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# AN ANALYSIS OF THE IMPACT OF MOBILE BANKING SERVICE QUALITY ON CUSTOMER SATISFACTION AND LOYALTY: A CASE STUDY OF STANDARD CHARTERED BANK OF ZIMBABWE

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## ABSTRACT

*This study analysed the impact of mobile banking service quality on customer loyalty in the context of Standard Chartered bank of Zimbabwe as a case study, the largest traditional commercial bank in the country. The study adopted a quantitative descriptive design and the researchers administered a self-constructed questionnaire to 60 mobile banking users across the 12 Standard Chartered bank branches in Bulawayo and Harare. The findings of the study are that Standard Chartered mobile banking service quality in terms of awareness and assurance is satisfying customers as far as perceived ease of use is concerned. In terms of perceived usefulness, the bank is dependably satisfying customers' needs. Furthermore, the results indicated that there is an overall strong positive relationship between mobile banking service quality dimensions, customer satisfaction and customer loyalty. The study recommends that, to leverage customer loyalty the bank has to ensure total quality management and continuous improvement in the area of mobile banking services awareness campaigns, improved mobile banking services assurance, bank swift responsiveness to customer concerns and enhanced mobile banking services dependability.*

## KEYWORDS

mobile banking, service quality, services awareness, services assurance, responsiveness, service dependability, customer satisfaction, customer loyalty.

## INTRODUCTION

Customer loyalty is an important aspect of the marketing concepts. This concept has attracted the renewed attention during the past decade due to the emergence of long-term relationship between service providers and customers in the banking sector of Zimbabwe. Facing fierce competition and limited resources the banking services providers have shifted their focus from acquiring new customers to retaining the existing customers. As a result customer satisfaction and customer loyalty has become the core of the brand: customer relationships. A challenging question facing today's banking and marketing managers is how to understand the appropriate long-term relationship, particularly in relation to a number of known antecedents to mobile service quality in gaining customer loyalty (Taylor, 2004). According to Mary (2009) mobile banking was first introduced in the late 1990s in New York by the four major banks: Citibank, Chase Manhattan, Chemical and Manufacturers. In Africa the mobile banking was introduced in 2001. Chronicling the history of mobile banking in Zimbabwe, Runyowa (2013) posit that, in Zimbabwe, the first mobile banking innovation was on 28 November 2011 by the Standard Chartered Bank. Standard Chartered Bank (Zimbabwe) is the oldest traditional financial institution in Zimbabwe, having been established as Standard Bank in 1892. The current bank was created when Standard Bank merged with Chartered Bank in 1969. Standard Chartered Zimbabwe is one of the largest International banks in Zimbabwe, with a personal banking customer list in excess of 63,000 and a corporate client list exceeding 200 companies, according to [www.standardchartered.com](http://www.standardchartered.com).

## LITERATURE REVIEW

Gremler and Brown (2006) define customer loyalty as the degree to which a customer exhibits repeat purchasing behavior from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for this service exists. According to Bloemer and Kasper (2005) customer loyalty is interpreted as true loyalty rather than repeat purchasing behavior, which is the actual re-buying of a brand, regardless of commitment. Zeithaml (2001) states that customer loyalty is a multi-dimensional construct, which includes both positive and negative responses to it. However, a loyal customer may not necessarily be a satisfied customer. Colgate *et al.* (2008) also notes that it is not always the case that customer defection is the inverse of customer loyalty. While Levesque and Mc. Dougall (2003) suggest that even when a problem may not be solved, approximately half of the customers would still remain with the firm. This may be due to switching costs, lack of perceived differentiation of alternatives, location constraints on choice, time or money constraints, habit or inertia which are not related to loyalty (Bitner, 2003; Ennew and Binks, 2001). Customer satisfaction refers to the customer's perception that his or her expectations have been met. If the customer's expectations are met, then he is satisfied, if the expectations are surpassed, then he is delighted, but in the event that they are not met, the customer is dissatisfied (Kotler, 2001). Satisfaction may be viewed as, an emotion (an effective response to service offers), meaning the extent to which the customer is happy with the service experience. How happy they are with certain mobile service providers. It is also viewed as a fulfillment of the achievement of relevant goals. This entails the extent to which the service offered meets or exceeds customer needs. That is, the extent to which customers is enabled to fulfill their communication goals by the mobile service provider. Satisfaction may also be viewed as a state, which concerns the level of reinforcement or arousal, the extent to which it drives the customer towards acceptance or avoidance (Joseph, 2003). Mobile banking is an application of mobile commerce that enables customers to bank virtually at any convenient time and place (Furst, 2002). It is also defined as the provision of banking and related financial services such as savings, funds transfer, and stock market transactions among others on mobile devices (Tiwari and Buse, 2007). Mobile banking can be defined as the ability to conduct bank transactions via a mobile device, or more broadly – to conduct financial transactions via a mobile terminal (Drexelius and Herzig, 2001). This definition is a suitable working one as it includes not only basic services such as bank account statements and funds transfer, but also electronic payment options as well as information based financial services such as alerts on account limit or account balance, and access to stock broking. It compares all with the definition found in Hawari (2009) where mobile banking is referred to as the ability to bank virtually anytime, anywhere. Definition of service quality holds that this is the result of the comparison that customers make between their expectations about a service and their perception of the way the service has been performed (Lehtinen and Lehtinen, 2002). Service quality is defined as the degree of discrepancy between customers' normative expectation for service and their perceptions of service performance (Parasuraman, 2005). The definition of service quality was further developed as, the overall evaluation of a specific service firm that results from comparing that firm's performance with the customer's general expectations of how firms in that industry should perform (Parasuraman, 2005). As the time evolved, quality concepts such as total quality management (TQM) and new public management (NPM) have been adopted by many organizations in most developed countries as early as 1990s. The key objective of NPM, for instance, is to improve the delivery of service quality by taking a customer-oriented approach (Mwita, 2000). Wu *et al.* (2006) integrate data envelopment analysis (DEA) and neural network (NNs) to examine

the relative branch efficiency. The use of the DEA technique in performance benchmarking of bank branches has evolved from relative benchmarking of performance in terms of operating efficiency (service quality) and profitability (Manandhar and Tang, 2002).

## STATEMENT OF THE PROBLEM

Commercial banks in Zimbabwe offer diversified mobile banking services at lower costs. However, according to Bank survey report (2013), the banks have failed to retain approximately 42% of their mobile banking customers during the mid-2012. There was an increase of 55% in the number of customers who were partially disengaged by 2013. Nine percent was recoded as the number of the customers fully disengaged from the banks by April 2014. The trend evidently showed that the commercial banks are failing to retain customers and maintain customer loyalty as part of major corporate goals for bank survival. New mobile banking services were introduced and are still being introduced by the banks, but the number of customers engaged to the banks is falling drastically. This is proving that quantity of services provided to customers and charges may not be the major concern of the mobile bank users. However the reduction in customer loyalty could best be explained by mobile banking services quality initiatives. Therefore this study sought to analyse the impact of mobile banking service quality on customer satisfaction and loyalty in the Standard Chartered bank in Zimbabwe.

## OBJECTIVES OF THE STUDY

1. To analyse the socio-economic impact of quality mobile banking service offered by Standard Chartered bank of Zimbabwe on customer loyalty.
2. To investigate if there is any significant relationship between mobile banking service quality offered by Standard Chartered bank, customer satisfaction and customer loyalty.
3. To determine the extent to which quality of mobile banking services offered by Standard Chartered bank affect customer loyalty.

## HYPOTHESIS

H<sub>1</sub>: There is a significant relationship between mobile banking service quality offered by Standard Chartered bank and consumer loyalty.

### SUB-HYPOTHESIS

H<sub>1a</sub>: There is a significant relationship between Standard Chartered bank mobile banking service awareness and customer loyalty

H<sub>1b</sub>: There is a significant relationship between Standard Chartered bank mobile banking service dependability and customer loyalty

H<sub>1c</sub>: There is a significant relationship between Standard Chartered bank mobile banking service responsiveness and customer loyalty

H<sub>1d</sub>: There is a significant relationship between mobile banking service assurance and customer loyalty

## METHODOLOGY

The researchers adopted a quantitative descriptive design that allowed the researchers to analyse the impact of mobile banking service quality on customer loyalty for Standard Chartered bank. The design helped the researchers to collect data which was analysed quantitatively using descriptive statistics and multi-regression analysis taking into account various socio-economic service quality variables i.e. responsiveness, service awareness, assurance and dependability to analyse the impact of mobile service quality on customer loyalty. The instrument was administered to 60 mobile banking users across the 12 Standard Chartered bank branches in Bulawayo and Harare.

## SCOPE OF THE STUDY

The scope of the study is limited to the Standard Chartered Commercial bank branches in Harare, the capital city of Zimbabwe and Bulawayo the second largest city in Zimbabwe.

## ANALYSIS OF THE STUDY

TABLE 1: FREQUENCY DISTRIBUTION OF MOBILE SERVICE QUALITY DIMENSIONS, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY DESCRIPTIVE STATISTICS

	Mean	Std. Deviation	N
Service Awareness	3.85	.360	60
Service Assurance	3.65	.481	60
Bank Responsiveness	3.55	.502	60
Service Dependability	3.80	.403	60
Customer Loyalty	2.55	.594	60
Perceived ease of use	1.70	.462	60
Perceived usefulness	1.90	.775	60

From table 1 above, Service Awareness with a mean of 3.85 (SD 0.360), Service Assurance with a mean of 3.65 (SD 0.481), Bank Responsiveness with a mean of 3.55 (SD 0.502), and Service Dependability with a mean of 3.80 (SD 0.403) all above the acceptable mean of 2.5 reflect the frequency distribution of the mobile banking service quality dimensions in place to enhance customer satisfaction and loyalty. Notwithstanding the low perceived ease of use and usefulness of the mobile banking facilities and services, as reflected by a mean of 1.70 and 1.90 respectively.



