Maharashtra Industrial Development Corporation Jalgaon are not having sound marketing strategies for promotion of their products.

(b) DATA COLLECTION:

For obtaining primary data, researcher has interviewed 82 entrepreneurs, out of them 60 full fledged questionnaire are considered for analyses & also 160 marketing executives selected on stratified random sampling technique. The well designed structured questionnaire was used for data collection.

Secondary data was collected from company manuals & records. Reports of Association of plastic industries, magazines, journals, newspapers, reference books etc.

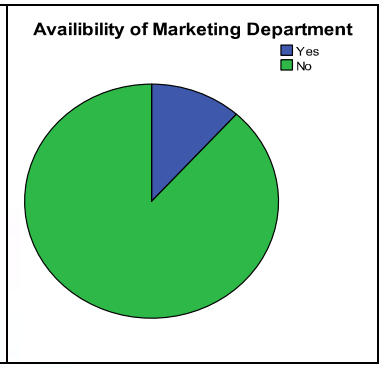
(c) DATA ANALYSIS:

Survey responses were analyzed by using various statistical tools i.e., median, correlation, regression, ANOVAs etc. The analysis of various questions along with pie charts is as given below.

- **Do you have separate marketing department?**

Availability of Marketing Department

	Frequency	Percent	Cumulative Percent
Yes	7	11.7	11.7
No	53	88.3	100.0
Total	60	100.0	



- **Do you have Brand Name?**

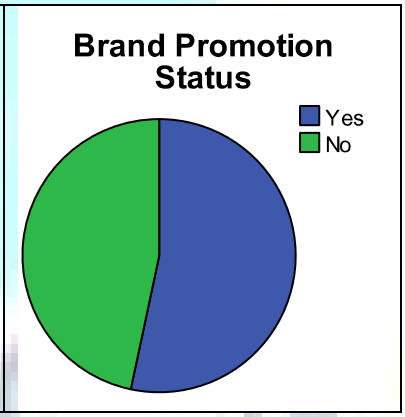
Availability of Brand Name

	Frequency	Percent	Cumulative Percent
Yes	48	80.0	80.0
No	12	20.0	100.0
Total	60	100.0	

- **Do you promote your Brand? How?**

Brand Promotion Status

	Frequency	Percent	Cumulative Percent
Yes	32	53.3	53.3
No	28	46.7	100.0
Total	60	100.0	

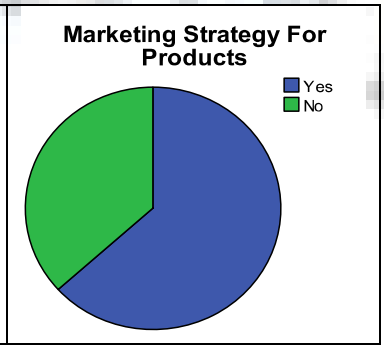


However the 80% despondence having their own Brand name and 53% of them are taking efforts to promote the Brand, but researcher has observed that they are not aware about the methodology to promote the Brand and they are also not aware about the importance of Brand Value in the market.

- **Have you prepared marketing strategy for your product?**

Marketing Strategy For Products

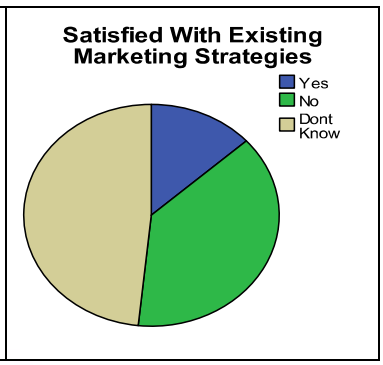
	Frequency	Percent	Cumulative Percent
Yes	38	63.3	63.3
No	22	36.7	100.0
Total	60	100.0	



- **Do you think your existing marketing strategy is best and gives maximum results?**

Satisfied With Existing Marketing strategies

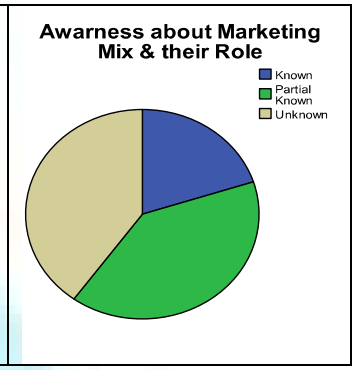
	Frequency	Percent	Cumulative Percent
Yes	8	13.3	13.3
No	23	38.3	51.7
Dont Know	29	48.3	100.0
Total	60	100.0	



- **Do you know about marketing mix (i.e. Product, Price, Place, Promotion) and their role in determining marketing Policies and Strategies of your unit? If yes please explain in details.**

Awareness about Marketing Mix & their Role

	Frequency	Percent	Cumulative Percent
Known	12	20.0	20.0
Partial Known	24	40.0	60.0
Unknown	24	40.0	100.0
Total	60	100.0	



- **How do you advertise?**

Mode of Advertisement Preferred	Response from 60 entrepreneurs
Through word of mouth	47
Through print media	22
Through internet (email)	18
Through electronic media	04
Bill boards	00

- **How you get order for your products? What is the mode of sales preferred for your Products?**

Mode of sale Preferred	Response from 60 entrepreneurs
Direct sale at factory Gate	60
Indirect sale through channels	18
Direct sale through sales executives	07
Online and Telemarketing	05

STRATEGIC MARKETING MANAGEMENT IN SMALL SCALE PLASTIC UNITS; PRESENT SCENARIO

Maharashtra Industrial Development Corporation Jalgaon is well known for its Plastic industries, Particularly for Polypropylene mats and Polyvinyl Chloride Pipes. The market share of Polypropylene mats of Maharashtra Industrial Development Corporation Jalgaon is more than 80% of the Polypropylene mat Production in Maharashtra. Researcher has personally collected the information through questionnaire about marketing management of small scale plastic industries in the Maharashtra Industrial Development Corporation Jalgaon. Also several strength areas of small scale plastic industries are also identified. As to pointing limitation of words in research paper a very brief analysis is given below.

During the analysis of selling price of PP mats it has been observed that during previous 10 years, the prices of Polypropylene mats has gradually decreased and profit margin for manufacturer has reached at breakeven point. Similar trends have been observed in Polyvinyl Chloride pipes and allied plastic products as well. The continuous decline trend of plastic mats enforced Manufactures to use raw material of inferior quality i.e. in 1999 the ratio is 80% virgin material + 20% recycled material. Where as in 2009 it was 10% virgin material and 90% recycled material. The price, utility, quality and ductility of recycled material is very less than the virgin material. Hence it results in very poor quality of Production. This present situation is due to consequences of number of factors including improper marketing strategies, cut practices, improper and flexible pricing. In plastic units marketing strategies adopted by entrepreneurs and marketing executive are at its basic level, instead of competing with global level, they corrode the market by reducing the prices and by providing cheaper quality products. This is badly affects on quality, quantity and acceptability of plastic products of whole small scale industries in Jalgaon.

Researcher would like to ponder upon non availability of separate marketing department. Analysis shows that 75% small scale Units do not have separate marketing department to promote their products. Maximum of these small scale units consider marketing as an allied activity with finance and production. Globalization is one of the major factors responsible for current trend in small scale plastic industries at Maharashtra Industrial Development Corporation Jalgaon. Globalization directly or indirectly has affected all business strategies of small scale plastic industries across India.

FINDINGS

1. Marketing Strategy used by entrepreneurs are at very basic level and instead of promoting own product they are always intended to grab on door customers.
2. Only 10% entrepreneurs are aware about formulation process of marketing strategy.
3. More than 60% entrepreneurs believe that for plastic mats “cheapest is the best” is the optimum strategy.
4. More than 70% entrepreneurs are not using proper marketing communication tools. Maximum of them concentrates on word of mouth and personal selling to retailers.

5. Only 20% entrepreneurs are having formulated marketing management strategy to promote their products.
6. More than 80% entrepreneurs were not conscious and know the important of the Brand Value in market.
7. Out of all interviewed units, more than 80% units don't have separate marketing department. The one who is look after production or office, he caters marketing as an additional responsibility.
8. The adverse impact of globalization on plastic industries is clearly seen.

RECOMMENDING THE BEST STRATEGY FOR PROGRESS

During the analysis of small scale plastic processing industries research has clearly observed that maximum entrepreneurs are either not aware or not interested to implement effective marketing management process for promotion of their products. Researcher further identifies that the main reason behind cultivation of such attitude is Negligence in designing and implementing marketing strategy. Although strategies are changes as per kind, nature and other characteristics of business but by considering the general business environment of small scale plastic processing units. Researcher has suggested several best Strategic applications and steps for survival and progress of these small scale plastic processing units in competitive environment.

1) EXPANDING MARKET SHARE: The Small Scale Plastic Processing Units would try to improve their market share. The profit impact of market strategies (PIMs status) indicates that profitability rises with the market share Sidney Schoeffler, Robbert buzzell and Donald Heany have found on an average, a difference of 10 percentage points in market share accompanied by a difference of about five points in pretox return or return on Investment ROI. Hence, expanding market share is a prime strategy for plastic processing units.

2) MARKET CHALLENGER STRATEGIES: The Small Scale Plastic Processing unit which is not dominant but occupying fairly prominent positions in the market and are next to the market leaders are generally beneficiary's of such strategies. Market challenger strategies includes: Price discount strategy, cheap prizing strategy, Introduction of minisize packages & intense advertisement campaign strategy.

3) MARKET FOLLOWER'S STRATEGIES: There are a large number of small scale plastic processing units which are content with moderate market presence. These units have limited resources and therefore cannot go for quality innovation, new technologies or extensive promotional campaigns and therefore their production capacities and marketing efforts would remain moderate. The market followers would construct their strategies in relation to the companies who have higher market shares than themselves.

The market followers should frame their strategy depending upon the market segment to which its product goes and in general the unit keeps its manufacturing cost low and its product quality acceptable to the consumers. Follower units have their set of customers in different segments and they try to retain these customers. Often, these customers are targeted by market challenger units for improving their sales and market share. The market follower units decide their growth depending upon the growth potential of target markets. These units do not have the capability to grow aggressively like the large companies in the challenger's role. The market follower units often concentrate on profit and cost and effective organizational management.

4) MARKET NICHE STRATEGY: In the niche or focus strategy the small scale plastic processing units concentrates on a selected few target markets. As the small scale plastic processing units i.e. manufacturer of plastic processing mats and PVC pipes are already classified in niche category the following niche market strategies can be used as per applicability.

SPECIALIST NICHE: Such units may specialize in one type of job like fabrication of plastic products, plastic mats, PVC Pipes and Hollow plastic containers.

VERTICAL JOB SPECIALIST NICHE: Such units may be specializing in certain production parts or jobs which are required by large original equipment manufacturers like plastic moulded container for oil.

PRODUCT LINE NICHE: It includes units which may produce special products and continue to sell these products.

CONCLUSION

The Small scale Plastic Processing Units in MIDC, Jalgaon has been moving through critical state. Instead of "survival to the fittest" maximum entrepreneurs believes in "Cheapest is the best" which badly affects on their business operation and promotion activities. The successful and efficient implementation of marketing management strategies is the optimum solution for overcoming the problem of survival and existence. However, even though the small scale plastic processing units are affected and effected by globalization, still they proves their flexibility to operate the business in adverse scenario and work together and identifies themselves as a market leader in plastic mats and pipes in India.

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BUSINESS OPPORTUNITIES AND TRENDS IN INDIA
'SILVER MARKET AND YOUTH PREMIUM MARKET'

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ABSTRACT

The mantra of new era of marketing is to make delighted the actual, potential and perennial consumers. In today's scenario, to woo the consumer is a great challenge because everything is on the scale of fluctuations. The customers' literacy, media explosion and customers behavior, all these affect the consumer's attitude in the consumption and purchasing process and ultimately on the business opportunities. The most important empowerment, 'India is the world's 4th largest economy in terms of Purchasing Power Parity, after USA, China and Japan; it is expected to move to the third position by the year end'. The literacy rate among youth is 82 percent with better literacy ratio among women sector too, which is a very powerful tool. Asia's relatively bright growth prospects is due to the solid presence of 'the most exciting consumer market segment' in Asia; the 'elderly consumer market' aged 65 and above, already having long established their financial independence and purchasing power and the 'young premium consumer market', the young premium consumer, a segment that is increasingly well educated, geographically mobile and technologically savvy. The youth market is to become bigger in the coming decade, their buying power estimated to reach $ 331 billion in affluent Asia and $ 500 billion in emerging Asia by 2016. Business in the 21st Century, beside price will be based on the product quality, more incredible customer service, shopping convenience and customizing will breed success. In new mantra, the customer is the lifeblood of business and internet is the lifeline. Thus big latent opportunities are envisaged.

KEYWORDS
Convenience and cost, latent market, purchasing behavior, product variant, and rural / premium market segment.

INTRODUCTION

Strictly speaking, in the entire business cycle, there are only two main forces that can build up a healthy 'economic scenario'; on *one side the marketer and on another the consumer.* They are very significant, and play a vital role with all other various market variables and consumer forces. The hi-tech technology platform is providing customized products and lot more product features with best marketable offering. The industrial revolution, green revolution, windfall growth of information technology and the groundswell environment and liberalization of economy has opened up new opportunities and distinct positive business trends in Indian market.

The business opportunities have become more robust with the entry of multinationals and the competition has become intense. As a result, the size and responsiveness of the urban markets have almost been sluggish and share of business has been divided to the minimal despite the high sales promotion overheads. The fast moving consumer goods (FMCG) from the major players such as HLL, Colgate Palmolive, Britannia and Procter and Gamble were the first to wake up and begin to look for better business opportunities to encash positive trends of the business.

The analysis of new trend of future business opportunity indeed depict that brands such as Anacin Tablets, Brooke Bond Tea, shampoo sachet and Lifebuoy soap were among the first to hit the new market and new retailer's shelves of the rural market. The big business players penetrated into the highly potential, lucrative and new market with unique marketing strategies. The new pocket of new market obviously the Indian rural markets, which is very huge market and with better buying capacity.

The retail sector in India is a rising sector and it has lot of scope and positive business trend, which influences on the buying behavior of "Silver Market and Youth Premium Market". The Indian retail industry accounts for 10 percent of the GDP and 8 percent of employment. The ICRIER study found that total Indian retail business would grow at 13 percent from US$ 322 billion in 2006-07 to US$ 590 billion in 2011-12.