TABLE 2: CORRELATIONS BETWEEN MOBILE BANKING SERVICE QUALITY, CUSTOMER SATISFACTION AND CUSTOMER LOYALTY

		Service Awareness	Service Assurance	Bank Responsiveness	Service Dependability	Customer Loyalty	Perceived ease of use	Perceived usefulness
Service Awareness	Pearson Correlation	1	.279*	.183	.490**	.629**	.336**	.128
	Sig. (2-tailed)		.031	.162	.000	.000	.009	.331
	N	60	60	60	60	60	60	60
Service Assurance	Pearson Correlation	.279*	1	.390**	.157	.685**	.435**	.041
	Sig. (2-tailed)	.031		.002	.230	.000	.001	.756
	N	60	60	60	60	60	60	60
Bank Responsiveness	Pearson Correlation	.183	.390**	1	.050	.162	-.154	.144
	Sig. (2-tailed)	.162	.002		.703	.216	.242	.273
	N	60	60	60	60	60	60	60
Service Dependability	Pearson Correlation	.490**	.157	.050	1	.467**	.218	.260*
	Sig. (2-tailed)	.000	.230	.703		.000	.094	.045
	N	60	60	60	60	60	60	60
Customer Loyalty	Pearson Correlation	.629**	.685**	.162	.467**	1	.611**	.342**
	Sig. (2-tailed)	.000	.000	.216	.000		.000	.007
	N	60	60	60	60	60	60	60
Perceived ease of use	Pearson Correlation	.336**	.435**	-.154	.218	.611**	1	.341**
	Sig. (2-tailed)	.009	.001	.242	.094	.000		.008
	N	60	60	60	60	60	60	60
Perceived usefulness	Pearson Correlation	.128	.041	.144	.260*	.342**	.341**	1
	Sig. (2-tailed)	.331	.756	.273	.045	.007	.008	
	N	60	60	60	60	60	60	60

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

Table 2 indicates that, in terms of perceived ease of use, there is a significant positive relationship between service awareness ( $r = 0.336$ ,  $p < 0.05$ ) and customer satisfaction. There is also a positive significant relation between service assurance ( $r = 0.435$ ,  $p < 0.05$ ) and customer satisfaction an intervening variable. Bank responsiveness and service dependability has also a positive relationship with customer satisfaction but it was not statistically significant ( $p > 0.05$ ). This implies that mobile banking users perceive the quality of service as favourable in terms of awareness and assurance if the measurement of satisfaction is based on perceived ease of use. In terms of perceived usefulness the results of the study show that there is a significant positive relationship between service dependability ( $r = 0.260$ ,  $p < 0.05$ ) and customer satisfaction in terms of perceived usefulness. Service assurance, bank responsiveness and service awareness had also a positive relationship with customer satisfaction but it was not statistically significant ( $p > 0.05$ ). This imply that mobile banking user perceive the quality of service as favourable in terms of dependability if the measurement of satisfaction is based on perceived usefulness. The result of Pearson correlation analysis provided in table 3 shows that service awareness is significantly, positively correlated to customer loyalty. The results show a coefficient of  $0.629^{**}$  at  $p = 0.05$  ( $r = 0.629^{**}$ ,  $p < 0.05$ ) which shows that the two constructs, service quality and customer loyalty are positively related. Therefore, the hypothesis that there is a significant relationship between Standard Chartered mobile banking service awareness and customer loyalty should be accepted.

TABLE 3: CORRELATIONS FOR SERVICE QUALITY DIMENSIONS AND CUSTOMER LOYALTY

		Service Awareness	Service Assurance	Bank Responsiveness	Service Dependability	Customer Loyalty
Service Awareness	Pearson Correlation	1	.279*	.183	.490**	.629**
	Sig. (2-tailed)		.031	.162	.000	.000
	N	60	60	60	60	60
Service Assurance	Pearson Correlation	.279*	1	.390**	.157	.685**
	Sig. (2-tailed)	.031		.002	.230	.000
	N	60	60	60	60	60
Bank Responsiveness	Pearson Correlation	.183	.390**	1	.050	.162
	Sig. (2-tailed)	.162	.002		.703	.216
	N	60	60	60	60	60
Service Dependability	Pearson Correlation	.490**	.157	.050	1	.467**
	Sig. (2-tailed)	.000	.230	.703		.000
	N	60	60	60	60	60
Customer Loyalty	Pearson Correlation	.629**	.685**	.162	.467**	1
	Sig. (2-tailed)	.000	.000	.216	.000	
	N	60	60	60	60	60

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

The result of Pearson correlation analysis provided in Table 3 shows that dependability is significantly, positively correlated to customer loyalty. The result shows a coefficient of  $0.467^{**}$  at  $p = 0.05$  ( $r = 0.467^{**}$ ,  $p < 0.05$ ) which shows that the two constructs, service quality and customer loyalty are positively related. Therefore, the hypothesis that there is a significant relationship between Standard Chartered bank mobile banking service dependability and customer loyalty should be accepted. The result of Pearson correlation analysis provided in Table 3 also shows that service responsiveness is positively correlated to customer loyalty although not statistically significant. The result shows a coefficient of  $0.162^{**}$  at  $p = 0.05$  ( $r = 0.162^{**}$ ,  $p < 0.05$ ) which indicates that the two constructs, service quality and customer loyalty are positively related although the relationship was too weak. This study shows that responsiveness and customer loyalty

are insignificantly positively correlated. Therefore, the hypothesis that there is a significant relationship between Standard Chartered bank mobile banking service responsiveness and customer loyalty should be accepted. The result of Pearson correlation analysis provided in Table 3 shows that service assurance is significantly, positively correlated to customer loyalty. The results in Table 3 also show a coefficient of 0.685\*\* at  $p = 0.05$  ( $r = 0.685^{**}$ ,  $p < 0.05$ ) which indicates that the two constructs, service quality and customer loyalty are positively related. Therefore, the hypothesis that there is a significant relationship between mobile banking service assurance and customer loyalty should be accepted.

TABLE 4: MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.852 <sup>a</sup>	.726	.706	.322	.726	36.448	4	55	.000

a. Predictors: (Constant), Service Dependability, Bank Responsiveness, Service Assurance, Service Awareness

b. Dependent Variable: Customer Satisfaction, Customer Loyalty

TABLE 5: CORRELATION COEFFICIENTS

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
1 (Constant)	-3.089	.557		-5.545	.000
Service Awareness	.659	.138	.399	4.770	.000
Service Assurance	.748	.097	.605	7.681	.000
Bank Responsiveness	-.185	.091	-.156	-2.029	.047
Service Dependability	.270	.120	.183	2.261	.028

a. Dependent Variable: Customer Satisfaction, Customer Loyalty

Tables 4 and 5 show that there is a significant relationship between mobile banking service quality offered by Standard Chartered bank and consumer loyalty. The adjusted  $r^2$  shows that 70.6% of variance in customer loyalty was accounted for by mobile banking service quality dimensions. Since there is an overall significant positive relationship between mobile banking service quality and customer loyalty, this implies that the hypothesis that there is a significant relationship between mobile banking service quality offered by Standard Chartered and consumer loyalty should be accepted.

## FINDINGS AND SUGGESTIONS

The results above indicate that mobile banking service quality has an impact on customer satisfaction and customer loyalty. The results of the multi-linear regression show that there is overall positive relationship between mobile banking service quality dimensions and customer loyalty, intervened by customer satisfaction.

**Suggestion 1:** With regard to perceived ease of use, mobile banking services quality awareness and mobile service quality awareness are critical to customer satisfaction and hence customer loyalty. This implies that mobile banking users perceive the quality of service as favourable in terms of awareness and assurance. This implies that in order to leverage customer loyalty the bank should satisfy its customers by improving communication strategies and must offer information on newly introduced products and the staffs develops courtesy to gain customer satisfaction.

**Suggestion 2:** With regard to perceived usefulness, mobile banking service dependability is critical to customer satisfaction as an intermediate or intervening variable. This imply that mobile banking users perceive the quality of service as favourable in terms of dependability if the measurement of satisfaction is based on perceived usefulness. As a result the bank must continue fulfilling its promised services in terms of delivery in time and maintain its terms of services to improve customer satisfaction.

**Suggestion 3:** The mobile banking service quality dimensions or variables of Service Awareness, Service Assurance, Bank Responsiveness and Service Dependability accounted for 70.6% of the variance in customer loyalty within the Standard Chartered bank branches in Zimbabwe. To leverage customer loyalty the bank has to ensure total quality management and continuous improvement in the area of mobile banking services awareness campaigns, improved mobile banking services assurance, bank swift responsiveness to customer concerns and enhanced mobile banking services dependability.

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**REINFORCEMENT OF LECTURE PRESENTATION BY USE OF ANIMATION IN MATHEMATICS****WILLIAM NKOMO****TEAM LEADER****SOFTWARE ENGINEERING & PROFESSIONAL PRACTICE****BOTHO UNIVERSITY****FRANCISTOWN****BERTHA KARIMBIKA****TEAM LEADER****MANAGEMENT INFORMATION SYSTEMS (ADMINISTRATION)****BOTHO UNIVERSITY****FRANCISTOWN****ABSTRACT**

*This paper discusses how animation simplifies the task of demonstrating technical concepts in mathematics to students who have challenges in comprehending instructions in the English language. The study group consists of students who are doing Mathematics for Computing in the Faculty of Computing at Botho University (N=38) Botswana. In the study, complex mathematical topics were selected and re-designed to include animation to simplify the presentations and demonstrations. Each class session was scheduled to take one hour and forty five minutes (105 minutes) per week plus two hours (120 minutes) tutorials after lunch every Friday. The experiment sessions were conducted for 7 weeks starting from the 5<sup>th</sup> week of the semester (2012-2013 cohorts) amongst the first years doing mathematics for computing. Data were collected by using a questionnaire specific to the use of animation in the mathematics for computing course and interviews on the learners' views of animation as a tool for effective learning at the end the 11<sup>th</sup> week. The findings of the study revealed that including animation in the complex topics of mathematics during the experiment sessions was more effective in increasing students' understanding and enjoyment of the concepts than when traditional methods are used in the control sessions.*

**KEYWORDS**

animation, progression class, dual-coding theory, textual-static-narration, textual-animation-narration.

**INTRODUCTION**

Animation is the simulation of movement by displaying a series of images on frames (Wikipedia, 2009). Animation on computers is one of the chief ingredients of multimedia presentations and has been extensively used in molecular and cellular biology (McClean, et al., 2005), chemistry, and physics education (Adegoke, 2010) and computer algebra systems (Lipeikiene & Lipeika, 2006) and programming (Myungsook, 2006); (Nkomo, et al., 2014). The idea behind animation is used to simplify complex topics during presentations and to make it possible to demonstrate some concepts that would not be possible without it. In molecular biology, the DNA structures have been constructed in expanded forms and analysed and reconstructed. In mathematics, it allows students to explore and experiment and in physics animation has enabled students to simulate concepts that would not be feasible in the really laboratory. In total, animation has made the science courses interesting, simplified and achievable without necessarily any need to setup expensive and complicated laboratory machinery. Furthermore, it can be argued that a mixture of text, graphics and animation can improve the quality of learning or teaching and it fits as one of the common learning styles amongst the learners today. Some positive studies have been reported in Botswana by William Nkomo and Samson-Zulu (2014). In their study, they proposed a visual graphics interface to simulate programming in C++ and the pass rate improved by 5% amongst the experiment group versus the previous semesters where traditional lecture methods were used. More so, the studies conducted by Chuang (1999) and Adegoke, (2010) concur with the present study. In their separate studies, they found that students' learning outcomes in physics improved significantly with the concurrent use of animation, narration and text when compared to the use of narration and on-screen text alone.

At Botho University, mathematics for computing is a module taken as a foundational course presumed to be a pre-requisite to programming and computer architecture courses in the BSc Computing Honours Degree programme. This module presents challenges to students ranging from; phobia, preconceived perceptions that it is difficult and lack of sound background from high school. To mitigate these challenges the present study proposes a simplified dimension to the presentation of concepts in class by enriching slides with the motion pictures, objects and graphics (animation). In the sections that follow, we discuss the background the present study, review related literature, outline the research methodology used in the study present the results and findings of the study and examine their implications to modern learning/teaching at Botho University.

**MOTIVATION**

*Challenges faced by progression students:* A common problem noted at Botho University with some progression students is their inability to comprehend technical instructions given to them during lectures or when they are reading books. The most dominating drawback in this case is the English language (Nkomo, et al., 2014). In the present study we propose that timely and systematic inclusion of text, narration and animation can help students to understand better. Normally, some students can understand better if the instructions are presented by use of pictures, or a combination of pictures and text (Chuang, 1999). Animation creates a multi-sensory learning framework where the students can explore, experiment, reflect, and visualise (Mayer & Anderson, 1991).

*Consultant for the Post Graduate Certificate in Higher Education (PGCHE) programme:* Dr. Mark Lejh had an opportunity to visit the CP-MAT-B1 Mathematics for Computing in Francistown on the 26<sup>th</sup> of October 2012. The topic discussed was Exponents and algorithms. Lecture presentations included use of text, animation and narration. During the lecture, extensive use of the multimedia was deliberately used and students' engagement was relatively high and students seemed to be thrilled by the approach. From this meeting, some commendations were that students' engagement is likely to improve via animated slides because animation could be appealing to students and can get them to improve on their learning outcomes.

**REVIEW OF RELATED LITERATURE**

A promising approach to assisting students to learn the science courses better and encourage their future participation in such courses is the application of multimedia animation. Blending textual and narration presentations with static and motion pictures (animation or video) provides for effective teaching and learning. According to (Adegoke, 2010), visuals such as graphs, maps and charts and dynamic pictures (animation and video) improve cognitive skill acquisition and problem solving. (Lipeikiene & Lipeika, 2006) and (McClean, et al., 2005), also share the same view that animation bring about visualization that augment the information presented in text and hence, allow students to explore, experiment and visualise mathematics as a dynamic process (McClean, et al., 2005; Lipeikiene & Lipeika, 2006). Research has shown that visual perception is the most developed sense in learners and is a dominant component in humans that facilitate effective learning. Literature on algebra learning/teaching (Lipeikiene & Lipeika, 2006), molecular and cellular biology (McClean, et al., 2005), physics

education (Adegoke, 2010), and programming (Myungsook, 2006) confirms that blending textual, narration and animations helps the teacher to turn the classroom into a dimension of sight, sound and mind. This work is supported by (Mayer & Anderson, 1991; Paivio, 1990).

Currently, the most dominant mode of presentation used by lecturers at Botho University is through mixing textual and static graphics (charts, pictures and diagram) to outline a concept or illustrate the steps involved to solving problems. There is need to upgrade this traditional **textual-static-narration** approach to presentation by demonstrating the **textual-animation-narration** approach. As already mentioned, animated presentations could be an effective intervention (Nkomo, et al., 2014), and we hope that the students can benefit from their valued effect in the learning process. The power of animation lies in its ability to stimulate both visual and auditory senses of the learner. (Adegoke, 2010; Paivio, 1990; Mayer & Anderson, 1991). The value of graphics and motional pictures appears to be associated with the dual-coding theory (Paivio, 1990) which suggests that long-term memory retention is facilitated by a combination of verbal and visual cues.

Animated presentations have proved very effective in illustrating concepts in maths and molecular biology by using a sequence of objects, images or cartoons or real pictures in motion (Knight & Wood, 2005; Lipeikiene & Lipeika, 2006; Chuang, 1999; Mayer & Anderson, 1991). Researchers have used it to model ideas/hypothesis; architects use it to show constituents of a structure, and how different components combine to make a complete structure like a bridge. In molecular biology it has been used to demonstrate the structure of the DNA to new students (McClean, et al., 2005). In mathematics animation is effective when demonstrating an algorithm or a step-by-step method of solving a problem. If motional objects/cartoons are used, then the learners' visual senses are activated (Lipeikiene & Lipeika, 2006). Visual senses are a very effective approach in assisting learners to create long-lasting memories (Paivio, 1990; Ronit, et al., 2003). In the following sections, we explain how **animation method** was used in teaching mathematics.

## THE PURPOSE OF STUDY

The present study deals with the redesigning of presentations of complex mathematics concepts during a lecture to include animation in order to simplify them. That is, the study aims to examine whether animated presentations can significantly improve the quality of presentation, simplify the complex concepts and increase students' enjoyment of the mathematics sessions. For this purpose, answers are sought for the following questions:

- Can animation boost learners' achievements and interest by use of textual-animation-narration type of presentation in a lecture?
- Would there be any good learning experiences reported by students about the textual-animation-narration type of presentation?
- How best can educators integrate text, pictures and narration to improve on the presentation/demonstration of scientific concepts?

## IMPORTANCE OF STUDY

The present study seeks to examine the effects of the textual-animation-narration (animated slides) presentation on boosting students' interest and academic achievement. This is one amongst many strategies of creating a vibrant and interesting learning environment of the learners. The findings and recommendations from the study therefore are likely to inform educators on yet another pedagogical paradigm of optimizing and aligning existing lecture presentation methods with the emergent learning styles of our modern learners. Such work can create an enjoyable learning environment and improve academic achievement amongst the learners.

## STATEMENT OF THE PROBLEM

At Botho University (Francistown), we recruit progression students to do BSc in Computing which includes Mathematics for Computing as one of the fundamental modules at first year. This module is one of the most failed modules because some of these students find it very difficult to comprehend mathematical instructions. The common challenges identified are that these students have; (a) had a long break from school, (b) not done mathematics at High School or (c) difficulties in communicating in English language. It is the onus of the teachers and the institution to optimize the existing lecture presentations to demystify mathematics and make it easier. In this study, we propose animation of specific topics in the module to achieve this.

## OBJECTIVES

Based on the key questions presented above, the objectives of the present study are:

- Identify specific topics in the Mathematics for Computing module and re-design them to suite the textual-animation-narration type of presentation in a lecture,
- Evaluate the effect of the new presentation method through the analysing some data collected during the experiment and formal interviews with participants, and
- Design a schedule that best integrates text, pictures and narration to improve on the presentation/demonstration of scientific concepts.