The unorganized retail will grow 10 percent from US$ 309 billion 2006-07 to US$ 496 billion in 2011-12. An Economic Times study of 50 top consumer goods and services firms in the June quarter of 2008-09 saw sales grow at an average rate of 24 percent year on year. Further, it is backed by better household income. According to NCAER, only 14 percent of Indian households will have annual household incomes less than US$ 921.66 by 2012. Now it is reported that the per capita income is almost Rs 46,000/- hence there is better purchasing power among people.The retailing is the basic and important tool to boost the rural market as well as upcoming customer in the suburban and urban market.

TRENDS OF BUSINESS OPPORTUNITIES

India is a leading economy with vast and massive market potential. Indian economy is growing rapidly in all facets and has created very good congenial feel-good environment on the market and industry. Indian consumer is the focal point and a driving anchor for growth. If we take a close look, Indian market is classified as;

FIGURE NO. 1: INDIAN MARKET PYRAMID

1. The 1st tier market is the richer market; more profitable, ready to pay high, small in number & quantity, brand sensitive and highly niche market. Only costly items will move, very highly focused market and customers. Customer retention pay high business revenue and it has strong relationship marketing. Marketing organized in the exclusive plushy ambience showrooms and retail format.
2. In the 2nd tier market we see upper middle class who are having better standard of living and always pave way with standard products and look for value of product, high-ended popular products (MNC products) etc. Customer loyalty and customers relationship management is the main focus in this tier.
3. In the 3rd tier we interact mostly with the middle class customers who have definite ceiling of price and look for best available benefits at that price. In this tier we envisage more customer defection process in either side. The product quality, price and service will be the main strength to have favor of customer. The variants in the products mix and customer benefits over the competitor's products will be main unique selling proposition (USP) to satisfy the need of customer and to generate customer delight.

4. In the 4th tier we have vast range of customers. This is an arena of consumption-first time purchaser based on their purse-not brand conscious. The product placement and availability of products in all sales points-mass marketing will increase sales. In this tier, little-drop-strategy (sales in small quantity) is the main to pull-customer towards product. Mainly the rural market and unorganized retailer are feeding centre to such demand. The demand potentials and scope of demand is very vast and one can generate good business, it is indeed a great opportunity for future business.

According to the ORG-MARG data, 90 percent of all shampoo and about 65 percent packed tea sales in rural area comes from sachet/small packs. On the other hand, the rising affluence among the upper middle and high income people in rural India has created a vast opportunity for many premium brands. These people are aspiring for superior quality, comfort and convenience, better place of shopping etc.And more importantly, they look for symbol of status and repute.

STRENGTH OF THE FUTURE BUSINESS IN INDIA

In modern competitive world, the urban markets in new retail format as well as rural markets are flooded with different FMCG products of many large scale organizations. In such a competitive market which has business opportunity in the 4th Tier of the market and rural market. It is noteworthy to see the size of rural estimated market. Consuming market was estimated at 742 million people, for the following products;

- The market estimation for Fast Moving Consumer Goods Rs 65,000/- crores.
- Durable Consumer Goods Rs 50,000/- crores.
- Agriculture inputs including tractors Rs 45,000/- crores.
- The market size for 2/4 wheeler Rs 80,000/- crores.

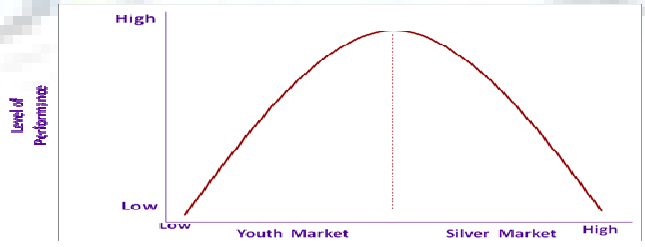
1. **Knowledge Society:** India has the power of Knowledge Society because of better education in all fields such as science, human science, technology, management etc., and the quality of literacy and knowledge has increased manifold. The information technology and use of computer and internet has given new life to urban market. The drive of education for all has registered better literacy level in the rural area. In the year 1947 after Independence the literacy rate was just 12 per cent but now it stands at 82 per cent in youth who have desire to learn further. India's higher education system is third largest in the world, after China and United States.
2. **Media explosion:** The apparent reason of high-tech in media has been giving in-depth exposure of the product by creating awareness in the market. The **Nice retail formats (infrastructure):** The two major tentacles of marketing, *the nice plushy retail sales points and easy finance from the manufacture* made the market more of hedonist, for instance Tata Motor's own finance Company will provide loan to buy their products, Bajaj Finance etc. Their showrooms having very nice ambience and customer reception, most of the consumers desire to purchase goods from these outlets.
3. media explosion has created an impact on the life style and consumers are inclined to have better standards of living.
4. **More job opportunity FOR women:** The concept of employment of women both in government and private sector has increased the disposal money of the family and life has become more automated. The nuclear families in urban area have been changing their life style and rural market is emerging to ultra-modern habits; the basic reason is the opportunities of job for women are increasing day-in-day-out and families tend to have more disposal money.
5. **Quality Consciousness:** Increase in income and improved awareness about the branded products has made the consumer more quality conscious than before. The demand for various categories of durables and non durable goods such as motorcycles, refrigerators, pressure cookers, better quality dress material, TV sets, premium soaps, biscuits, soft drink concentrates etc. are now not confined to urban markets only but it has penetrated in the rural market with quality consciousness and the scope and potential of demand is increasing.
6. **Brand Loyalty:** Improved awareness about the branded products in the rural market have made the villagers more loyal to a particular brand. Brand loyalty has been observed in case of well-entrenched brands such as Colgate tooth paste, Red label tea, Nirma bar and detergent powder, Ponds talcum powder, Lux, Rexona, Onida etc. About 50 to 60 percent of consumers were found to be buying the same brand repetitively.
7. **Fashion Consciousness:** As a result of TV network in all the segments of the rural market, the potential villager is becoming more conscious of how he/she looks and grooms. As a result, sale of textile, cosmetics, personal hygiene products, toiletries and readymade garments, branded shoes is picking up fast in rural areas. HLL/HUL penetration level in rural India for cosmetics is 88 percent (www.estratagicmarketing.com) these figures prove that rural people are becoming fashion conscious.
8. **Urban Orientation:** Many rural people migrate from rural areas to urban industrial locations in search of jobs which accounts for 32 percent rise in urbanization in 2008. Because of influence of urban culture on rural culture, rural customers are now oriented towards newer productsmore often.
9. **Willingness to Experiment:** The rural consumer is no longer suspicious of new urban products. He is willing to experiment with these products and take limited risks. This attitude may help marketers in securing higher trial rate for new products launched in the rural markets. This has made many large scale organizations to introduce their products in Indian rural markets.
10. **Size of market:** The Indian market is very huge and increasing at the rate of 10 to 15 percent. Dr Hedrick-Wong said Asia's relatively bright growth prospect is due to the solid presence of "the most exciting consumer market segment". In his book "The Future and Me: Power of the Youth Market in Asia" he foresees the youth market to become bigger in the coming decade, their buying power estimated to reach $ 331 billion in affluent Asia and $ 500 billion in emerging Asia by 2016.

BUSINESS FUTURE IN "SILVER MARKET AND YOUTH PREMIUM MARKET"

The main driving force of any developed and growing market and matured economy is clustering around the "CONSUMER". Indian consumer / market are packed with sophisticated means of communication and conveyance. The industrial advancement and expanded internal and international trade has paved the way for better business horizons. The rapid increase in population and migration from rural to urban areas has added to the business growth.

India has now the fourth largest gross domestic product (GDP) in the world in purchasing power parity (PPP) of its 1.2 billion people; as many as 450 million are apparently below the age of 21. Indian market is strong because of its two important market segments namely; "elderly consumer market (silver market)" and the "young premium consumer market (growing market)" Thus marketers need to strategize hedonist and consumer convenient marketing environment to gain consumer confidence of these resourceful segments.The consumer's position in India will be 720 million to join consuming age.

DIAGRAM NO. 1: YOUTH MARKET CONVERTING INTO SILVER MARKET



FUTURE MARKET PATH

The likely consuming Indian market is estimated around 720 million with 450 million under 21 years of age and the rest probably the silver market "elderly consumer market (silver market)" or perhaps in the mid of transit. The 4th tier marketing segment and intrinsic element of Indian market as discussed above are all driving forces to the future path of market in India.

This is not to say that there's no market opportunity; according to a recent article in Foreign Policy by University of Michigan Business School, Professor C. K. Prahalad, and Allen Hammond of the World Resources Institute, the 18 largest developing nations are home to some 680 million families earning USD 6,000 a year or less. These low-wage earners take in USD 1.7 trillion a year - roughly the size of Germany's gross domestic product. Hence 4th tier of market is a highly potential market.

Thinking small in large volumes - the essence of little-drop-strategy (sachet) yet never losing brand focus, could open up entirely new markets for many of the world's manufacturers and service providers. If your customers are willing but cash strapped, think micro loans, think mini-sizes, think leasing, think bundling and think reselling! It will create brand awareness with future affluent customers. Some of the thinking may eventually translate in innovative products for mature markets as well. Let us look into the reasons for this sachet revolution:

1. Affordably priced product
2. Less investment
3. Reduced risk of buying
4. Use and throw – single serve packs

SACHET MARKETING STYLE

All goods, namely consumer goods, consumer durable goods and brown goods are marketed in the sachet style. Personal computers, sachet style: in India, the **Simputer**, priced at less than 10,000 rupees, may look like a Palm handheld device, but it's several times more powerful; Multimedia and internet-enabled, current models allow the user the choice of English or one of three Indian languages built into the computer. It is designed to be useful even to the illiterate, thanks to built-in text-to-speech conversion software. **Acer** has also introduced a sub-Rs 21,000 AMD Athlon-based desktop for the Indian market, which comes with Linux, a 40GB hard disk drive, CD ROM and 1.44 Floppy Disk Drive. A smart move, given the fact that the number of PC users is expected to hit or exceed 1 billion by 2010, up from around 660 million to 670 million earlier, fueled primarily by new adopters in developing nations such as China, Russia and India, according to analysts. (Sources: Business Times, CNet.)

RECOMMENDATION

1. Low Unit Price- over the years, the sachet strategy has proved so successful that, according to an ORG Marg data, 95 per cent of total shampoo sales in rural India are by sachets. A decade ago, Hindustan Lever Ltd (HLL) experimented with a marketing strategy of sachets. The aim was to initiate rural consumers to use shampoo in the place of traditional alternatives and in the process it increased sales volumes and made shampoo affordable for the masses. These LUP one-time-use packs proved popular with the consumers. Urban consumers, too, have responded enthusiastically to sachet shampoos, as also the hotel industry.
2. Tata Nano is the best automobile product example to catch the fourth tier market segment and the sachet strategy from all FMCG company to open the future market in the Indian market.
3. Predictive marketing strategy to grab around 450 million people who are under 21 years of age. The silver market elderly consumer market is perhaps in the mid of transition.
4. The determined market size 450 youth, marketer need to develop best fitted products to meet the demand with better relationship marketing and customer relationship management. In due course of life cycle perhaps the same youth customer will fall in the category of elderly silver market. Hence nourishing of youth premium market is most important since same can be envisaged as silver market over a period of time.
5. The business in retail sector will be alwaysbe there even during a recession because it has very intrinsic character of retailing. GopiKrishnaswamy, CEO of Insight Instore a firm that gauges shopping trends through market research, said that thanks to recession, traditional retailers, the *kirana*shops have benefited immensely. The demand and need of sachet – small in quantity – always exist irrespective of recession or not.
6. The Four Ps is also being replaced by the Four Cs model, consisting of *consumer, cost,convenience*, and *communication*. The Four Cs model is more consumer-oriented and fits better in the movement from mass marketing to niche marketing.

CONCLUSION

1. Many agencies have estimated differently about the size of market. The one thing that is common amongst these estimates is that Indian market will be very huge and has massive scope of increase. The little-drop-strategy will play a very significant role and will have sizeable impact on the market share.
2. The status of the retail industry will depend mostly on external factors such as Government regulations and policies and real estate prices, besides the activities of retailers. The demand and customer-pull has alwaysbeen a driving force and plays a significant role in the retail industry.
3. The new opportunities across a broad range of geographies and infrastructure are being captured by an increasing number of domestic real estate developers and investors. Indeed, allare eager to participate in a booming market that is still at an infancy stage of evolution.
4. In the rush to expand retail formats and to construct new malls, many schemes fall well below international standards. But ultimately there will be morechoice available for the Indian consumer since the number of malls coming-up is increasing. Further, it is observed that sincemost of the mallsdo not meet international standards, they may not be up to the expectation of the market dynamics.
5. Most of the retailers will struggle to implement aggressive expansion plans to retain existing customers and to avoid customer defection. The challenges before the retailers are; a lack of suitable and affordable property, inefficient logistics operations and shortage of manpower;more particularly skilled manpower. A rapidly growing, but highly challenging retail environment will inevitably result in many losers as well as winners.
6. Local retailer should have better product mix and better sales promotion schemes and tools such as freebies, after-sales service etc. As a matter of fact, local retailer generally has low cost of operation when compared to big retail marts. Hence local retailer can afford to sell at a very competitive price in the market.
7. The local customers are only the silver customer/elderly customer, who naturally desire to shop at local retail shops than far off bigger formats, due to various reasons. Hence local retailer should cater to them properly.

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JIT BASED QUALITY MANAGEMENT IN INDIAN INDUSTRIES

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ABSTRACT

This paper investigates JIT implementation practices and performance in Indian industries. The main objective has been to identify those attributes of Just in Time (JIT) based Quality Management, which are highly difficult to implement in Indian industry. Regardless of the company size, the type of product, process, or manufacturing, JIT based quality management has potential to improve product quality and productivity in Indian firms. Paper also dwells on searching out most accountable reasons for slow implementation of JIT based quality management and highlights its most expected benefits.