## RESEARCH METHODOLOGY

The present study is both an experimental model with the experiment sessions (where animation is used in week 5 to 11) and control sessions (where textual-static-narration presentation is used in week 1 to 4 and week 12 to 16) and qualitative. Students' views on their learning experiences during animated sessions were collected and analysed, and therefore its qualitative nature.

### PARTICIPANTS

Thirty eight (38) students were involved in the study and all are from the progression classes at Botho University (Francistown). Amongst these students, 28(74%) are female and 10(26%) are male. The average class age is 23 years.

### CHARACTERISTICS OF THE PROGRESSION CLASS

Progression classes constitute students who have not been in class for a couple of years or students who have been exempted from doing other modules because they have equivalent qualifications to meet the basic entry requirements for the computing degree programme at Botho College. The majority of these students find it hard to understand textual instructions from the lectures due to factors pointed out earlier. Therefore, there is need for interventional strategies in learning/teaching to keep these problems at their minimum.

### DESIGN

The experiment was done using the CP-MAT-B1; Mathematics for computing module within the 2012 academic year. It was conducted during the final 7 weeks of the course. The class was scheduled for up to a maximum of three (3) one hour forty five minutes (105 minutes) lectures per week plus two hours tutorials after lunch every Friday.

### DESIGN OF THE EXPERIMENT

The experiment took place over the final 7 weeks of the course (weeks 5 -11). In the first week (week 5) to the progression students were alerted that a new approach to teaching will be introduced and will be mainly applied during the extra lessons conducted on Friday. Although Friday sounded informal to them, the register was to be marked because the mandate was sought from the Education Manager to conduct these extra lessons. However, a few of the experiments were conducted during the normal scheduled hours to avoid total disadvantaging some students who could not afford to be present in the afternoon extra lessons and tutorials. Figure 1 shows the schematic representation of the experimental design showing the dates for the maths lectures conducted in week 5 up to week 11.

Consent was sought from management and students. The times for conducting the experiment were proposed to be Friday afternoon (1440 hours to 1715 hours). After the first presentation, it was observed that students were very interested in the animated presentation and a decision was taken to incorporate it to most of the lectures.



**IMPLEMENTATION OF ANIMATION IN PRESENTATION**

Specific topics or sections of topics that were difficult to teach or presumed to confuse students were selected and redesigned with motion objects and images. Friday afternoon (1440 to 1715 hours) was identified and proposed to management as the ideal time for conducting the experiment. The presentation slides were designed so that animation would outline the flow of logic, effects of parameters or the sequence of steps involved in executing a task. For example, exponentials and logarithms, graphs, tree traversal were used. See Appendix B for slides.

**PROCEDURE**

The experiment was administered using the CP-MAT-B1 – Mathematics for computing module the within the 2012 academic year. It was conducted for 7 weeks of the course. The class was scheduled up to a maximum of four (3) one hour forty five minutes (105 minutes) lectures per week plus two hours tutorials after lunch every Friday.

**FIGURE 1: SCHEMATIC PRESENTATION OF THE EXPERIMENTAL DESIGN**

	DAY AND TIME			
	WEDNESDAY (7:00 - 8:45) AM	THURSDAY (7:00 - 8:45) AM	FRIDAY MORNING (7:00 - 8:45) AM	FRIDAY AFTER NOON (3:40 - 5:15) PM
WEEK				
5	3/10/2012	4/10/2012	5/10/2012	5/10/2012
6	10/10/2012	11/10/2012	12/10/2012	12/10/2012
7	17/10/2012	18/10/2012	19/10/2012	19/10/2012
8	24/10/2012	25/10/2012	26/10/2012	26/10/2012
9	31/10/2012	1/11/2012	2/11/2012	2/11/2012
10	7/11/2012	8/11/2012	9/11/2012	9/11/2012
11	EVALUATION	EVALUATION	EVALUATION	EVALUATION

Orientation
  Textual presentation
  Animation presentation
  Evaluation

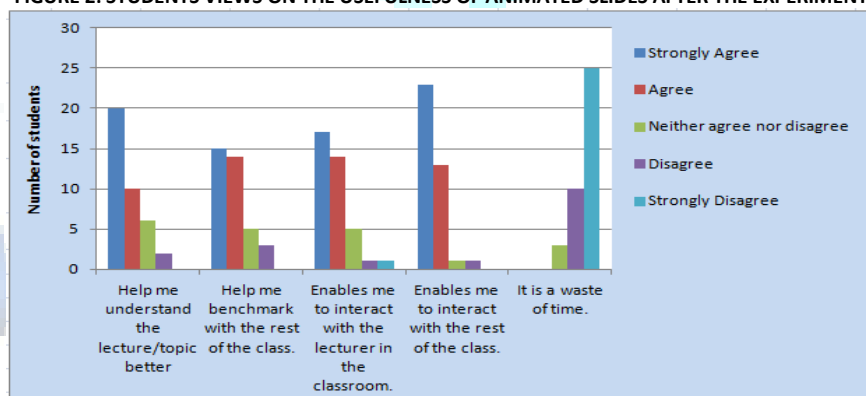
Figure 1 shows lecture weeks in rows while modes of presentations are shown in columns. Dates are included in the cells indicating which day and time the lecture was conducted. The experiment was started on the 5<sup>th</sup> of October 2012 with the extra lesson in the afternoon and finished on the 9<sup>th</sup> of November 2012. Most of experiments were conducted on Friday afternoon and only five of these were administered during the normal periods on Wednesday to Friday for the reasons aforesaid. The blue colour denotes the dates and times when the animation presentations were conducted. On the 3<sup>rd</sup> and 4<sup>th</sup> of October (white square), students were introduced to the method and an explanation was given in class with regards to the advantages of animation. Furthermore, students were told the complex topics where animation has been built-in and the possible dates when the reinforcements will be made. The orange squares indicate the dates and times when the traditional textual and narration method of presentation was used. During the 11<sup>th</sup> week, an evaluation of the method was done where students filled the evaluation forms and also responded to the questionnaires given to them

**RESULTS AND FINDINGS****QUESTIONNAIRE**

To collect feedback from students regarding the effectiveness of the animated slides, a questionnaire was used. All thirty eight (38) progression students responded. Due to such a small number, the researchers used qualitative feedback as the primary measure of effectiveness. Learners' feedback was collected in two ways: (a) a survey specific to the use of animation in the Mathematics for computing courses; (b) learners' view of the animation as a tool for collecting feedback at the end the 11<sup>th</sup> week. The details of the survey are summarised in Appendix A. The key points in the survey are: Qualitative feedback was used as the primary measure of effectiveness of animation since the sample group is small and most of the judgement relied on literature. All students that took the C1-MAT course responded to the survey.

**SURVEY RESULTS FOR LEARNERS' FEEDBACK ON THE USE OF ANIMATION**

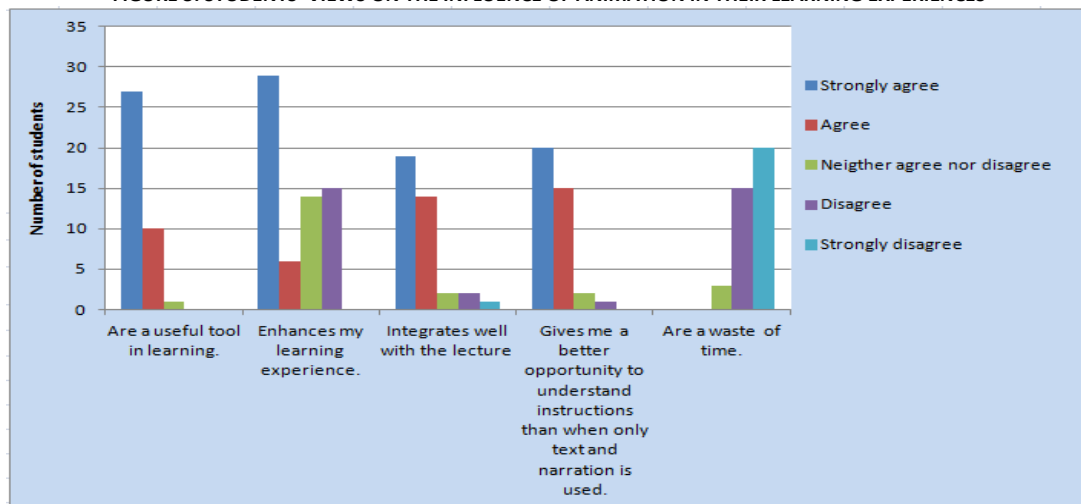
In this section, we present the views of the 38 participants collected via the questionnaires distributed amongst them after the 11<sup>th</sup> week of the experiment. The survey sought to establish four pedagogical elements crucial for the learning and teaching which are; (a) the participants' general experiences as they were exposed to animated slides, (b) influence of animated slides in their learning experiences, and (c) impact of animated slides and preferred learning styles of the participants. The diagrams that follow summarise this:

**FIGURE 2: STUDENTS VIEWS ON THE USEFULNESS OF ANIMATED SLIDES AFTER THE EXPERIMENT**

When figure 2 is examined, it is seen that 30 out of the 38 (79%) students either "strongly agreed" or "agreed" with the suggestion that slides animation is a useful tool in enhancing interactions in class and increasing the ability of students' understanding of the concepts. Only 6 out of 38 students are not sure of their views and the remaining 2 students disagree with the suggestion. None of the students strongly disagree with the suggestion. Similarly, all students disagree or strongly disagree with the suggestion that the use of animation is a waste of time.

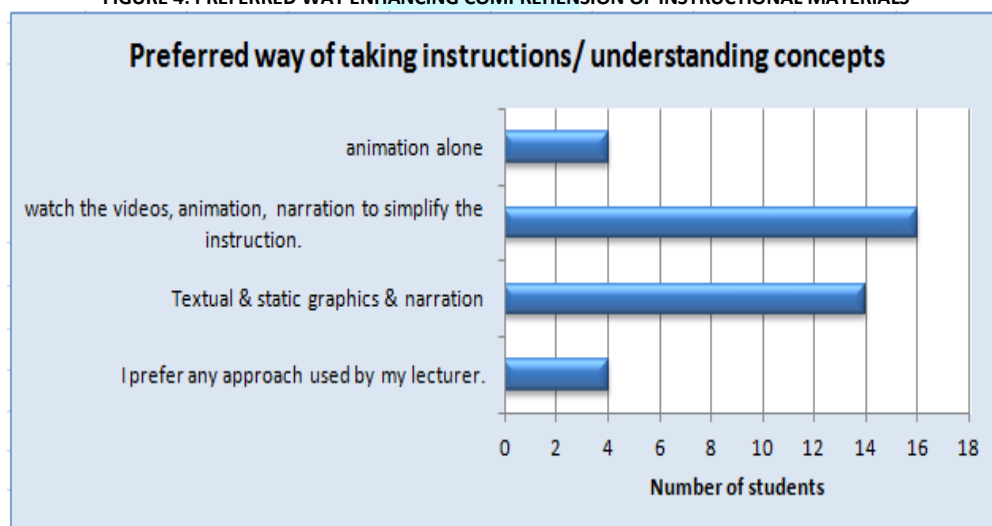


FIGURE 3: STUDENTS' VIEWS ON THE INFLUENCE OF ANIMATION IN THEIR LEARNING EXPERIENCES



When figure 3 is examined, it is seen that there is a high number of students who strongly agree that animation improved their learning experiences, gave better opportunities to grasp concepts than if textual-narration presentation was used and also they strongly agree that it exposed them to a better integration method they prefer.

FIGURE 4: PREFERRED WAY ENHANCING COMPREHENSION OF INSTRUCTIONAL MATERIALS



When figure 4 is examined, it is seen that 16 out of 38 (42%) of the students prefer watching videos, motion and narration of the instruction (*textual-animation-narration*) to comprehend an instruction. A part of 37% of the students favour *textual-static-graphics-narration* instructional mode. Eleven percent (11%) is fine with *animation* alone and the remaining 11% are fine with any approach.

#### SELECTION OF STUDENTS FEEDBACK COMMENTS

The following is a sample of some comments made by the progression students in the CP-MAT-B1 batch doing mathematics for computing. The comments were considered to reflect students' views about the use of animation and their experiences of learning during the course.

**Student 1:** "Use of animation made me realise that mathematics is not as difficult as I thought. I enjoyed it very much. It was must first time to stand up and contribute in class, which I never did at high school..."

**Student 2:** "I did not know that analysis of sets can be made so easy using the diagrams. It was so difficult at high school, now it's clear..."

**Student 3:** "It's my first time to use this, but well I have no problems with it. But me I like the oral discussions in class."

**Student 4:** "That was magical, I can forget something but, tree traversal and exponents are there in my heard. I have pictured how you can traverse in-order, post-order and pre-order it."

**Student 5:** "This is a wonderful approach; I will use it with my child who is doing grade 4. I think he will find it great too."

#### SUMMARY OF FINDINGS

We can deduce the following findings from the presentation of results above:

- Animated slides (computer-based instruction) boost learner's attention and enthusiasm to learn,
- Most students (79%) agree or strongly agree that animation increased their cognitive achievement,
- More than 70% of the students agree or strongly agree that they enjoyed lecture sessions where animation is used as part of the presentation, and
- A good number of students prefer lectures where the teacher talks less and animation is used more.

#### DISCUSSION AND IMPLICATION OF FINDINGS

The findings of this study showed that use of multimedia (animation) in an instructional interface could yield positive results in enabling a better learning/teaching environment for mathematics. The results concur with that of Chuang (1999) and Adegoke (2010) who found that students' learning outcomes can improve significantly when animation, narration and on-screen text are used concurrently in an instructional interface.

In this study it is important to note that the main focus was to investigate animated slides as an alternative strategy to improve instructional presentation in mathematics. The nature of the survey reflects this and so we do not have sufficient evidence to quantify pedagogical effects of the strategy (animation) about its influence on academic scores/achievements of the learner. However, independent studies by Mayer (2001) and Lipeikiene & Lipeika (2006) show that successful integration of instructional information in the form of written words on screen, animation and good narration of these is likely to benefit to students. It can be proven that the abovementioned instruction presentation modes can have balancing roles/effects. For example, if the three modes are combined,

students' are captivated. Secondly, the use of narrated animation and text tends to give students more opportunities to take quality notes. Paivio (1990) observed that animation offers visual and auditory models and these are vital for what the student remembers during the learning process. This observation is in agreement with the findings of the current study.

In a nutshell, this study has revealed that students are captivated by animated presentation of complex mathematical concepts and algorithms. Furthermore, learners' comprehension of mathematical instructions is likely to improve significantly if animation is used. However this was not within the scope of this study but, it has been proved in Adegoke (2011) study of the "Effects of multimedia instruction on senior secondary school students' achievement in physics". The present study therefore suggests that animated instructions are a way of reducing negative perception that mathematics is difficult and can improve cognitive off-loading (Paivio, 1990). More so, students who are exposed to computer-based multimedia (dynamic lecture presentations via animated demonstrations) environment are likely to achieve better learning outcomes than those who are not (Adegoke, 2011).

## CONCLUSIONS

Animated slides are very useful for demonstrating complex concepts and enhancing the quality of presentations especially for the technical courses. The idea is not new but, it has been more popular with kindergarten and secondary schools in the UK. In this study we observed that animation is applicable at higher education where it can be used as a spur the learners' attention by making them anticipate and want to see more. More so, it supports both verbal and visual modes of mental representation (Mayer & Anderson, 1991) and hence it caters for different accessories via which learners can intercept and absorb instructions (through eyes and ears). Computer-mediated instructions arouse the interest of students (Adegoke, 2011) and encourage them to explore more in mathematics than the lecturer-mediated instruction. The present study established that animation boost students' interest to pay attention, conduct experiment that would not be feasible without it and make them want to explore further. Also, it enables lecturers to demonstrate concepts with ease. This study is in consonance with Adegoke (2011), Adegoke (2010), Chuang (1999) and Mayer & Anderson (1991) who concluded that computer-mediated instruction can improve learning. Since learners use both verbal and visual systems in cognitive processing, we argue that blending text, graphics and motion pictures are the best ingredients for a vibrant and purposefully decorated learning environment for effective dual-coding.

## LIMITATIONS

Animated slides are a useful innovation albeit some challenges may not be avoided. In the present study the following issues arose;

- The need for multiliteracies amongst the progression students: Progression classes consist of students who are mature and/or who have been away from school for a long time. Computer-based/digitized instructions are multimodal (presented in the form of text, pictures, icons, hypertext and motion). These proved to be very difficult to interpret amongst the participants. Therefore for the technology brought some issues such as; poor lesson flow, communication gaps and reduced comprehension of concepts.
- Milestone versus the new presentation strategies (animation): It may be impossible to cope with the demands of the milestone if the infusion of animation forces the lecture sessions to exceed the maximum time scheduled for the classes. In the present study, it was necessary to conduct extra classes on Fridays in order to make demonstration and presentations with animation. This was necessitated by the fact that these classes were not compulsory and students were not forced to attend.
- Time to prepare the animated slides: The process of adding animation is not easy and needs to be well designed to enable intended learning outcomes to be accomplished. The task may take several hours outside working hours of the teacher's time; therefore the teacher needs to be dedicated to develop quality slides for improving learning/teaching all the time.

## SCOPE FOR FURTHER RESEARCH

Although the present study is purely experimental, qualitative and captures a few participants (n=38), the results seem to be in consonance with conclusions made by other researchers elsewhere (Adegoke, 2010; Chuang, 1999; Lipeikiene & Lipeika, 2006; McClean, et al., 2005). However, further research is imperative to investigate the relevance of animation in improving academic achievement of the learners. A more sound statistical analysis will be to compare the cognitive achievement amongst learners in the experimental group (where animation is used) and the control group (where the conventional lecture method is used). Basically, this must be a quantitative investigation with an increased sample size.