KEYWORDS

Attributes, Indian Industry, Just in Time, Quality Management, t-Test

INTRODUCTION

Just-in-time (JIT) is a production strategy that strives to improve a business' return on investment by reducing in-process inventory and associated carrying costs. This production method is also called the 'Toyota Production System'. To meet JIT objectives, the process relies on signals or Kanban between different points in the process, which tell production when to make the next part. Kanban are usually 'tickets' but can be simple visual signals, such as the presence or absence of a part on a shelf. Implemented correctly, JIT focuses on continuous improvement and can improve a manufacturing organization's productivity, profitability, quality, and efficiency. To achieve continuous improvement key areas of focus could be flow, employee involvement and quality. JIT based quality management imposes a different set of requirements on the typical work culture. Work culture reflects the way of life of people, their norms and values regarding work in an organizational setting where technology and social cultural forces jointly determine managerial style and practices. In other words, work culture may play a significant role in successful implementation of any new management philosophy. People and managers of different countries think differently according to their social and cultural principles. Therefore, the implementation of various attributes of JIT Based quality Management in India may differ from its implementation in other countries. Such dissimilarities cause different types of implementation problems that would not be found in other society. In the present study, a survey attempts to analyze some important issues related to JIT based quality management in Indian context through conducting a pre designed survey on a sample of 34 industries. The primary objectives of the survey are:

(1) To identify those attributes of JIT Based Quality Management, which are highly difficult to implement in Indian industry.
(2) To search out most accountable reasons for slow implementation of JIT Based Quality Management in India.
(3) To highlight the most expected benefits of JIT Based Quality Management.

LITERATURE REVIEW

For researchers, JIT management has continuously been a topic of immense interest and there have been numerous studies, theoretical as well as empirical, on various aspects of JIT based quality management. This is amply reflected in number of conceptual articles; surveys, case studies and empirical/modeling work. Ebrahimpour and Schonberger (1998) have explained the JIT/TQM system with discussions on common problems of developing countries. They have suggested that developing countries desperately need to improve the quality and productivity of their goods to survive and compete with the developed countries. At the same time, Bartezzaghi and Turco (2001) have classified quality into four dimensions; quality of design, quality of performance, reliability & maintainability and technical assistance. They have stated that JIT partially influences the quality of conformance, which is most directly related to productivity. Quality of conformance is determined by compliance with design specifications for every product. Crawford and Cox (2004) in their research recognized the need for innovative performance measurement systems in JIT environment. They have developed a series of propositions for constructing JIT performance measurement systems. The developed propositions are based on detailed examinations of the performance measurement systems of some companies, which were addressing the problem of performance evaluation. Later on Fiedler et al. (2007) developed an expert system for implementing a sequence of just-in-time techniques. This system is capable of giving more precise recommendations with respect to a given manufacturing environment. Based on some of these research findings and existing gaps in the literature, the present work dwells on identifying attributes of JIT based quality management, their implementation and expected benefits. Literature review has helped to explore the relevance and status of JIT attributes, besides helping to formulate directions for future strategies. In the literature, JIT practices have continuously drawn the attention from researchers and practitioners. This is reflected in number of conceptual article survey and case studies, and empirical/ modelling work

PHILOSOPHY OF JIT

It states that simple: inventory is waste. JIT inventory systems expose hidden causes of inventory keeping and are therefore not a simple solution for a company to adopt. The company must follow an array of new methods to manage the consequences of the change. The ideas in this way of working come from many different disciplines including statistics, industrial engineering, production management, and behavioral science. The JIT inventory philosophy defines how

inventory is viewed and how it relates to management. Inventory is seen as incurring costs, or waste, instead of adding and storing value, contrary to traditional accounting. This does not mean to say JIT is implemented without awareness that removing inventory exposes pre-existing manufacturing issues. This way of working encourages businesses to eliminate inventory that does not compensate for manufacturing process issues, and to constantly improve those processes to require less inventory. Secondly, allowing any stock habituates management to stock keeping. Management may be tempted to keep stock to hide production problems. These problems include backups at work centers, machine reliability, process variability, lack of flexibility of employees and equipment and inadequate capacity. So the just-in-time inventory system focus is having "the right material, at the right time, at the right place.

PRESENT STUDY

(A) METHODOLOGY

The present study has been carried out over SMEs situated in Haryana and these enterprises manufacture various kinds of goods like auto parts, castings, pipes and tubes, pumps, grinders etc. The study was carried out in following steps:

- An extensive literature survey was conducted over journals, books; e-resources etc. The literature survey provided a shape to the present research problem. Based on this review, various dimensions and related attributes of the JIT concept were identified.
- Keeping the objectives and the limitations of the present study in mind, various research methodologies were examined and it was decided to use survey based data collection as the most appropriate approach.
- Then questionnaire was designed for the managements of the enterprises, keeping in mind, all the attributes of JIT strategy in Indian context. The questionnaire included questions based on company's profile, implementation of JIT, quality management strategies, other related problems and expected benefits.
- This questionnaire was also subjected to pre-testing for modification and refinement.
- Then the questionnaire was got filled by selected industries and the responses were subjected to analysis through statistical analysis followed by validation of the results by hypothesis testing.
- Then the final conclusions were drawn for framing future guidelines.

The questionnaire was mailed to 115 manufacturing firms located around Delhi, Faridabad and Gurgoan because of logistic constraints. Initially the response was poor and to get better response, reminders were sent to managers by telephonic calls and some mangers were personally contacted. In all, thirty-seven responses were received and out of thirty seven responses, three were excluded from study due to incomplete and irrelevant responses. At last, thirty-four responses were found suitable for study, making response rate twenty-nine percent.

(b) RESULTS

Table 1 shows various reasons for slow implementation of JIT based quality management over Indian industries and it also shows the level of impact (from high to low) of theses attributes. The t-test is conducted at 5% level of significance to analyze the issues such as degree of difficulty in implementation of various attributes of JIT based quality management, expected benefits and reasons for its slow implementation in Indian industries. The following hypotheses were formulated for t-test.

1) Ho: No attribute is difficult to implement in Indian industry. (The null hypothesis (Ho) will be rejected if any attribute subjected under test is not difficult to implement.)

2) Ho: All expected benefits could not be achieved through implementation of JIT based quality management. (The null hypothesis, Ho, will be rejected if surveyed companies have achieved any expected JIT benefits)

The benefits such as improved equipment utilization, improved quality control, improved worker efficiency, increase in inventory turn, increased flexibility, increased productivity, increased profit margin, increased team work, low scrap rate, reduced inventories, reduced product cost, reduced production lead time, reduced purchase lot size, reduced frequency of stoppage and reduced work-in-process are highly expected benefits from implementation of JIT based quality management. All causes listed in table 1 were found to be not responsible for slow implementation of JIT based quality management in Indian industries. The null hypothesis (Ho) will be rejected if surveyed companies face problems listed as reasons for slow implementation of JIT based quality management.in table 1. The values which are less than 3.00 are accepted otherwise it is rejected. On the basis of above hypothesis it is concluded that out of 12, eight are accepted and four are rejected. The t-test has been conducted at 5% significance level to analyze the issue of degree of difficulty in implementation of various attributes of JIT based quality management.

PROBLEM IN IMPLEMENTATION

For identifying the various problems being faced by the companies, the managers were asked to identify the problems being faced during implementation of JIT based quality management. Poor and inadequate maintenance of machines is cited by seventeen managers, where as four managers mentioned that multifunctional workers are often not available. Some companies indicated that biggest problem is use of traditional quality control techniques. One company has indicated that negative attitude traits and beliefs of Indian workforce are highly responsible for slow implementation of JIT based quality management. Fourteen companies indicate that high cost of implementation was a major problem. The survey results indicate that informal and casual quality auditing, lack of support from suppliers, lack of training and lack of' understanding about JIT concepts etc. are some other reasons for slow implementation. In addition, participating industries have also indicated that they do not have full support from top management and research and development (R&D) department

TABLE: 1: REASONS FOR SLOW IMPLEMENTATION OF JIT BASED QUALITY MANAGEMENT

SN	Reasons	Impact					NR	MS	t-Cal.	Results (ho=3.0)
		High				Low				
		5	4	3	2	1				
1	High cost of implementation	14	7	4	4	2	3	3.529	.202	Ho rejected Ha= 3.50 accepted
2	Informal/casual quality auditing	7	6	16	3	1	1	3.353	-1.053	Ho rejected Ha= 3.50 accepted
3	On QC, lack of communication	5	9	11	4	2	3	3.059	0.448	Ho accepted
4	Lack of customer awareness on QC	8	6	7	7	2	4	2.971	-0.227	Ho accepted
5	Lack of employee participation	2	6	13	12	0	1	2.853	-1.153	Ho accepted
6	Lack of production technology	3	7	7	11	5	1	2.676	-2.577	Ho accepted
7	Lack of support from workers	7	9	6	8	3	1	3.176	1.314	Ho accepted
8	Lack of support from supervisors	8	7	7	8	2	2	3.147	1.101	Ho accepted
9	Lack of support from suppliers	7	16	8	2	0	1	3.735	1.527	Ho rejected Ha= 3.50 accepted
10	Lack of support from designers	0	3	11	13	3	4	2.176	-6.479	Ho accepted
11	Lack of support from HRD	5	8	9	6	3	3	2.912	-0.687	Ho accepted
12	Lack of support from R&D	14	9	8	3	0	0	4.000	0	Ho rejected Ha= 3.50 accepted

(NR: No Response; MS: Mean Score; t-Cal: t Calculated)

CONCLUSIONS

In this survey, the degree of difficulty in implementation of JIT based quality management is found to be 3.18 on a scale of 0-5; implying that implementation in totality is reasonably difficult in Indian industries. Some attributes such as set up time reduction and kanban are also found to be difficult in implementing due to lack of' investment in research and development (R&D) activities. Another significant difficulty in implementing JIT based quality management is huge investment in installation of visual control, training of employees and restructuring of production process costs. It has been observed that ISO certification has increased the quality awareness in industries. Consequently, quality control and maintenance activities are now' considered as staff function. This may be a favorable sign for implementation of JIT based quality management. The concept of total preventive maintenance has not been accepted deeply, resulting in high frequency of breakdowns. Even with these problems, Indian industries are expecting significant benefits from implementation of JIT. However, expected benefits do not just happen in a minute and before an organization enjoys the benefits of JIT, it must accept the principles of JIT philosophy as an organizational philosophy. This may require the organization to modify its operating procedures, production system, and in most cases work culture. In this context, in many cases, the plant layouts have to be changed and kaizen has to be implemented. This study indicated that implementation of JIT based quality management in Indian organizations is not an easy job, yet number of attempts are being made in several Indian industries to implement this approach in a phased manner with the belief that it would help in facing the global competition.

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RECENT CASE STUDIES OF RISK IN INFORMATION SECURITY

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ABSTRACT

Risk is omnipresent in every walk of life, whether it is in day-to-day personal life or in business or in information technology sector. Every human activity involves a certain amount of risk. Even after meticulous planning anything go wrong unexpectedly and we may have to suffer a loss. In this modern age of rapidly changing business scenario, individuals and organizations rely to a great extent on automated computer systems to store, retrieve, process, and exchange information. Organizations use the information stored on these systems to conduct essential business operations. Therefore organizations need to protect the information from unauthorized access and potential destruction. With increasing dependence on computers for information storage and retrieval and with more number of persons becoming knowledgeable in the intricacies of information handling, there is a corresponding increase in cyber crimes. The number of crimes have increased recently thus putting at grave risk the business of corporations. Of late, there have been a large number of cases of abuse of computer information. The paper reviews information on the recent happenings involving risks in information technology and suggests methods of preventing such heinous cyber crimes.

KEYWORDS

Case Studies, Information Technology, Information Security, Risk, Risk Management.

INTRODUCTION

Risk is omnipresent in every walk of life, whether it is in day-to-day personal life or in business or in information technology sector. Every human activity involves a certain amount of risk. Even after meticulous planning anything go wrong unexpectedly and we may have to suffer a loss. In this modern age of rapidly changing business scenario, individuals and organizations rely to a great extent on automated computer systems to store, retrieve, process, and exchange information. Organizations use the information stored on these systems to conduct essential business operations. Therefore organizations need to protect the information from unauthorized access and potential destruction.

In olden times, computer system of an organization was developed, used, and maintained in isolation from other areas of business. These computer systems were centrally located and were responsible for all business operations. However, in today's modern Internet world of information browsing, the information of an organization has unwittingly become vulnerable to misuse by unauthorized individuals who has gained easy access to such classified information. IT managers and network administrators face an increasing challenge of managing and protecting information and network resources from unauthorized access. Missing of confidential information from an organization may prove harmful for the reputation of the institution and it may loose valuable clients. To avoid such situations, organizations must secure information from misuse and damage.

With increasing dependence on computers for information storage and retrieval and with more number of persons becoming knowledgeable in the intricacies of information handling, there is a corresponding increase in cyber crimes. The number of crimes have increased recently thus putting at grave risk the business of corporations. Of late, there have been a large number of cases of abuse of computer information.

WHAT IS RISK?

Risk often is used to mean uncertainty. It creates both problems and opportunities for businesses and individuals in almost every walk of life. Executives, employees, investors, students, householders, travelers and farmers all confront risk and deal with it in various ways. Sometimes a particular risk is consciously analyzed and managed; other times risk is simply ignored, perhaps out of lack of knowledge of consequences.

UNDERSTANDING RISK

Even in day-to-day life, we unintentionally or unknowingly pay attention to the possibility of suffering loss. For example, we look both ways before crossing the road or we research an organization's prospects before accepting a job offer. Risk is related to uncertainty. The more risk we take, the more are our chances to lose or gain. However, by quantifying risk, we can make rational decisions whether or not the risk is worth taking.

DEFINITION OF RISK

Risk can be defined as the possibility of suffering loss. For example, the data on the intranet of an organization is at risk if virtual employees, such as the employees on contract, can access the data. Therefore measuring the probability of the occurrence of an adverse event enables one to estimate the impact of the risk. For example, skiing in bad weather poses a high probability of danger, and therefore, the threat to one's life is high.

Even though risk and uncertainty are used interchangeably the main concern here is with the type of uncertainty in which the possible outcomes are either "loss" or "no loss," rather than with uncertainties that also present the opportunity for profit. It is worth noting here that organizations are considering the broader set of risks that they face, regardless of type. This new definition reflects the realization that risks from different sources interact to define the overall risk profile of the firm and recognizes the importance of all forms of risk that affects a firm's ability to realize its strategic objectives (NIIT , 2004).

CASE STUDIES OF RISK IN INFORMATION SECURITY

With wide spread use of Internet and communication facilities, there has been a considerable increase in the number of cyber crimes damaging the functioning of even well established corporations. Some of the case studies involving the pilferage of information and their abuse by causing enormous loss to leading corporations are highlighted below.

PIRACY OF FILM BEFORE RELEASE

In January 2010 there was a sensational cyber crime of the film 'Jaggubai' starred by actor Sarath Kumar was clandestinely copied on CDs and uploaded on Internet even before its release in theatres for public viewing.

BOOK CLANDESTINELY UPLOADED ON INTERNET

Another actor Parthiban had lodged a complaint with the Commissioner of Police, Chennai that his book he wrote and published in 1995 was sold at Rs. 200/-. He stopped selling his book in 2000. Recently he had detected that his book was clandestinely uploaded in Internet and the culprit was selling it at Rs. 490/- and thus made a roaring money to the tune of several crores of rupees.

CAT FIASCO

The country witnessed the great fiasco of the computer based entrance test of CAT for admission to elite IIMs in the country in December, 2009. The computers could not be booted on the first day of the test which was later attributed to virus attack. The whole operation was organized by an American firm Prometric. A large number of management aspirants were terribly shaken by this colossal failure of information technology.

FAKE WEBSITE AND FAKE EMPLOYMENT

Two engineering graduates created a website that resembled the original website of an information technology company at an Internet browsing centre where they gave false identity particulars. A security guard of the genuine company provided the duo the database of job applicants. The duo asked a few candidates to appear for an interview. They used a prepaid SIM card that had a fake address. When three candidates responded, the accused asked a few questions and said that the outcome of the interview would be communicated online. A couple of days later, the three received e-mails which stated that they had been selected for the job and they had to deposit Rs. 30,000 in the company's account. Believing this, the trio deposited money in the account of a nationalized bank which was actually that of a person in Assam. The duo had stolen his debit card for transacting through ATM located in remote areas. Like this the duo had cheated to the tune of Rs. 2.4 lakh. The police have stated that the method adopted was new (Vijay Kumar, 2010).

STOLEN EMAILS

At a recently held Climate Summit at Copenhagen, Denmark several thousand files and email messages stolen from one of the world's foremost climate research institutes were circulated. This action set off a debate and led some who oppose limits on greenhouse gas emissions, and at least one influential country, Saudi Arabia, to question the scientific basis for the Copenhagen talks (Revkin and Broder, 2009).

DIGITS ON THUMBS AND INDEX FINGER CHANGED

Lin Rong, a Chinese woman initially entered Japan with a fake passport and overstayed there illegally. So, she was deported to China in 2007. Now she has managed to sneak back into Japan after surgery to change the skin on her thumbs and index fingers. However, she was arrested for illegal entry. The skin patches from the digits on her right and left hands were removed and then re-grafted onto the matching digits of the opposite hand. Her main objective was to fool the biometric security system at the airport because Japan's airport security system matches the finger prints of incoming foreigners to a database of wanted criminals and past deportees. Police noticed that her fingers had unnatural scars when Lin was arrested sometime ago for faking a marriage with a Japanese man. The woman had told the police that she had paid some 100,000 yuan ($16,000) for the surgery, leading investigators to believe Chinese brokers are arranging such fingerprints changes.

FILM PIRACY

Samantha Tumpach, a 22-year old female film fan from Chicago, Illinois during her surprise sister's birthday celebration at a movie theatre captured for three minutes a pivotal segment of the film The Twilight Saga: New Moon on her video camera while taping a part of the party. On a complaint from the theatre bosses the police arrested Tumpach and put her behind bars for two days. Now she faces serious piracy charges.

VOIP MISUSED BY TERRORISTS

It has now come to light that terrorists including the 26/11 Mumbai attackers, increasingly use popular global VoIP (Voice over Internet Protocol) engine provided by operator Skype. In this system analog voice signals are converted to digital format, compressed into Internet Protocol packets and transmitted over NET. For this, VoIP systems employ audio codecs (programs) which encode speech as digital audio. VoIP thus turns a standard Internet connection into a way to place free calls, bypassing phone networks. Because Skype has not shared its encryption code with India, it has become difficult for the Indian Intelligence agencies to intercept conversation of suspected terrorists (Chatterjee, 2009).

GOOF UP BY BA

British Airways (BA) offered in October 2009 a $40 round trip fare which includes taxes, fees, and surcharge, from any city in the US to any destination in India. Scores of eager beaver flyers snagged the tickets in the two-hour window on October 2. Later BA said it was a systems' glitch. The airline claimed that it was actually filing for a $40 increase in fares between the US and India and somewhere down the line the plus sign got knocked off (Rajghatta, 2009).

FALTERING BY PRESIDENT'S SECRETARIAT

Sometime last year President of India was to visit Udipi in Karnataka. Normally it is a practice by president secretariat to send minute-by-minute programme to district authorities for necessary security arrangement. But this time such a programme was sent to a software engineer in Bangalore who was not at all connected with the issue. Here the officials of president secretariat goofed up. They would have landed up in deep trouble had the information landed in the hands of antisocial groups.

CONCLUSION OF CASE STUDIES

All these above case studies have highlighted the vulnerability of information to be stolen by unscrupulous elements for furthering their own interest thus causing serious damages to organizations and individuals.

MANAGEMENT OF RISK

After sources of risk are identified and measured, a decision can be made as to how the risk should be handled. The process used to systematically manage risk exposures is known as a risk management. Risk management is a systematic approach to identify, analyze, and control areas or events that can cause unwanted damage or loss to an individual or organization. Risk management helps to:

(a) Assess the risks involved in a project or business
(b) Systematically manage and reduce the risks to an acceptable level
(c) Develop cost-effective strategies and action plans to mitigate the risks

Risk management begins during the planning phase of a project and continues throughout the project development cycle. The process of risk management is dynamic in nature and involves making decisions and following up of decisions with actions to prevent the risk from materializing in future.

UNDERSTANDING INFORMATION SECURITY RISK MANAGEMENT

Now-a-days organizations are investing heavily on computer systems and information technology processes and methods to gain a competitive edge in the market. Critical business information is being stored, processed, and transferred through the electronic medium. However, apart from the advantages, technology brings various threats to information and networks resources. Spams, viruses, spoofs, eavesdrops, and tampers are some of the issues which have, of late, become very serious.

INFORMATION SECURITY (IS) RISK MANAGEMENT

The IS risk management helps the organizations to identify and manage the potential risks associated with information and information technology in a cost-effective way. The IS risk management deals with all the components of information security risk, which are assets, threats, vulnerabilities, risk impacts, and

countermeasures. Usually, organizations set up an IS risk management system team to identify and analyze technology-based risks. IS risk management is an integral part of an organization's overall risk management system.

CONCLUDING REMARKS

In this modern age of widespread Internet use for various business activities of an organization, it has unwittingly exposed the confidential information of these organizations to hackers and antisocial elements. This has endangered the security of information of the organizations to very high level of risks. There have been an increasing number of cyber crimes that are taking place worldwide. This is the result of wide spread use of Internet and communication facilities. As the hardware and software involved in the equipments are relatively simple which could be handled easily by persons with criminal intent who could put this for wrong purposes thus causing damages to organizations and individuals. The research, therefore, intends to identify various risks associated with information security and to develop a model to deal with such risks and to make the information security tamper-proof.

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RELATIONSHIP BETWEEN JOB STRESS AND EMPLOYEES PERFORMANCE IN DAY TO DAY OPERATIONS OF PRIVATE ORGANIZATIONS AND THE IMPACT OF STRESS ON THE OVERALL PERFORMANCE OF EMPLOYEE

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ABSTRACT

This paper examines relationship between job stress and employees performance in day to day operations of private organizations and the impact of stress on the overall performance of employee based on empirical evidence drawn from banking Sector in Chandigarh and jalandhar, India. A total of 120 samples with 30 samples (Asst. Managers, Managers, Sr. Managers and project officers) from each bank had been included based on simple random sampling. Managerial personnel from HR, Marketing, Finance, Operations and Technical functions are included in the study. The study shows that when the average stress scores decreases, the average employee performance score increases proportionately. The study reveals positive correlation and significant association between employee performance and stress level. In the present study we shall try to explain that Stress in an organizational role or organizational role stress (ORS) reflects the quality of role design (Srivastav, 1999). Well designed roles have a good matching between the organization (considering its structure, systems, Processes and goals) and the individual (considering his personality, competence and needs). When this happens, role stress is low, role occupant gets motivated (may even be self actualized) and role performance is high. On the other hand, when roles are ill designed, role stress is high, role occupant gets de motivated and ORS arises due to inadequacies, mismatch or conflicts encountered by role occupant during his role performance.

KEYWORDS
Role Stagnation, Role Overload, Personal inadequacy, Self Role Distance, Role Ambiguity.

INTRODUCTION

As Organization become more complex, the potential for stress increase. Stress in an inevitable consequence of socio-economic complexity and to some extent, its stimulant as well. People experience stress as they can no longer have complete control over what happens in their lives. We feel frustrated and then stressed. There begin no escape from stress in modern life, we need to find ways of using stress productively and reducing days- functional stress. Organizational role (Pareek, 1993, p.3-20, p.477-491) is a position in an organization or social system which is defined by the expectations of the significant people from the role occupant Role Occupant interacts with the organization through his role and performs certain function in response to his role expectations. Organizations are networks of roles and occupation of a role is a potential source of stress. Stress due to occupation of a role is known as role stress .Stress in an organizational role or organizational role stress (ORS) reflects the quality of role design (Srivastav, 1999). Well designed roles have a good matching between the organization (considering its structure, systems, Processes and goals) and the individual (considering his personality, competence and needs). When this happens, role stress is low, role occupant gets motivated (may even be self actualized) and role performance is high. On the other hand, when roles are ill designed, role stress is high, role occupant gets de motivated. ORS arises due to inadequacies, mismatch or conflicts encountered by role occupant during his role performance. The researcher felt the need to study the causes of stress and relationship of stress to rising turn over in organizations.In order to make the study, banking organizations were chosen .The study is based on branches of icici bank and hdfc banks in jalandhar and Chandigarh in India. Samples were chosen from these two banks for data collection.

OBJECTIVES

- To study relationship between job stress and employees performance in day to day operations of private organizations by a case study of banking sector.
- To study the relationship between stress and efficiency
- Identify reasons of role stagnation, role overload, personal inadequacy, self role distance and role ambiguity leading to stress.
- To throw light on other factors of stress such as work performance, job engagement, job rotation, job retention etc and their relationship with performance.

RESEARCH METHODOLOGY

SMALL SAMPLE SIZE

All the banks could not be included for collection of relevant data and sample size is small. The researcher felt that all organization face problems of employees stress and turnover. Strong Competitions pose threat to organizations. There is need to do research not only on the role played by various factors leading to stress but also how to reduce it. Various case studies can throw light on this emerging issue which needs to be tackled with utmost care. For greater validity and generalizations further research seems necessary. The organizations can benefit immensely by adopting appropriate measures, in the content of the present findings for enhancing performance of their employees and the overall performance of the organization

DEMOGRAPHIC PROFILE OF RESPONDENTS

The total no of samples collected from the two private sector banks i.e., ICICI and HDFC is 120. Around 52 % of respondents fall in the age group of 21-30 Yrs, 29% in the age group of 31-40 yrs and 19 % in the age group of above 40 years. Out of 120 respondents 49% are male and 54% females. Most of the respondents (83%) are post graduates and only 17% are professionals.

RESEARCH PLAN

Stress is inevitable and cannot be avoided in everyday life(Perstonjee, 1999.p.15-34).Stress is the result of a lack of fit between a person (in terms of his personality ,Aptitudes and abilities) and his environment when he is unable to cope with the constraints or demands encountered (Harrison, 1976). Stress can arise from an opportunity, threat or challenge when the outcome of episode is both uncertain, and important (Robbins, 2003). Organizational role (Pareek,1993, p.3-20,p.477-491) is a position in an organization or social system which is defined by the expectations of the significant people from the role occupant .Role Occupant interacts with the organization through his role and performs certain function in response to his role expectations. Organizations are networks of roles and occupation of a role is a potential source of stress. Stress due to occupation of a role is known as role stress .Stress in an organizational role or organizational role stress (ORS) reflects the quality of role design (Srivastav, 1999). Well designed roles have a good matching between the organization (considering its structure, systems, Processes and goals) and the individual (considering his personality, competence and needs). When this happens, role stress is low, role occupant gets motivated (may even be self actualized) and role performance is high. On the other hand, when roles are ill designed, role stress is high, role occupant gets de motivated. ORS arises due to inadequacies, mismatch or conflicts encountered by role occupant during his role performance.

ORS SCALE

ORS scale (pareek, 1983) measures the role related stress among employees in an organization . There are ten sub scales and five point likert scales is used for scoring each item. The ORS scale is one of the best instruments for measurement of role stress in an organizational setting. It has been validated and its reliability has been verified (Pareek, 2002, p.536-547). ORS scale has been used extensively for role stress research (Pestonjee and pareek,1997; 1999, P 87-136 , srivastav,1993,1995a,1995b,1995).

ORS construct developed by Pareek (1983) is relevant for study of Role Stress in organizations. It is important to understand that an organization is a system of roles in itself is a system. For an individual, there are two role systems (Pareek, 1993, p, 3-20):

Role Space represents all the roles performed by the individual. For example, an individual can play the role of a sales manager in the organization and the role of a mother at home.