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## APPENDIX

FIGURE 5: USE OF ANIMATION SURVEY FORM

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
<b>A) Review/Summary questionnaires before/after the course:</b>					
1. Help me understand the lecture/topic better	20	10	6	2	0
2. Help me benchmark with the rest of the class.	15	14	5	3	0
3. Enables me to interact with the lecturer in the classroom.	17	14	5	1	1
4. Enables me to interact with the rest of the class.	23	13	1	1	0
5. It is a waste of time.	0	0	3	10	25
<b>B) The animated slides</b>					
1. Are a useful tool in learning.	27	10	1	0	0
2. Enhances my learning experience.	29	6	1	1	1
3. Integrates well with the lecture	19	14	2	2	1
4. Gives me a better opportunity to understand instructions than when only text and narration is used.	20	15	2	1	0
5. Are a waste of time.	0	0	3	15	20
<b>C) Effective way of influencing my understanding – which of the following statement you agree with most?</b>					
1. I prefer any approach used by my lecturer.	4				
2. I want the lecturer to write down instructions/draw diagrams (textual & static graphics)	14				
3. I want to watch the videos, pictures and hear the narration to simplify the instruction.	16				
4. If I only visualise I understand	4				
<b>D) Preferred mode of instructions – which of the following statement you agree with most?</b>					
1. I am happy with textual-narration presentation	16				
2. I prefer the mixture of text, graphics and videos/animations	20				
3. Only narrated videos and animations work well for me	2				
<b>E) The use of animation system</b>					
1. I have used the animation in one course	10				
2. I have used animation in two courses	5				
3. I have used animation in more than two courses	9				
4. I have never been exposed to animation at all (although it was available to me)	14				

## ANALYTICS CUSTOMER RELATIONSHIP MANAGEMENT PROGRAMS AND TECHNOLOGIES: ISSUES AND TRENDS IN BANKING SECTOR

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### ABSTRACT

*Executing Customer Relationship Management (CRM) for the financial and banking industry involves many issues, including the use of unique solutions. To be successful with CRM, financial and banking organizations must define and develop a business strategy as well as a supporting infrastructure for that strategy. The market dynamics facing financial services companies have never been more fluid and complex. In the midst of these trends is your customer. Any CRM solution invested in must be implemented with the clear goals of improving the Customer satisfaction and loyalty; Customer insight; Speed-to-market for products and service; and Customer security. All this must be done in a manner that generates measurable increases in revenue and reduces overall costs of service. May seem daunting, but one has to keep on looking for appropriate CRM solutions to have long-lasting and profitable relationships with customers. Under this study, management in a bank is data mining tasks such as dependency analysis, cluster profile analysis, concept description, deviation detection, and data visualization. The model developed here answers what the different customer segments are, who more likely to respond given offer is, which customers are the bank likely to lose, which most likely to default on credit cards is, what the risk associated with this loan applicant is. Finally, a cluster profile analysis is used for revealing the distinct characteristics of each cluster, and for modeling product propensity, which should be implemented in order to increase the sales.*

### KEYWORDS

CRM, Banking Technology, Banking Sector.

### 1. INTRODUCTION

The changes after liberalization and globalization process initiated since 1991 in India have a profound and significant impact on the operational environment of the banking sector. The challenges and pressure of the newfound environment have been intense. Today, many businesses such as banks, insurance companies, and service providers realize the importance of Customer Relationship Management (CRM) and its potential to help them retain existing ones and maximize their lifetime value. At this point, close relationship with customers will require a strong coordination between IT and marketing departments to provide a long-term retention of selected customers. This paper deals with the analytics of Customer Relationship Management in banking sector and the need for Customer Relationship Management to increase customer value by using some analytical methods in CRM applications. CRM is a sound business strategy to identify the bank's most profitable customers and prospects, and devotes time and attention to expanding account relationships customers through individualized marketing, repricing, discretionary decision-making, and customized service-all delivered the various sales channels that the bank uses.

### 2. ROLE OF CRM

- ❖ Customer relationship Management is vast concept in the present market. Every bank wants to maintain the relations with their customer.
- ❖ Customer's relationship Management is, when customer comes to you for a transaction or for service, you should be able to identify that customer. Know what transaction that customer problem has had in the past, and ideally make some suggestions of what you could do for that customer that may be of help.
- ❖ CRM is an intergraded framework or a business strategy and putting it into place will require a set of integrated applications that is liked with every aspect of business function and customer.
- ❖ Customer is less willing to make the compromise or trade off in productive and service quality. So the following statement is true. Customer are the only true source of revenue and hence profit.

### 3. TYPES OF CRM

Generally, three types of CRM are adopted by banks:

- ❖ **Operation CRM**-In this, CRM software packages are used to track and efficiently organize inbound and outbound interactions with customers including the management of customer relationships.
- ❖ **Marketing campaigns and call centers**- Operational CRM supports frontline processes in sales, marketing and customer service, automating communications and interactions with the customers.



- ❖ **Analytical CRM**— It is about analyzing customer information to better address marketing and customer service objectives and deliver the right message to the right customer at the right time through the right channel. It involves the use of data analysis to extract knowledge for optimizing customer relationships.
- ❖ **Collaborative CRM**- These involve systems facilitating customers to perform services on their own through a variety of communication and interactive channels.

#### 4. BENEFITS FOR CUSTOMERS

- Coordinated and professional approach to customer contact.
- Up-to-date customer information, Banks can offer more personalized services.
- Customers feel empowered if they have greater access to products and services. For example 24 hours banking.
- Targeted product and service offerings can be timed to coincide with customer events and requirements e.g., Education Loans and Tourism Loans.
- Develop better communication channels.
- Collect vital data, like customer details and order histories.
- Create detailed profiles such as customer preferences.
- Deliver instant, company-wide access to customer histories.
- Identify new selling opportunities.

##### 4.1. BENEFITS FOR EMPLOYEES

- Employees are empowered with the information to deliver high quality service and meet customer expectations. Employees have more time to serve customers.
- Employees have higher satisfaction ratings.

##### 4.2. BENEFITS FOR BANKS

- Managers are empowered with information that can help them manage customer relationships and make better decisions.
- Optimum use of bank resources.
- Customer satisfaction and increased loyalty.
- CRM permits businesses to leverage information from their databases to achieve customer retention and to cross-sell new products and services to existing customers
- It helps in capitalizing on short windows of opportunities in the market.
- Significant reduction in and limitation of operational costs through system automation and standardization.

#### 5. THE CRM SOLUTION FOR FINANCE INDUSTRY IS FOCUSED TO OFFER INDUSTRIAL SOLUTIONS TO:

- ❖ Bankers
- ❖ Financial Brokers
- ❖ Insurers
- ❖ Portfolio/Wealth Managers
- ❖ Financial Manager

#### 6. WHAT FINANCIAL INSTITUTIONS AIM TO ACHIEVE THROUGH CRM

The main aim is to offer focused customer services and to acquire new businesses simultaneously. A comprehensive customer service automation tool for financial institutes aims at offering. Holistic analysis of primary investors based on their risk profile to find opportunities for up-selling and cross-selling Lowering process expenses with better understanding of customer requirements to offer personalized portfolio services.

##### 6.1. CUSTOMER ACQUISITION SUPPORT TO INCREASE THE CUSTOMER BASE

Improving revenue share by becoming the one-stop financial solution destination for customers. Improving compliance and audit standards to optimize resource use and minimize wastage. Reducing effects of sales force attrition by creating a unified interaction platform for the entire product line. Improving performance of franchisee by gaining better visibility across their operation process to prevent revenue leakage.

##### 6.2. WHAT A CRM FOR FINANCIAL SECTOR OFFERS

A comprehensive CRM solution for finance industry must offer an analytical sales performance review to the user to help him offer focused and customized financial solutions to his clients.

A 360° view of customer's financial performance and risk sensitivity to help create targeted offers Smart contact management solution that facilitates compiling and tracking customer interaction at one place Graphical and analytical sales performance as well as portfolio performance report Real-time market analysis report to determine performance of a particular financial tool Chat facilities within the CRM to connect to colleagues and industry experts Sales task automation for better management of appointments and meetings to optimize core competence Risk analysis through integration with key systems of the bank to manage market exposure.

#### 7. BENEFITS OF A CRM PROCESS

- ❖ Ability to retain loyal and profitable customer and channel for rapid growth of the business project.
- ❖ Acquiring the right customers, based on known characteristics, which drives growth and increased profit margins.
- ❖ Increasing individual customer margins, while offering the right products at the right time.

#### 8. TECHNOLOGY IN BANKING

Every day banks have to take many accurate decisions. In order to decrease the risk associated with them, they need to have reliable information. For that purpose they mostly use data warehouses, in which they store all data necessary for conducting business. For many banks, there exists serious problem of information quality. The main reason for that is the low quality of transactional systems, mainly lack of enough care about data accuracy. However since the size of information is growing, it takes more and more time for analytics to analyze them. That is why there is urgent need for good IT software that could solve those problems. 10 years ago, very popular in banks were easy to introduce, departmental systems. In the moment when the banks started growing, it often turned out that each department has different system for risk management and information about customers was not uniform. Nowadays after the period of centralized solutions, new requirements for IT systems appear, such as open architecture, which arise from the business need of introduction specialized solutions, for example for credits or selling systems, and also the need for integration of systems among given financial group. Main attention in banking sector is put to the systems which enable better usage of customer information and preparing the best offer for them. According to many specialists, the most popular are systems using Business Intelligence, such as CRM systems or decision assistance.

#### 9. OBJECTIVES

- ❖ To study the Analytics Customer Relationship Management Programs and Technologies.
- ❖ To analyze the Issues and Trends in banking sector.

❖ To evaluate the performance of good CRM in banking sector.

## 10. METHODOLOGY

This section presents the concept of financial development, trade openness and economic growth and discusses the econometrics methodology that is employed in this papers including time series stationarity, CRM Banking sectors.