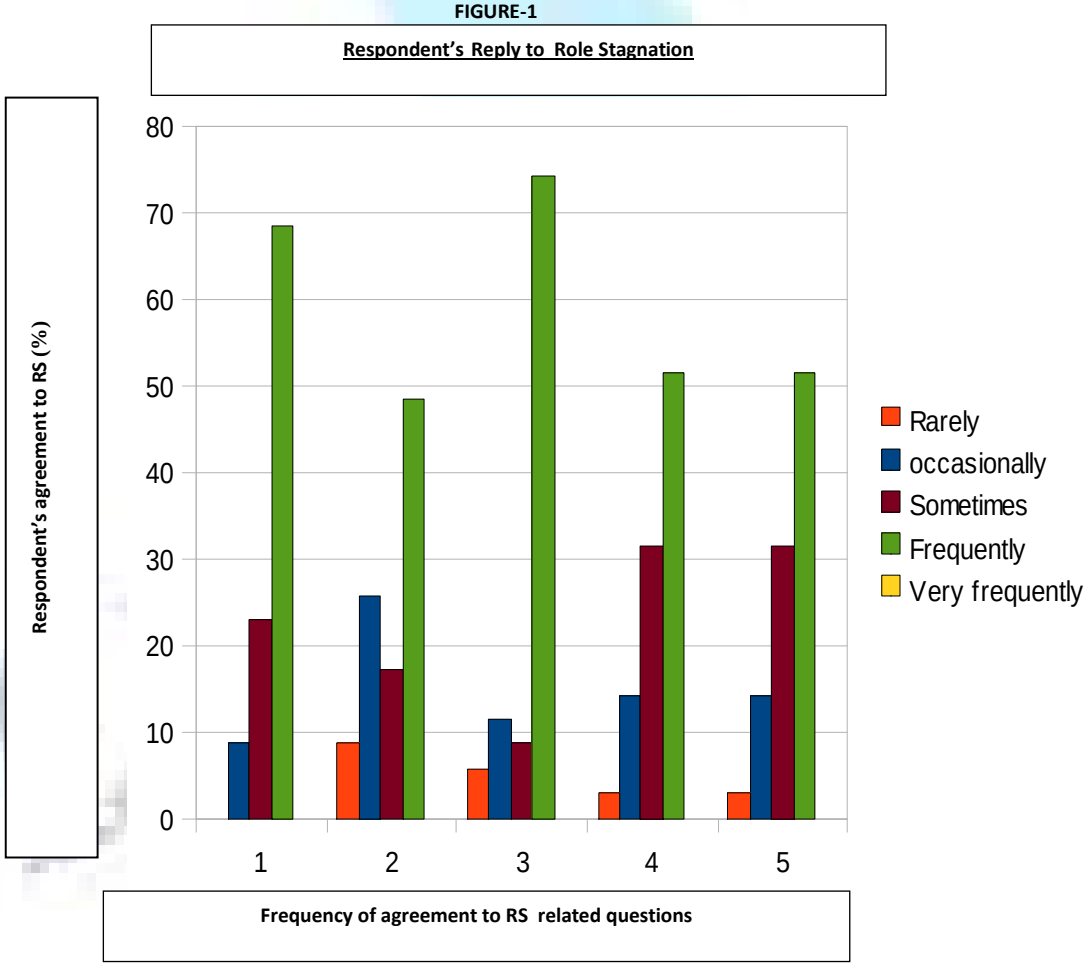
Role Set Represent all the roles with whom a role occupant is required to interact for the performance of his role. For example, the role set for a production manager will include his /her boss (the general manager), Peers (R & D manager, Quality manager, plant manager, marketing manager, Finance manager and HR manager) and subordinates (production executives in charge of production , planning manufacturing and testing) . Members of a role set who have role expectations from the role occupant are called Role Senders .Role Space and role set have in built potential for conflicts. These conflicts give rise to ten types of role stress. But the researcher felt that only following five types of role stress are more important and hence only these five roles have been included in the study and as a last step stress relationship has been calculated and studied with all these reasons and their effects on efficiency of worker and the organization as a whole .

- **Role Stagnation(RS)**
- **Role Overload(RO)**
- **Personal inadequacy(PI)**
- **Self Role Distance(SRD)**
- **Role Ambiguity(RA)**
- **Stress relation ship**

ROLE STAGNATION (RS)

After occupying a role for long time ,an individual may feel insecure in taking up a new role .One may keep stagnating in one's old role in which individual feels more comfortable and secure. RS is commonly encountered when role occupant lacks skill for the new role . For Example ,a soft ware programmer of long standing would experience RS on being promoted as a project manager. If one does not have project management skills. Lack of delegation by a boss to one's subordinates or the boss trying to perform subordinates work is often due to RS experienced by the boss.Respondents reply to role stagnation related question numbers 1,2,3,4,and 5 as framed by the researcher in his questionnaire have been presented as bar graph in figure -1

FIGURE-1



Not learning enough in present role to take up higher responsibilities.

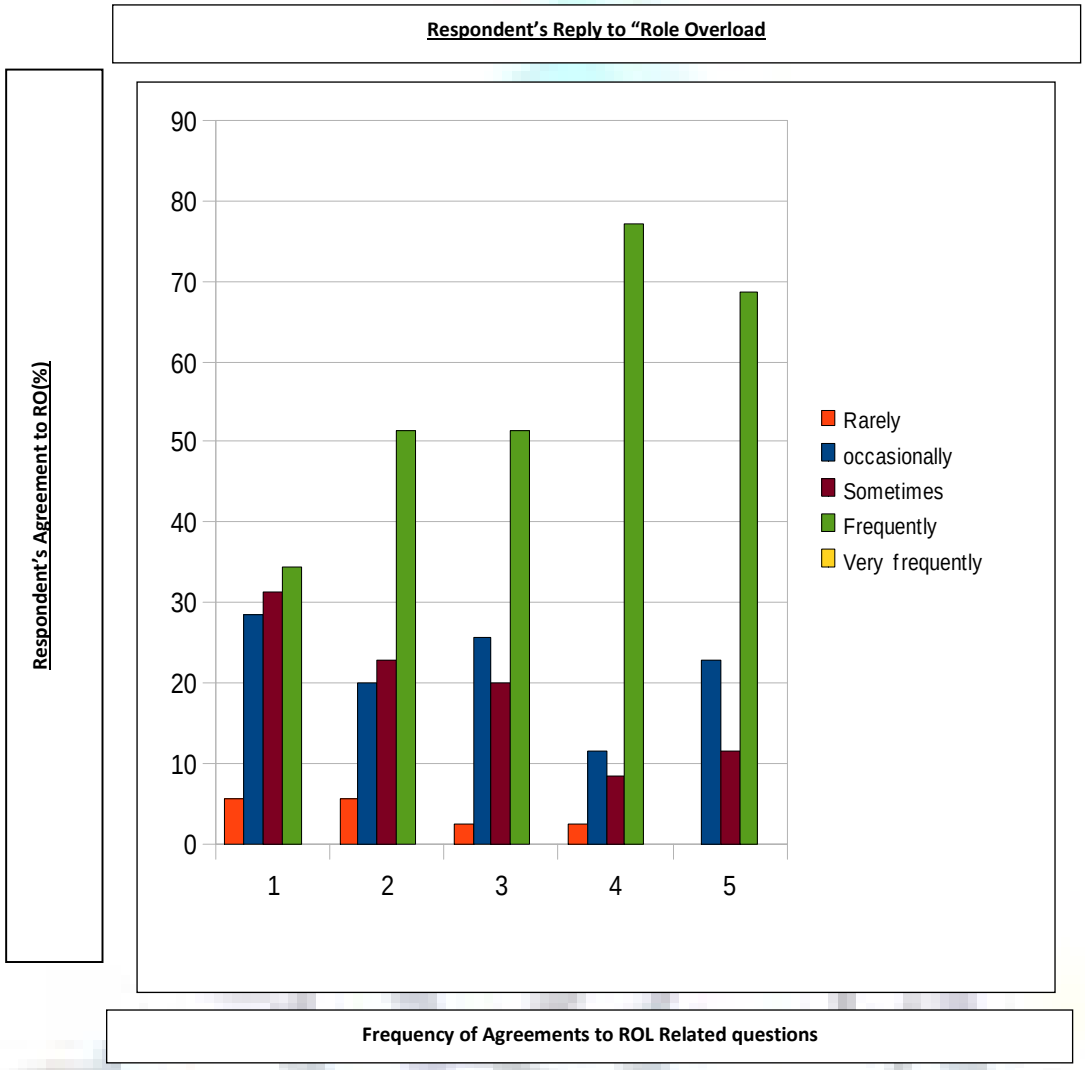
1. Too pre occupied with present responsibilities, unable to prepare for higher responsibilities.
2. Absence of time and opportunity to prepare for future challenges of my role.
3. Little scope for personal growth in present role.
4. Feel stagnant in present role.

The Figure -1 clearly show's that 8.58% respondents feel that the rare reasons of role stagnation are **pre occupation with present responsibilities** followed by **absence of time and opportunity to prepare for future challenges (5.72%) and stagnation in present role (2.86%)** .on the other hand , a large number of respondents feel that these factors frequently lead to role stagnation .About 74.26% view **absence of time and opportunity** as the most important factors followed by **not learning in the present role (68.54)**, **little scope for personal growth(51.38%) and inability to prepare for higher education due to preoccupation (48.52%)** .However a sizeable number of respondents sometimes and occasionally feel these reasons as important leading to role stagnation.They feel that **not learning enough for taking up higher responsibility, preoccupation are inability to prerare and little scope for personal growth** are more pressing reasons.

ROLE OVERLOAD (RO)

RO is experienced when there are too many expectations from a role. where as too many expectations from a role generate quantitative overload; Too high expectations from a role generate Qualitative overload .RO is experienced when role occupant lacks power or when expected performance outcome is significantly higher than the actual performance outcome. For Example if the quality manager is expected to deliver better than 99.9% acceptance ,0.1%rejection from the shop floor under one's charge when one is not able to ensure better than 95% acceptance (5% rejection) ,one will experience RO.Respondents reply to role over load related question as framed by by the researcher in his questionnaire has been presented as bar graph in figure -2

FIGURE - 2



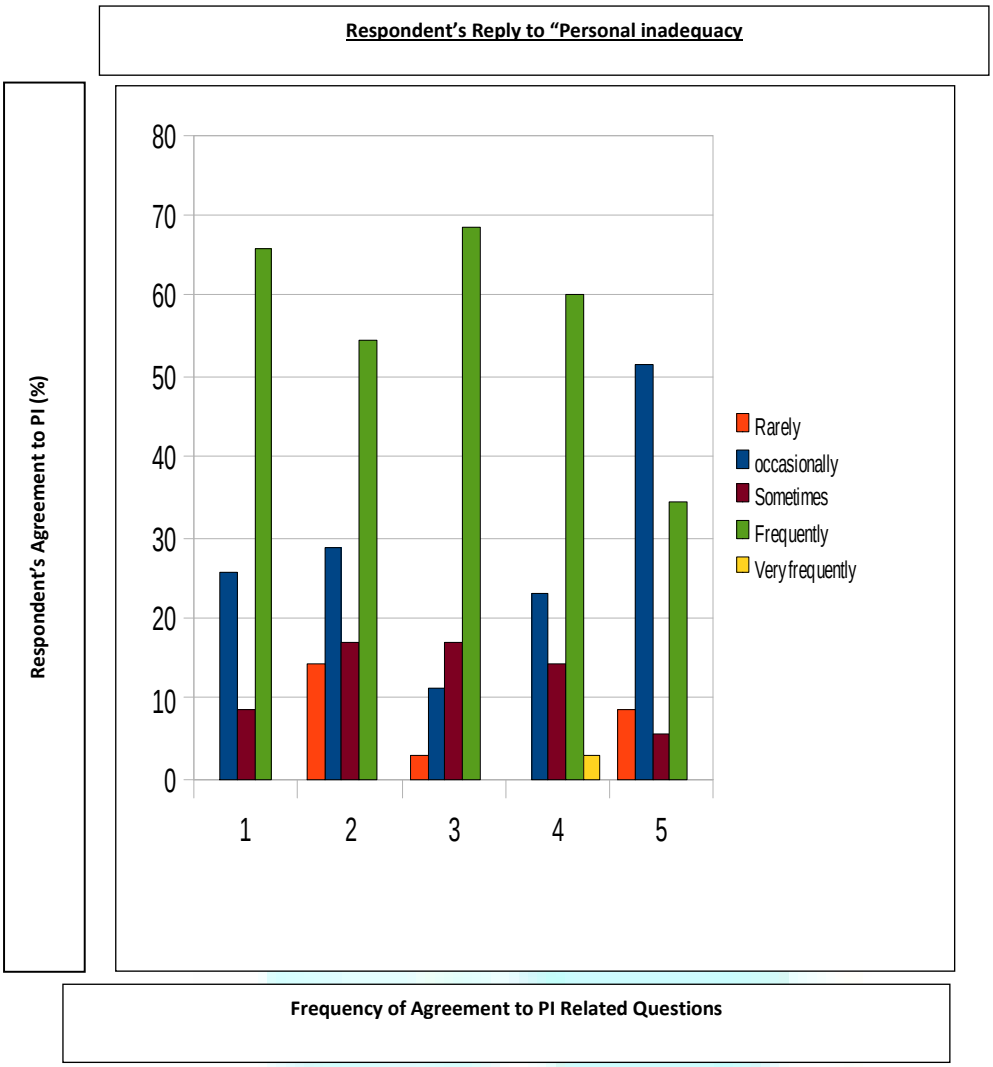
1. Work load is too heavy.
2. Amount of work interferes in quality of work.
3. Too much responsibility is given.
4. Need to reduce some part of my role.
5. Feel over burdened in my present role.

The Figure show that few respondents feel that **the work load is too heavy(5.72%) interference of amount with quality (5.72%) ,too much responsibilities (2.86%) need to reduce role(2.86%)** as rare reasons for role overload. A large number of respondents feel that these reasons frequently lead to role overload .The two most important reasons are **need to reduce role (77.22%) and feel over burdened (65.68%)**. However a sizable number of respondents favor these factors as occasionally and sometimes leading to role over load. The most important being heavy work load.

PERSONAL INADEQUACY (PI)

When a new role is assigned to some one without preparing him to undertake one,s new responsibilities, the role occupant may find one lacking in necessary knowledge , skills or experience need for one,s effective role performance and experience . For Example ,a sales manager with inadequate sales management skills or a programmer with inadequate programming skills will experience PI.Respondents reply to Personal inadequacy related question numbers 1,2,3,4,and 5 as framed by by the researcher in his questionnaire have been presented as bar graph in figure -3

FIGURE-3



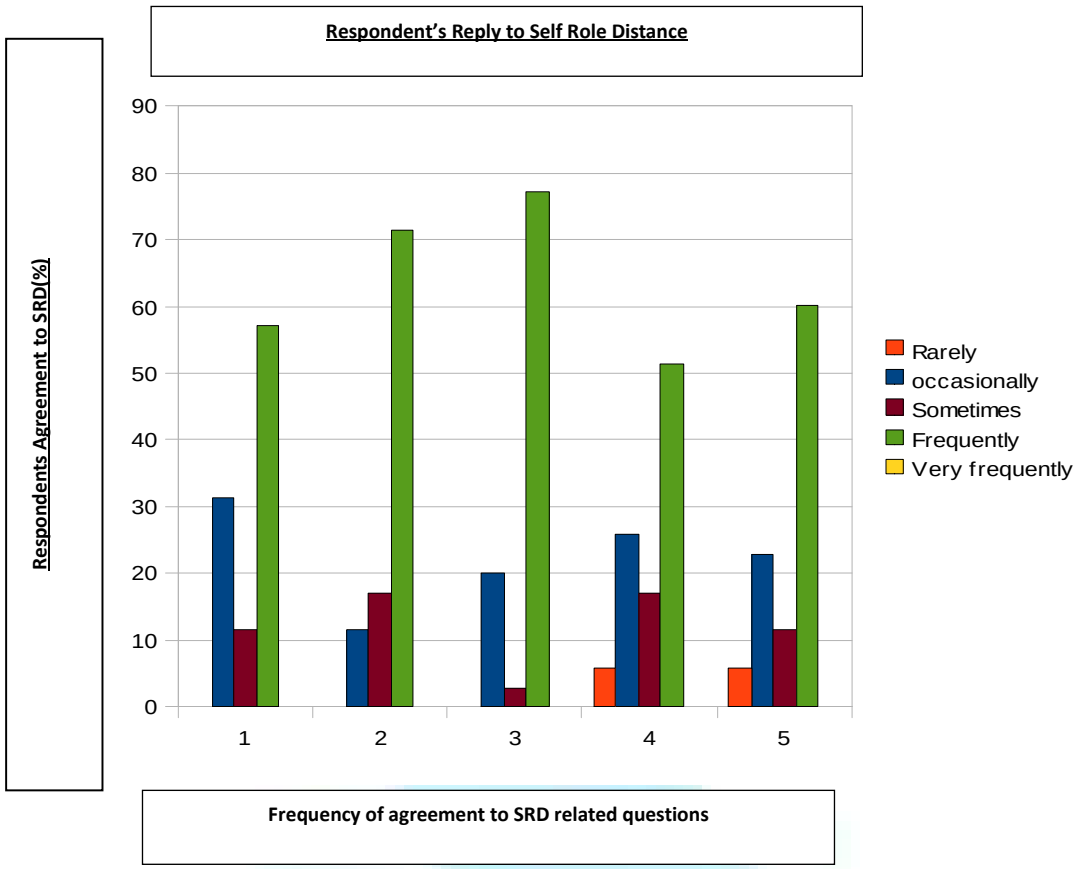
1. Lack of knowledge to handle the responsibility of my role.
2. Wish to have more skills to handle present responsibilities.
3. Lack of training for my role.
4. Wish to have prepared well for my role.
5. Need more training and preparation for my role.

As per the figure 3, the three most important and rare reasons for personal inadequate leading to stress are **less skill to handle present responsibilities (14.30%) ,more training required for role (8.58%) ,and lack of right training (2.86%)** .How ever , the same reason were favored by most of the respondents as frequently leading to personal inadequacy . Further ,the table clearly shows that on an average about 60% of the sample feels that **these reasons of personal inadequacy are prominent factors leading to stress.**

SELF ROLE DISTANCE(SRD)

SRD is experienced when a role occupant has to do what one dislikes ,when one's special knowledge and skill remains underutilized or when there is a conflict between the image/needs/values of the role and role occupant. For example,there is a fertile ground for experiencing SRD when an introvert person is given a sales/marketing assignment or when a highly creative person is asked to do a highly repetitive and routine work.Respondents reply to self role distance related question numbers 1,2,3,4,and 5 as framed by by the researcher in his questionnaire have been presented as bar graph in figure 4

FIGURE -4



.

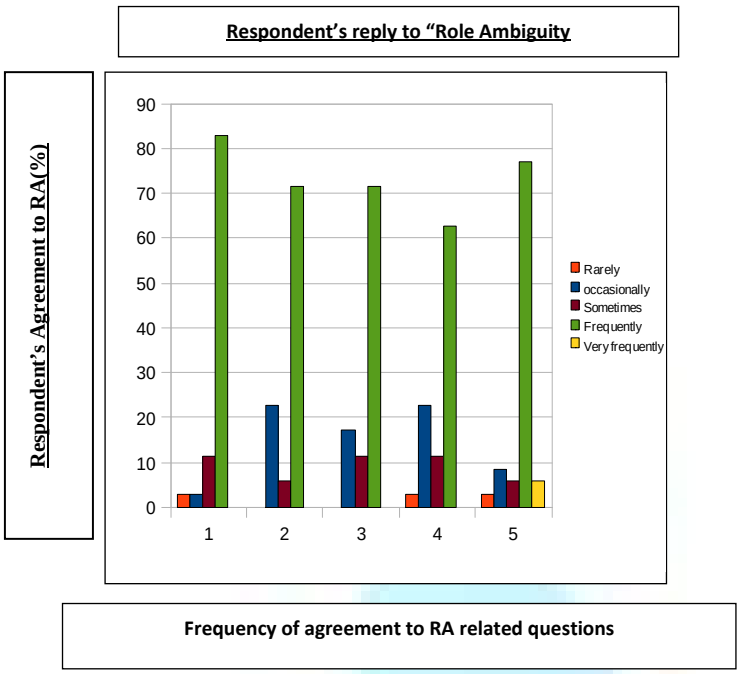
1. Doing things in present role against my judgment.
2. Unable to utilize my training and expertise in my present role.
3. Work done in my organization is against my interest area.
4. If granted freedom to define my role, I would do things differently from the way I do them now.
5. Experience a conflict between my values and what I do in my present role.

As per the figure 4, the two least important causes of conflict between self concept and expectation from role as shown in the table are **freedom to define my role (5.72%)** and **conflict between my values and present role (5.72%)** .many respondents feel that causes such as **doing things in the present role against my judgment, unable to utilize my training ,and work done in my organization against my interest area** are occasionally and some times responsible for self role distance.But a large number of respondents feel that reasons for self role distance occupies an important place in stress. These are **work done in the organization against my interest (77.22%) unable to utilize my training and expertise in my present role (71.50%) , experiences a conflict between my values and the present role (60.6%)** . last but not the least important factors are **doing things against my judgment (57.25%)** and **freedom to do things differently (51.38%)**

ROLE AMBIGUITY(RA)

RA is experienced when the role occupant is not clear about expectations from one's role.One may have doubts about certain responsibilities ,functions or activities weather one should under take them or they will be done by some other role occupant .Ra may arise because expectations may have not been defined in the first instance or they would have changed with time . Occupants of newly created roles or process having inappropriate defined activities often experience RA.Respondents reply to role ambiguity related question numbers 1,2,3,4,and 5 as framed by the researcher in his questionnaire has been presented as bar graph in figure-5

FIGURE -5



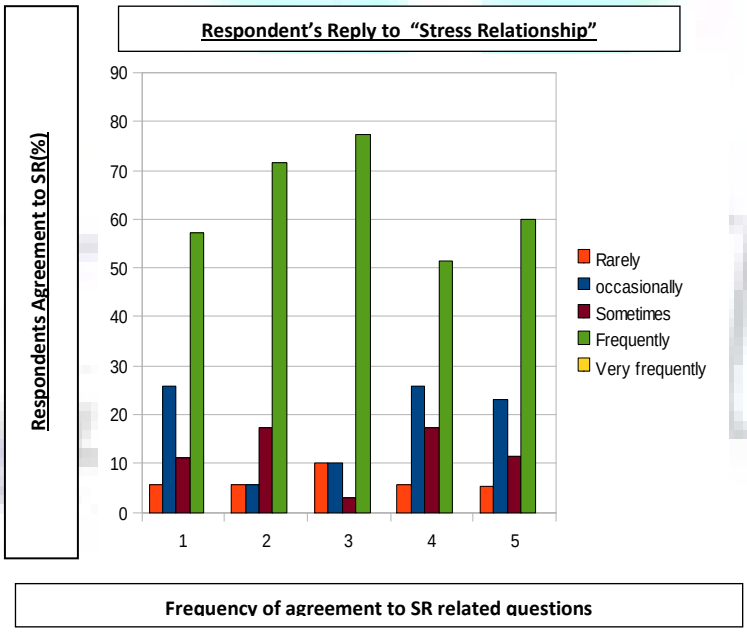
1. Not clear on the scope and responsibilities of my role.
2. Don't know colleagues expectations.
3. Several aspects of my role are vague and unclear.
4. My role is not clear and well defined.
5. Priorities of my role are not clear.

As per figure-5 about 50% of respondents feel that **these reasons of role ambiguity** favoring stress as enumerated by the table .How ever a small percentage (2.86%) rarely view reasons such as **not clear on the scope and responsibility of my role ,my role is not clear and well defined and priorities of my role are not clear** causing role ambiguity. Only 4 respondents out of to view **priorities of my role are not clear** as a very frequent factors causing stress in a organization.

STRESS RELATION SHIP (SR)

SR is not clearly experienced when the role occupant is not clear about expectations from one's role .One may have doubts about certain responsibilities,functions or activities weather one should under take them or they will be done by some other role occupant But When suddenly those expectations of other particularly of those placed above him are coming in his way , he experiences stress Those expectations may have not been defined in the first instance or they would have changed with time . Occupants of newly created roles or process having inappropriate defined activities often experience Stress. Respondents reply to Stress relationship related question numbers 1,2,3,4,and 5 as framed by the researcher in his questionnaire has been presented as bar graphin figure-6

FIGURE-6



1. All above factors collectively forcing you to leave the organization.
2. Job redesigning can reduce stress.
3. Felling relaxed when doing other works than job assigned.
4. If the stress affects your working.
5. If one or more factors are changed work efficiency will improve.

As per figure -6 about 57.32 % of respondents feel that **these reasons collectively contribute to increasing level of stress** frequently ,how ever **a small percentage (5.71 %) rarely view these reasons as contributer of stress** . A large percentage **(71.5%) however feels frequently that job redesigning can reduce the stress level a lot. A high percentage (77.22%) of respondents feel that they are** Feeling relaxed when doing other works than job assigned, **51.38 feel that stress definitely affect working** and above **60.06 % feel that if one or more of the reasons are removed efficiency will improve .**

FINDINGS RECOMMENDATIONS AND CONCLUSION

The exhaustive study on subject suggest following findings:

1. The study on concept of stress, sources of organizational stress, personality characteristics influencing the level of experienced stress, impact of spillover of stress from work to non work facets of life, the consequence of stress for the individual and the organization, and stress management at individual and organizational levels highlights the subjective, cognitive, physiological, behavioral and adverse health effect on individual. As an outcome of this some of the effects on organizational health are:-Low morale among employees, Lacks in efficiency or poor performance, Boredom at work, Lost belongingness to the organization , Rise in interpersonal conflicts , Higher accident rate ,Loss in job satisfaction etc.
2. **Study highlights that existence of work stress does not imply lower performance among employees**. It is evident from the study that stress could have positive or negative influence on employee's performance as low or moderate amounts of stress enable them to perform their job better. However a high degree of stress and even moderate amount of stress for long time reduces job satisfaction and job performance. An underperforming employee in an organization feels stagnant and confused in his present role. Managers of the organization being primary change agents may shape the culture of the organization through their innovation and role model behavior. Turnover of employee is directly related with the culture of the organization.
3. **Study on role related stress among employee's has revealed following facts:-**

a. Result of role stagnation shows highest resentment among employees due to the absence of time and opportunities (74.26%) and not learning enough in present role (68.54%) as it leads to stagnation of promotional aspects of an employee causing lack of individual growth opportunities within the organization. The high level of role stagnation among career growth concerned employee's, will cause dysfunctional stress, and hence employees turnover.

b. Study of factors related to present role overload indicates that employee's need to reduce role (77.22%) and feel over burdened (65.6%) and feel that these factors prevent them to set their frame of mind for proper motivation to take on much challenging and volumetric job. Due to these reasons employees are realizing their inner potential being underutilized. This leads to the job dissatisfaction and thereby causing distress to the extent of quitting the job permanently.

c. Study of personal inadequacy mostly caused by the lack of knowledge to handle present role (65.68%) , Lack of right training for present job(68.54%) despite preparedness of employee to learn more on present role (60.06%) causes high degree of stress as they would be denied growth within organization and lacking in recognition for their efforts.

d. An impression of self role distance related factors indicate that, since sometimes most employee's (71.22%) feel underutilized of their training and expertise and almost same amount of employees (71.22%) feel the difference between their role and interest area , is a leading reason of growing stress and turnover among employee's because it leads to boredom and dissatisfaction towards the job.

e. The study on role ambiguity factors clearly indicate that employees are under severe dysfunctional stress due to the factors like **Lack of Clarity on scope and responsibilities of role (82.94%) , unclear on colleagues expectation and several aspects are vague and unclear (7105%) , Unclear priorities of present role (77.22%) .** This role ambiguity prone stress causes change in behavioral symptoms of an employee. Such employees work as negative catalyst within the organization. The social ties among employee's get strained making it difficult for management to harmonize the organizational activity in pursuance of its goals.

4. **Study on turnover , effects of employer and employee's relations reasons of employee's turnover and various retention strategies highlighted following few observations :-**

a. Lack of organizational commitment due to hire and fire mantra as employee's start concentrating more on their own professional development.

b. Employee's leave organization in search of better offer in terms of developing their professional skills, satisfying their higher order of need seeking more challenging job an in search of a more trust worthy leadership.

c. Various factors causing employee's turnover also lay emphasis on poor rewarding policies adapted by the organization ,lack of recognition to employee's extra effort, poor growth opportunity with in the organization , poor communication among rank and files of the organization ,incapable top leadership lacks in providing guidance to the subordinates . However, the nature of job and job related health hazardous effects are the major contributors to the employee's turnover.

5. **The study highlights on other factors like:-**

a. Work Performance: - As many researches show that there is a significant relationship between work performance and turn over behavior. As the work performance is a variable of job related stress, there for highly stressed employees under performs due to their psychological disorder. As under performs are less likely to receive any recognition and rewards in the organization, thus they are more likely to quit the organization.

b. Employee's Engagement: - This is another factors emerging out of the study which requires management to pay more attention to obtain more passionate contribution from employees than job performance as a responsibility. Engaging an employee as with right kind of work at right time at right location aims at capacity building of the work force leads to draw an extra mileage from it. Employee's need to be made a part of work allocated by the organization with due consideration to his skill set and aptitude levels. This can be called as engagement in true spirit as the employees develops an emotional attachment to the job. Since engaged employee's feel highly motivated and attached to the organization, therefore he continues with the organization for long time.