## 11. ISSUES AND TRENDS IN THE BANKING SECTOR

The banking sector is rife with change and uncertainty. How will changes in banking laws and regulations affect profitability? What should be the framework of stress scenarios, including specific regulatory scenarios and guidelines? What is needed to correctly measure each business line's different risk characteristics (e.g. loans, CDO securities, structured products, derivatives)? Where can we more effectively apply better customer models to reduce losses and focus growth? These questions are fraught with ambiguity and there are no easy answers. It is difficult to understand the current complex environment, much less to predict the future with any degree of confidence. Banks need more in depth information to answer these and identify additional

To effectively manage risk and drive risk-performance. Lever analytics may help turn data into information that can provide answers. Three business drivers increase the importance of analytics within the banking industry.

- Regulatory Reform – Major legislation such as Dodd-Frank, the CARD Act, FATCA (Foreign Account Tax Compliance Act) and Basel III have changed the business environment for banks. Given the focus on systemic risk, regulators are pushing banks to demonstrate better understanding of data they possess, turn data into information that supports business decisions and manage risk more effectively. Each request has major ramifications on data collection, governance and reporting. Over the next several years, regulators will finalize details in the recently passed legislation. However, banks should start transforming their business models today to comply with a radically different regulatory environment.
- Customer Profitability – Personalized offerings are expected to play a big role in attracting and the banking sector is rife with change and uncertainty. How will changes in banking laws and regulations affect profitability? What should be the framework of stress scenarios, including specific regulatory scenarios and guidelines? What is needed to correctly measure each business line's different risk (e.g. loans, CDO securities, structured products, derivatives)? Where can we more effectively apply better customer models to reduce losses and focus growth? These questions are fraught with ambiguity and there are no easy answers. It is difficult to understand the current complex environment, much less to predict the future with any degree of confidence. Banks need more in depth information to answer these and identify additional questions to effectively manage risk and drive risk-adjusted performance. Leveraging business analytics may help turn data into information that can provide these answers. Three business drivers increase the importance of analytics within the banking industry.
- Regulatory Reform – Major legislation such as -Frank, the CARD Act, FATCA (Foreign Account Tax Compliance Act) and Basel III have changed the business environment for banks. Given the focus on systemic risk, regulators are pushing banks to demonstrate better understanding of data possess, turn data into information that supports business decisions and manage risk more effectively. Each request has major ramifications on collection, governance and reporting. Over the next several years, regulators will finalize details in the recently passed legislation. However, banks should start transforming their business models today to comply with a radically different regulatory environment.

### 11.1. CUSTOMER ANALYTICS

As soon as the economy shows signs of stabilization, banks may quickly focus on growth. While some banks are already looking at growth opportunities, they are also aware that revenues are likely to remain under significant pressure for the foreseeable future. These banks are likely to experiment with a variety of growth strategies, such as attempting to enhance customer profitability by deploying more sophisticated analytics. Some of the specific goals are to increase cross-selling opportunities, create better targeted offerings, develop more effective relationship pricing and leverage bundled pricing to create more compelling customer experiences. Indeed, with many formerly innovative banking products now often viewed by customers as commodities, many banks have shifted focus to concentrate on enriched customer service as a primary differentiator.

### 11.2. CUSTOMER BEHAVIOR ANALYTICS

To more effectively serve their customers and drive profitability, banks can use advanced predictive analytic techniques to parse credit card databases, mortgage data, deposit data and even social networks to find subtle cues to help analyze, categorize and anticipate customer patterns. This capability can help improve marketing and risk management practices. It can also help create products aimed at a traditionally overlooked customer segment – e.g. credit cards and loans that help first-time defaulters rebuild their credit history. Analysts can also make finer distinctions in customer behavior patterns that allow them to more quickly detect

Deviations from normal behavior – e.g., widespread shifts in credit card spending habits from upscale to value-priced retailers. This analytics capability can help banks more effectively tailor their customer service offerings and develop an enhanced customer service portfolio that serves as an effective differentiator.

### 11.3. INTELLIGENT CUSTOMER SEGMENTATION

In the past few years, only a few leading institutions have established programs to transition from product-to-customer-centric strategies to bolster their growth, although many have talked about it. The implementation of these strategies requires more sophisticated customer segmentation capabilities-and only few banks have them. Most retail banks can benefit from enhanced insight into current and potential customer profitably, preferences, and needs. This innovative way of segmenting customers uses multiple internal and external data sources including account, billing, demographical, and psycho graphical information. Advanced analytics solutions can provide banks with tools and templates to more effectively segment their customer base to acquire, service, cross-sell, retain and expand personal and small business relationships.

### 11.4. CUSTOMER RELATIONSHIP ANALYTICS

Advanced analytics solutions can help banks in their efforts to develop more effective cross-selling and up-selling methods. For example, with scenario modeling algorithms, banks can identify “the next best” banking product or service most likely to be purchased by a particular customer or segment. Banks can also leverage analytics techniques like affinity grouping to identify those products that would be the most profitable additions to a customer's existing portfolio. Many banks - especially larger, national banks, have invested heavily in marketing and the development of non-branch distribution channels i.e., ATMs, Internet banking sites, call centers, and wireless technologies. However, these multichannel marketing actions and infrastructures typically require a significant investment, as well as the development of a broad implementation strategy. Thus, implementation of multichannel marketing has led to increased customer service cost. To mitigate these costs, many banks are considering rationalizing their distribution channels and reducing marketing spend to better align with individual customer segments and payment preferences. Analytics can help in this rationalization process by providing more in-depth insight, and by providing increased visibility into the drivers of financial purchases and/or transactions by channel. This visibility can help banks design more effective distribution channel models, based on the nature of customer segments served and costs incurred. It can also help banks quantify the return on investment from marketing investments such as media buying and promotional activity and better facilitate the allocation of the marketing budget.

### 11.5. OPERATIONS ANALYTICS

The pressures on banks' information technology budgets will likely continue as institutions look to execute broad cost-reduction programs to preserve capital and improve profitability. CIOs have been asked not only to cut discretionary spending, but to drive additional savings out of their baseline technology operational run rates as well. One way of attaining operational savings is to make the supply-chain function more efficient. Supplier and Procurement Analytics solutions have been demonstrated to provide banks with the ability to better track back-end processing to more effectively support front-end delivery to their customers. Analytics has also been shown to provide banks with more visibility into their external-vendors' performance in order to facilitate more timely and cost-effective management and discover opportunities to achieve greater cost and process efficiency.



**11.6. EXPENSE ANALYTICS**

Increased regulatory and tax requirements have led many banks to find ways to reduce their compliance-related expenses. One way to reduce these expenses is to leverage analytics to more effectively analyze tax and litigation spending to help reduce known costs, and to identify hidden costs. Further, banks can reduce costs by leveraging commonalities across different areas, through enabling shared services.

**11.7. WORKFORCE ANALYTICS**

Banks continue to closely monitor headcount, and they understand that the current skills gap will continue to grow in critical workforce segments. Anticipating workforce demand and maintaining high retention rates while effectively recruiting new employees and properly allocating them will likely continue to be a challenge for many banks.

**12. CONCLUSION**

Analytics can help banks in their efforts to analyze, model, and more efficiently manage their workforce. Banks can leverage advanced analytics solutions to improve people management decisions and control workforce costs and productivity. Analytics can also be used in a wide variety of other workforce management activities, such as workforce planning to improve staffing utilization, recruitment analysis to predict the probability of success in a particular job family, emergent leader analysis to identify and train future leaders for next level management roles, and organizational alignment to "right size" with more effective management layers and control structure.

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**UNDERSTANDING NEED OF FLOWER GROWERS OF HIMACHAL PRADESH**

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**ABSTRACT**

*Bestowed with rich biodiversity and congenial climatic conditions, floriculture in Himachal Pradesh has immense scope. The potential of floriculture have not been fully tapped yet. A study was carried out to get first hand information regarding technological and management problems faced by floriculturists and to understand their research needs for enhancing quality flower production from the region. The analysis of survey indicates that flower growers are adopting protective cultivation, as it enables production of good quality flowers and fetches a higher return. No major problem was evident in procurement good quality planting materials, but high price was the key concern. Mites and other sap sucking insects were common pest problems. It was noticed that farmers were getting farm inputs easily at affordable cost. Certain Govt. policies such as subsidy on the construction of polyhouses promoted floriculture in the region. Establishing cooling chain facility emerged as one of the major needs of the farmers.*

**KEYWORDS**

floriculture, R&D issues, policies, linkages, marketing.

**INTRODUCTION**

 Government of India identified floriculture as a sunrise industry and accorded it 100 percent export oriented status. Hence, floriculture is presently considered as a promising commodity. Floriculture industry has been experiencing rapid growth. The annual growth rate for world floriculture is 8- 10 % (Thankan Ghule and Shreekumar Menon, 2013). While Indian floriculture industry is flourishing with a growth rate of 24% per annum (The Economic Times, 20th Jan., 2015). During 2012-13, there was about 232.74 thousand hectares land under flower cultivation producing 1729.2 thousand MT of loose flowers and 76731.9 lakh of cut flowers in India. During 2013-14, India also exported 22,485.21 MT of floriculture products worth of Rs. 455.90 crores ([http://apeda.gov.in/apedawebsite/SubHead\\_Products/Floriculture.htm](http://apeda.gov.in/apedawebsite/SubHead_Products/Floriculture.htm)).