RECOMMENDATION AND SUGGESTIONS

Based on findings of the subject under study, following recommendation on employee's stress management and employee's turn over are suggested.

Recommendation for Stress Management:- Although many organizations, institution and companies have started imparting training to their employee's for stress management but these steps are not enough unless supported by primary behavioral aspects like attitude leisure, humor , Variety in job , opportunities , job satisfaction ,constant motivation and spirituality. These are few tips to make work full of pleasure:-

Attitude:- When attitude is right, the approach is right and one enjoys his / her work, but it is very difficult to create or mould a right attitude as these are in born traits and are not amenable easily to correction. According to Ritu Chaudhary, Vice President Jet Airways, "Positive attitude is no longer just a prerequisite. It is astutely essential to succeed in the fiercely competitive business world. A positive executive is a productive executive. Positive attitude can do wonders in any field. It not only helps people to conquer sickness and disabilities but also makes them more efficient and successful in their chosen field."

Leisure:- Many people avoid work as they feel that work create stress followed by strain. Such people work half heartedly by reach late for work waste time in gossip and even leave early. But sincere workers enjoy work. So work and leisure are in a way synonymous to each other. Relaxation is natural answer to stress. Employee must relax whether or not feel stressed. Learning and practicing relaxation techniques helps employee's to cope better with the effect of stress.

Humor: - One way to turn almost any situation into a positive one is through magical elixir of humor. It is believed that humor makes environment lively and adds spices to work. Every work situation can be made more interesting and enjoyable. Monotony due to long working hours could lead to fall in productivity, dullness and nerve breaking .Light jocks ,humor etc. will relieve work pressure and will make the people laugh enjoy and participate. Ultimately, the staff will restart their jobs with renewed vigor, energy and enthusiasm.

Variety in job: - Routine jobs create monotony in work and workers lose their interest in the work during the long run. Even in extreme cases they start hating the work. Variety of jobs adds pleasure to work and make it more palatable.

Opportunity:-Since right opportunities inspire people to shoulder higher responsibilities and work more, therefore potential employees must be given right opportunity to express their capability potential and interest in doing their job.

Satisfaction:-Many times a work may not be the liking of an employee but if given freedom , flexibility and authority will draw immense satisfaction to be proud achieve of something .However in the absence of job satisfaction , employee find less involvement and develop low self esteem. Since high self esteem employee' grow in conviction, competence and render willingness to accept responsibility, therefore it becomes a major component in determining success or failure.

Motivation:-Motivation is a tonic for the workers. Constantly motivated employees are more productive at their work as work become enjoyable and challenging. Motivation could be financial or non financial. Even self motivation can spur one to do more without any limit.

Spiritually:- The work done by a spiritual person at work place through his thoughts and act may be exactly same, but such person conceives of a higher ideal and broader perspective .such work generates huge energy and one feels motivated towards work. Hence work becomes highly productive without exerting stress on one self. Spiritual workers are more cheerful and hard working. They are more peaceful and high achievers. Ultimately it is organization where employee's drive pleasure from their work and become creative in thinking. Employee's must grow along with organization and adapt to changing competitive circumstances. to this effect organization must create stress free environment to its employee's.

RECOMMENDATION TO ARREST EMPLOYEE'S TURNOVER

All the known strategies for reducing employee's turnover could be grouped under seven heads:-

Early interventions :- Large no of employee's leave in the first six months .Therefore managing expectation through a better orientation and Buddy system can check employee's attrition.

Skill interventions:-Better training and providing learning opportunities through an internal job posting/ job Rotation program could reduce personal inadequacy and improve job satisfaction.

Leadership intervention:-Better bosses ensure lower turnover. Coaching positive feedback and fair and sensitive handling through 360 degree feedback into the appraisal of supervisor could make work more pleasurable.

Communication intervention:-Regular open forums, improved credibility of senior management, multiple channels of internal communication, and anonymous suggestion boxes for safe feedback and planned sharing of important corporate information would provoke employee's participation and empowerment. This will curb employee's intent of turnover.

Reward and recognition interventions:-Monetary and non monetary reward can provide employee's motivation and hence employee's engagement.

Jobs Enrichment interventions:- Increasing variety of tasks and broadening responsibilities reduces role stagnation jinks from employees.

Selection interventions:-Multiple studies have shown that about 42% of employee's turnover could be reduced through improved selection interviewing procedures.

CONCLUSION

In the nut shell, employee's need to feel valued recognized and encouraged. They want to do meaningful work and have some say in their job designing, in their performance measurement and proportionate compensations and managing the organization. The organization need to develop emotional bond with the employees. The new psychological contract should be aimed at developing a long lasting relationship between the employer and employee. The organization should also encourage and provide various avenues to foster good relationship among the employees.

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CONSUMER AWARENESS TOWARDS MOBILE - BANKING AMONG WORKING PROFESSIONALS

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ABSTRACT

With more than 650 million mobile users and wireless tele-density reached at approximately 59 percent, India is all set to accept mobile technology for payments and remittances. Mobile commerce or M-Commerce is at early stage in India. Mobile remittances have done wonders in other emerging market economies like Kenya and the Philippines. In India, many banks have recently joined hands with mobile operators to offer a bouquet of financial products such as saving accounts, pre-paid instruments and credit products through a mobile phone based platform which reflects their growing interest of addressing the large number of mobile users in the country that do not have access to the banking. The partnership between mobile operator, banks and merchants enables a consumer to pay their utility bills, recharge their accounts, shop, book tickets, view bank accounts and accept remittances; therefore converting a mobile into a 'Mobile Wallet'. The banks are nowadays promoting mobile banking services to their customers. This study examines the level of awareness towards mobile banking services among working professionals.

KEYWORDS

Consumer Awareness, Mobile Commerce, Mobile Banking & Mobile Wallet.

INTRODUCTION

The wireless technology and increasing mobile penetration have created tremendous business opportunities in terms of communication, purchasing, trading etc. Moreover, higher data speed and mobile technology enables mobile devices to access, receive and send huge range of information as well as services in real time. The market for mobile phones and other handheld devices is growing due to low costs, ease of use and increasing computational power. Very few industries have witnessed the kind of growth telecom has seen in India. Currently, we have more mobile phones in our country than land lines. The mobile subscriber base has largely grown from around 10 million subscribers in 2002 to more than 700 million subscribers in 2010 leading wireless tele-density reaches to 63.22[1] [See Exhibit – I below].

OVERVIEW OF INDIA'S MOBILE MARKET – 2010

TABLE - I

Category	Units
Mobile Subscribers :	
• Total number of wireless subscribers - GSM, CDMA & FWP [2] (as on Dec, 2010)	752.19 Million
• Overall Wireless Tele-density [3]	63.22
Service Providers :	
• Five Major Wireless Telecom Service Providers	1. Bharti – 20.27% 2. Reliance – 16.70% 3. Vodafone – 16.52% 4. BSNL – 11.53% 5. Tata – 11.20% (Market share as on 31.12.2010 – data released by TRAI)
Net Addition :	
• Yearly rate of growth (Wireless Subscribers) From Dec 2009 to Dec 2010	43.23%

Source: TRAI [http://trai.gov.in]

The mobile phone revolution is sweeping across India and has huge potential to transform the lives of the nation's millions of rural people who have mobile phones but they do not have access to banks. This gap is only widening. The mobile banking technology can bridge this 'digital divide' and foster financial inclusion (Gandhi R., 2010). The Internet has carved an incredible market space. In parallel with Internet, another technology streams have also emerged strongly to play increasingly important role in business and society: mobile communications (Feng *et al*, 2006).

MOBILE COMMERCE

Many experts classified 1980s as the decade of the PCs, the 1990s as the decade of the Internet, and claimed the first decade of the 21st century as the decade of mobile computing and mobile commerce (m-commerce). M-commerce is in very early stage of development in India. Several definitions of mobile commerce are found in academic literatures. Before defining m-commerce, this paper should first define Mobile – business (M-business). It is defined as the exchange of goods, services, knowledge and information through mobile technology. M-business includes not only consumer-facing applications but also enterprise solutions that enable the companies to operate more efficiently by serving their customers in a better way and generate additional revenues. Mobile commerce (m-

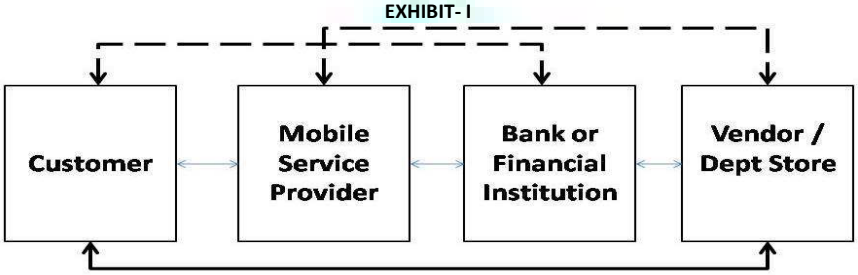
[1] According to the Telecom Subscription Data as on 31st December 2010 released by TRAI- Telephone Regulatory Authority of India
[2] GSM- Global System for Mobile Communications, CDMA - Code division multiple access, FWP – Fixed wireless phone.
[3] The number of landline/mobile telephones in use for every 100 individuals living within an area. [Source: http://encyclopedia2.thefreedictionary.com/teledensity]

commerce), on the other hand, is simply defined as executing any transaction using mobile technology. A mobile commerce is the one that involves exchanging internet contents with a network of mobile people via wireless device. Paying a utility bill and buying a movie ticket on a WAP[4] phone is an example of m-commerce. In very simple terms, one can say: M-commerce = E-commerce[5] + Wireless Web.

A mobile commerce is the one that involves exchanging internet contents with a network of mobile people via wireless device. M-Commerce still in its infancy is not currently a major economic force but in all likelihood it will become the future of global business (Kumar *et al,* 2008).

A typical flow of relationship between customer, bank, mobile service provider and vendor (shown in exhibit –II) can be defined where the customer may have relationship with mobile service provider who provides telecom service and the bank or financial institution which enable the transaction to take place. In order to purchase products, the customer requires establishing a virtual bank account to handle the transactions that the customer makes, and payment for the products etc.

EXHIBIT- I



Two forms of mobile payments are available: the mobile credit card and mobile wallet. A mobile wallet is in essence a smart card application stored in a mobile device that functions in a similar manner to debit cards and has bank accounts and security authentication tools (Flatraaker, 2008). On the other hand, a mobile credit card (using the mobile handset) functions as a credit card and permits online purchasing (Dahlberg et al., 2006). The mobile wallet idea is similar to m-commerce using a cell phone as a mobile payment device and considered to replace cash especially 'micro payments'.

MOBILE BANKING

Mobile banking is an integral part of m-commerce. 'Mobile Banking' can be defined as "a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA)[6]. While physical or traditional payment system with cash and cheques are still prevalent in some parts of the world, electronic payment systems, especially mobile payment are gaining consumer acceptance in many economies due to high mobile technology penetration. It provides exciting possibilities to increase remittance flows through banks, and include the poor and un-banked to the banking net[7]. Mobile technology is changing the design and delivery of personal financial services (Luarn & Lin, 2005). Wireless technology and mobile phones have transformed the banking services by channelizing it through mobile devices which creates enormous growth potential of banking as well as other financial services (Singh S., *et al,* 2010).

M-banking has the potential to bring basic banking and electronic transactions services to unbanked consumers in developing markets. Mobile banking (m-banking) involves the use of a mobile phone or another mobile device to undertake financial transactions linked to a client's account (J. Anderson, 2010). Mobile banking is an extension to application such as online banking and phone banking. Typical functions of m-baking include viewing account balances, transferring funds from one account to another, receiving alerts and paying bills. However, m-banking cannot support all banking functions. For instance, cash can only be withdrawn at physical branches or at automated teller machines (Barnes & Corbitt, 2003).

M-banking is generally viewed as a channel that is more flexible and ubiquitous than the existing banking channels. The mobile banking services can be categorized into – 'Transaction based' and 'Enquiry based' which can also be viewed as Pull/Push nature. 'Pull' is when the customer explicitly requests for a service or information from the bank, say, for last five transactions statement etc. 'Push' is when the bank sends out an alert when your account balance goes below a threshold level. Based upon this classification, we can present some of the mobile banking services - Fund transfer, Bill Payment, other financial transactions, Balance enquiries, Bills payment, Account statement, Transaction history, Cheque status etc.

TECHNOLOGIES IN USE FOR M-BANKING

At present, mobile banking is being used by deploying one or more than one of the following channels:

- ***IVR (Interactive Voice Response):*** Banks advertise a pre-specified number to their customers where they can make a call which is usually greeted by a stored electronic message followed by a menu of different options. IVR-based systems are generally deployed by the merchant establishments and banks allowing to the account holders to use their debit/credit card to carry out transactions. It is more expensive as compared to other channels e.g. SMS and WAP[8].
- ***SMS (Short Message Service):*** The customer requests for information by sending SMS containing a service command at a pre-specified number. Almost all mobile phones are SMS enabled which the most encouraging point for banks to deploy SMS enabled mobile banking technology. By registering for the services with banks, the customer can carry out merchant payment transactions by following the prescribed syntax.
- ***WAP (Wireless Access Protocol):*** Using the same concept of internet banking, the banks maintain WAP sites which can be accessed by customers using a WAP compatible browser on their mobile phone. Much like internet banking.
- ***Standalone Mobile Application Client*:** These are the customized mobile applications which can be downloaded on customer's mobile device before they can be used. 'Stock trading' and 'Enterprise mobility' are the examples of such application.

[4] The Wireless Application Protocol (WAP) is an open, global specification that empowers mobile users with wireless devices to easily access and interact with information and services instantly. [Accessed from http://www.wapforum.org]

[5] Electronic commerce means buying and selling of goods and services across the internet. [Accessed from http://www.cyberwebglobal.com/ecommerce.htm]

[6] PDA is a handled device that combines computing, telephone/fax, internet and networking features. [Accessed from http://www.webopedia.com/TERM/P/PDA.html]

[7] GSMA, *Mobile Money for the Unbanked*, 2010 [Accessed from: http://www.gsmworld.com]

[8] The Wireless Application Protocol (WAP) is an open, global specification that empowers mobile users with wireless devices to easily access and interact with information and services instantly. [Accessed from http://www.wapforum.org]

M-BANKING SERVICE BY SOME OF THE BANKS IN INDIA

TABLE: II

Name of Bank	M-banking Service	Name of M -banking Service	Name of Bank	M-banking Service	Name of M -banking Service
1. Allahabad Bank	Scheduled to launch in Apr 2011[9]	N.A	26. IndusInd Bank	Yes	INDUS MOBILE BANKING
2. Andhra Bank	Yes	ABK mPay	27. ING Vysya Bank	Yes	ING Mobile Banking
3. Axis Bank	Yes	Axis Mobile	28. Jammu & Kashmir Bank	Yes	SMS Alert Services
4. Bank of Baroda	No	N.A	29. Karnatka Bank	Yes	Karnataka Bank Mobile Banking
5. Bank of India	Yes	Star[Connect] Mobile Banking Services	30. Karur Vysya Bank	Yes	KVB 'SMS alerts'
6. Bank of Maharashtra	Yes	Maha Mobile	31. Kotak Mahindra Bank	Yes	Kotak Mobile banking
7. Bank of Rajasthan	Yes Amalgamation of Bank of Rajasthan Ltd. with ICICI Bank Ltd. with effect from August 13, 2010	iMobile (by ICICI Bank)	32. Oriental Bank of Commerce	Yes	OBCmPAY
8. Canara Bank	No	N.A	33. Punjab & Sind Bank	No	N.A
9. Catholic Syrian Bank	No	N.A	34. Punjab National Bank	Yes	Pnb Mobile
10. Central Bank of India	No	N.A	35. South Indian Bank	Yes	SIB Mobile Service
11. Citibank	Yes	Citi Mobile Apps, Citi Mobile for Smartphones and Citi Text Banking	36. Standard Chartered Bank	Yes	Standard Chartered Mobile Bank
12. City Union Bank	Yes	CUB's SMS Banking	37. Syndicate Bank	Yes	SyndSMSBanking
13. Corporation Bank	Yes	Corporation Bank SMS Banking facility	38. State Bank of India and Associate Banks :	Yes (SBI and Associate Banks)	State Bank FreedoM Banking (used by SBI and Associate Banks)
14. DBS Bank	Yes	DBS mBanking	38.1 State Bank of Bikaner & Jaipur		
15. Dena Bank	Yes	Dena m-banking	38.2 State Bank of Hyderabad		
16. Deutsche Bank	No	N.A	38.3 State Bank of Indore		
17. Development Credit Bank	Yes	DCB Mobile Banking	38.4 State Bank of Mysore		
18. Dhanalakshmi Bank	Yes	Dhanalakshmi Mobile Banking	38.5 State Bank of Patiala		
19. Federal Bank	Yes	FedMobile	38.6 State Bank of Travancore		
20. HDFC Bank	Yes	HDFC Bank Mobile Banking	39. UCO Bank	Yes	UCO Mobile Banking
21. HSBC	Yes	HSBC Mobile Banking	40. Union Bank of India	Yes	Umobile
22. ICICI Bank	Yes	iMobile	41. United Bank of India	Yes	UBI SMS Banking services
23. IDBI (for payment)	Yes	paymate	42. Vijaya Bank	Yes	V-Mobile banking
24. Indian Bank	Yes	INDmobileBANKing	43. Yes Bank	Yes	Yes touch
25. Indian Overseas Bank	Yes	IOBMobile			

Source: Web-site of banks. [Last viewed on 10 March 2011]

Almost all of the above mentioned banks (except few indicated as N.A) provide mobile banking services to their customers.

WHY M-BANKING?

- **More ways to access account:** Anywhere anytime banking is growing fast in India. As India is becoming technology driven this is the edge where mobile banking has edge over two modes of banking. Banks help to access account via texting
- **Mobile: An exploding platform:** Mobile helps people to stay connected even when they are miles away from their branch. Presently banks are rolling out with new services in mobile banking that will help people to access more easily.
- **Mobile banking is raging up quickly:** mobile banking is bringing a new focus in the phase of banking. The potential for this area is significant. Today only about 45 million people without traditional bank account use mobile money.
- **Rapid evolution of global protocols such as WAP (wireless application protocol):**

This enables the communication channel between computers and mobile devices. The WAP component essentially provides the facility for reformatting data for display on wireless handsets.

[9] Allahabad Bank to launch mobile banking in April, 2011 [Accessed from: http://www.business-standard.com/india/news/allahabad-bank-to-launch-mobile-banking-in-april/427082]

MOBILE BANKING: NO WIRES, NO WORRIES, NEW CUSTOMERS

With the proliferation & cost effectiveness of mobile delivery channel, banks have a built-in delivery mechanism that can offer services & 24×7 access regardless of where the customer happens to be. Unlike PC-Based e-banking, m-banking provides banks with the unprecedented opportunity to reach their customers in an unrestricted environment. The big benefits for banks higher customer satisfaction & loyalty, no transaction-based fee revenue, lower cost of ownership and integrated customer relationship management channel.

KEY CHALLENGES INVOLVED IN M-BANKING

- **Ambiguity among customers:** India is the world's second largest mobile market, with over 400 million subscribers. Despite of this aspect there exist a loophole of financial illiteracy, people are not fully aware of the applications provided in mobile banking. People are unable to understand the applications.
- **Security:** security of financial transaction is another challenge which is being faced by many people. However, some of the aspects need to be addressed jointly by application developers:-

a) Authentication of the device with service provider before initiating a transaction.
b) User ID/Password authentication of bank's customer.
c) Encryption the data being transmitted over the air.

- **Variety of devices:** There is large number of mobile phones and it is a big challenge for banks to offer a banking solution related to a particular handset. The desire for interoperatability depends on banks because banks go for only those transactions that generate volume. In present banking interface are well defined and money movements between banks follow the ISO-8583 standard.
- **Cloning** – Copying the identity of one mobile phone to another, thereby allowing the perpetrator to masquerade as the victim, normally with the intent to have calls and other services billed to the victim's cellular account. In the case of mobile banking, cloning could give the hacker access to the victim's financial accounts
- **Hijacking** – The attacker takes control of a communication between two entities, masquerading as one of them. As with cloning, hijacking could give the hacker access to the victim's financial accounts.

OBJECTIVES OF STUDY

The primary objective of this study is: (a) to examine the awareness level of mobile banking services among working professionals. The secondary objectives are: (b) to investigate whether or not they are using mobile banking and why. (c) to highlight major opportunities and challenges of mobile banking in India.

RESEARCH METHODOLOGY

This paper is based on primary as well as secondary data. The primary data collected through a structured questionnaire (using 'Google docs - form'[10]) from 82 respondents based in (i) Punjab (Jalandhar, Phagwara and Fatehgarh sahib district) & Chandigarh; (ii) New Delhi & National Capital Region (Gurgaon and Noida). A total of 250 respondents[11] from two different states were sent questionnaire using convenience (non-random) sampling out of which total 104 respondents actually responded as following:-

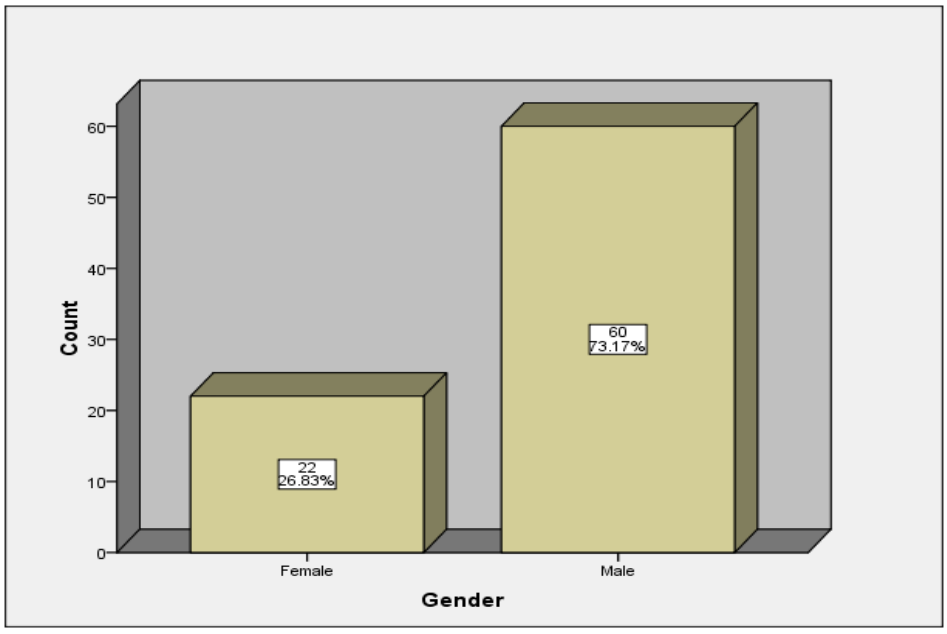
TABLE- III

Place(s)	Sample Size	%age	Actual Respondents	%age
Punjab	150	60%	58	70.7%
Delhi & NCR	100	40%	24	29.3%
Total	250	100%	82	100%

The survey was concerned with user and non-user of mobile banking especially working professionals. The items in the questionnaire were constructed based on a typical variety of professions existing in the country and their timing of work. The secondary data is taken from journals, magazines and newspapers.

RESEARCH FINDINGS

1. The total of 82 responses was obtained from 60 Males and 22 Female respondents.



[10] Google form can be accessed from the link -[https://spreadsheets.google.com/viewform?formkey=dHJSbUFTaE9qdTVSU3p1Mml1VEJyQ1E6MQ]
[11] The respondents included working professionals – Teachers as well as administrative staff of universities/educational institutes, Account professions, Lawyers, Doctors and IT Professionals.

2. Out of total 82 respondents, majority of them (total 30) belonged to less than 25 years age group and very few of them (total 5) belonged to 35-40 years age group as shown in Table- IV below:

TABLE- IV

		Age of Respondents (in Yrs.)					Total
		<25	25-30	30-35	35-40	>40	
Gender	Male	23	16	8	4	9	60
	Female	7	12	0	1	2	22
Total		30	28	8	5	11	82

3. Out of exhaustive list of occupations (Table- V) given in the questionnaire, most of the respondents (45) belonged to 'Teaching' occupation and very few of them belonged to administrative as well as other categories of occupation as shown below:

TABLE- V

Age of Respondent	Occupation							Total
	Teacher	Administrative	Doctor	Lawyer	Accounts or Finance	IT Professional	Others	
<25	14	3	0	0	5	8	0	30
25-30	21	0	1	1	2	0	3	28
30-35	0	0	0	3	1	4	0	8
35-40	5	0	0	0	0	0	0	5
>40	5	0	3	1	2	0	0	11
Total	45	3	4	5	10	12	3	82

4. The awareness level of sample was counted to be 53 (around 65%) of total 82 respondents and very few- total 20 (around 38%) use mobile banking whereas others do not use M-banking service.

TABLE- VI

		Do you use Mobile Banking service provided by your bank?		Total
		Yes	No	
Does your bank offer Mobile Banking facility?	Yes	20	33	53
	No	0	27	27
	Don't Know	0	2	2
Total		20	62	82

5. By applying Factor analysis, it is intended to study the patterns of relationship among given dependent variables, with the goal of discovering something about the nature of the independent variables that affect them, even though those independent variables were not measured directly. Similarly, in this paper, it is attempted to discover such independent variables which affect the pattern of relationship among variables.

5.1 The data adequacy was checked by applying KMO and Bartlett's test (Table VII) and it was found that sampling adequacy value stood at 0.536 which was above the standard value of 0.5. Hence, it is concluded that the data is valid for factor analysis.

TABLE- VII: KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.536
Bartlett's Test of Sphericity	Approx. Chi-Square	10.422
	Df	10
	Sig.	.404

5.2 The value of communalities is 49.353% (Table- VIII) and two factors were found coming out of available data as their Initial Eigenvalues were above 1. Rest of the 50.647% data was being lost while considering these two factors.

TABLE- VIII: TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.408	28.156	28.156	1.408	28.156	28.156	1.405	28.093	28.093
2	1.060	21.197	49.353	1.060	21.197	49.353	1.063	21.261	49.353
3	.970	19.393	68.747						
4	.854	17.074	85.821						
5	.709	14.179	100.000						

5.3 Four variables were worth considering whose values were above 0.5 (Table- IX). In the first factor, the following four variables become eligible into formation of single major factor:-

5.3.1 M-banking transactions are easy to learn and use;

5.3.2 M-banking transactions cheaper than other channels of banking;

5.3.3 M-banking transactions are confidential, authenticated and secured; and

5.4.4 M-banking is more efficient, convenient and safer that internet banking.

These four variables coupled together generate two major factors that are (a) 'Secured & easy accessibility' and (b) 'Uninterrupted Mobility' which strongly influence usage or adoption of M-banking services by sample.

TABLE- IX: ROTATED COMPONENT MATRIX[a]

	Component	
	1	2
I feel that mobile banking services are easy to learn and use	.545	-.105
I feel that mobile banking offers option to bank anytime and anywhere	.167	.856
I feel that the cost incurred during mobile banking transactions is cheaper than other channels of banking	.607	.098
I feel that mobile banking transactions are confidential, authenticated and secured	.581	-.518
I feel that mobile banking is more efficient, convenient and safer that internet banking	.611	.201

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

CONCLUSION

Since, it was found that awareness level of mobile banking services among working professionals is too low. The reasons for its usage by the current users and of those who are currently non-users strongly weigh on two major factors – 'Secured & easy Accessibility' and 'Uninterrupted Mobility' to exist in m-banking services. The banks must educate their customers by communicating advantages of m-banking services by weighing upon the above stated two major factors. The working professional are found be occupied in their respective offices whereby access to the banking services happens through e-banking or m-banking. There are enormous opportunities available for the banks to provide a bouquet of many financial services to the Indian masses especially those who have no access to the banks. For it, the banks need to increase awareness campaigns inside as well as outside bank branches. Increasing mobile penetration in the country may become one of the strongest opportunities for not only mobile service providers but for banks as well. At the same time, the banks must ensure the m-banking services are equipped with an authentic and secured mode of enabling the transaction which raises the level of confidence among users and encourages them to increase the frequency of transaction using m-banking gateway.

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