The production of flowers has increased in the traditional as well as non-traditional areas. Domestic Market, both for cut and loose flowers, has increased significantly due to rapid urbanization, shift in social outlook, increase in income and frequent use of flowers as gift and bouquets (Mishra, P.K, 2007). For becoming the hub of world floriculture trade, India has in fact all the favorable conditions like varied agro climatic profile, land resources, availability of skilled labour and agricultural scientists (Radha Nagaraj, 2005). In India, Himachal Pradesh has one of the most congenial agroclimatic conditions for growing of flowers and potted plants, but the state is yet to carve a niche in floriculture trade. Farmers of Himachal Pradesh are supported by Himachal Technology Mission, the National Horticulture Board and the State Horticulture Department for establishing green houses. During 2012-13, there was about 1000 ha area under floriculture in H.P., producing 37.7 thousand MT loose flowers and 1760.3 lakh cut flowers (Indian Horticulture Database- 2013). Certain areas in the state like Palampur in Kangra, Bharmour in Chamba, Rajgarh in Sirmour, Bilaspur, Mashobra in Shimla have emerged as the major flower growing areas. Certain subsidy schemes have also been provided to the flower growers (Pratibha Chauhan, 2013).

Although there is immense potential (protected as well as open field cultivation) for floriculture in the state and that Govt. is supporting to boost floriculture trade but still certain bottlenecks are hampering the interests of farmers and restricting the growth in this sector.

The present study was carried out to understand the technological needs and challenges faced by the farmers such that appropriate steps could be taken at policy level to address the need of the farmers holistically.

**METHODOLOGY**

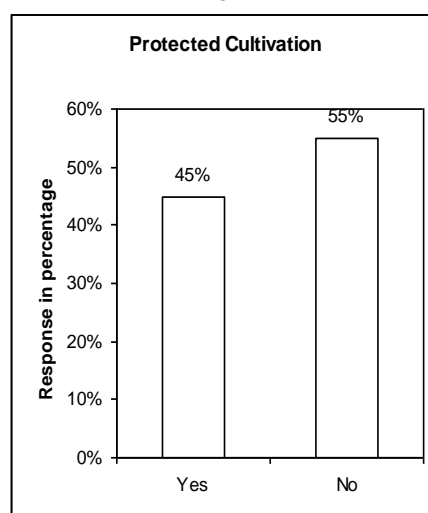
The study on problems of floriculture industry in H.P. is based on primary data. Primary data was collected using a pre-tested structured questionnaire. Data was recorded after personally interviewing top management. The questionnaire was structured to include information on land holding, type of cultivation (open/protected), planting material issues, farm management issues, R&D issues, linkages and marketing issues. Data collected was analyzed using simple analytical methods. Respondents (flower growers) for primary data collection were selected purposively on the basis of the concentration of flower growing area. As per the information available from Dept. of Horticulture, in Himachal Pradesh most of the flowers are cultivated in Kullu, Kangra, Bilaspur, Solan, Chamba, Una and Lahaul & Spiti areas. In our study we covered flower growing areas of Kangra, and Lahaul & Spiti

**RESULT & DISCUSSION**

Data collected from the respondents were analysed and key issues are as under:

**LAND HOLDING AND CULTIVATION TYPE**

FIG. 1



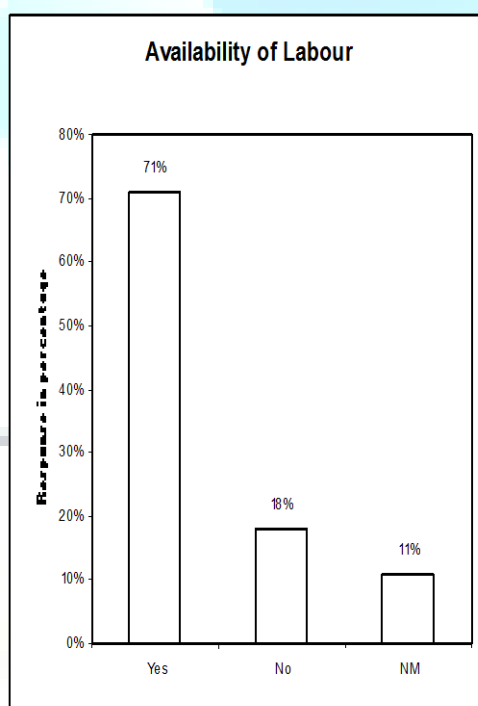
Majority of the farmers in the area have 2-3 kanal of land under floriculture. Some of them have maintained traditional cultivation and have used only a portion of their land towards floriculture. Only a few have large scale land dedicated for commercial cultivation. Greenhouse is popular and 45% of farmers have taken up protective cultivation as it yields good quality flowers and provides higher return. Also, Govt. provides subsidy for green house cultivation under different schemes. Crops like rose, gerbera, lilies, carnation, alstroemeria and other potted plants are grown in green house while crops like gladiolus and marigold are cultivated in open fields.

- PLANTING MATERIALS**

The majority of the planters expressed that they get good quality materials at affordable prices with a success survival rate of over 80%. The preferred sources of planting material are Pvt. Houses in Bangalore and Pune. At times National Horticulture board, State Universities and Central Govt. Institute like IHBT also provide high quality materials. A few planter also import planting materials from Holland and other countries. Many a times farmers retain selective planting materials for next season. The planters expressed that there is no problem in getting good quality material, but they are often expensive.

- CULTIVATION PRACTICE**

FIG. 2



Most of the planters are trained in the art. Many of them have attended training programmes organized by IHBT and Solan University. They feel that arranging trainings at block level can sensitize more people on taking up floriculture as a business. Also, advisory services rendered by IHBT and other technical institutes have helped them to overcome the field problems pertaining to cultivation, both under open and polyhouse conditions. Technical information regarding the package of practices are available in local language in print media and web. Farmers also get relevant information through Krishi darshan programmes. Occasionally, the farmers face disease problems particularly that of rotting of plants under the polyhouse condition. Mites and other sap sucking insects were found to be a common pest problem which reduce their yields and return. No major problem was expressed regarding availability of farm inputs like fertilizer, FYM, pesticides etc. Labour is not a serious problem and availability and skilled labours are adequate to meet the requirement. Several planters expressed in addition to floriculture they are further interested in taking tissue culture training to establish their own small units.

## • LINKAGE

FIG. 3

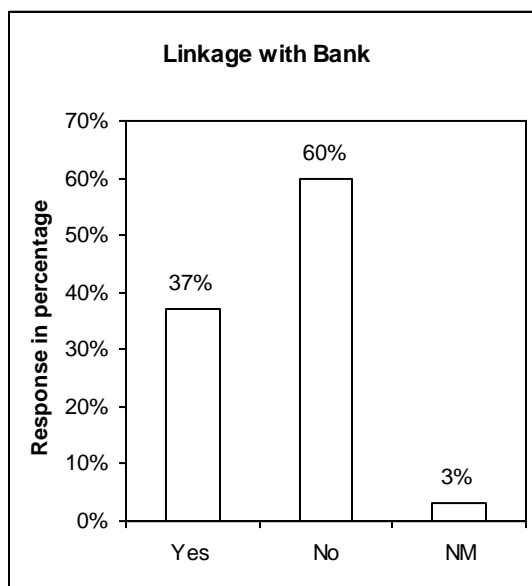


FIG. 4

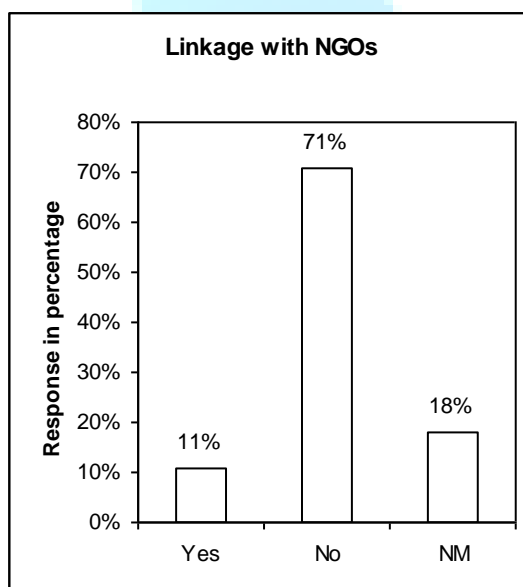
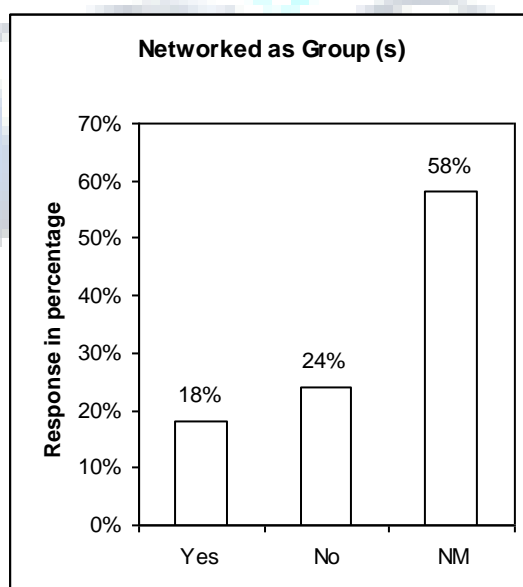


FIG. 5



It was observed that about 37 % of the farmers have linkages with banks as they have availed soft loan schemes. About 11% have linkage with NGOs. Interestingly, about 18% have formed group(s) for joint marketing of the produce and seed availability. It was felt that linkage and self help group would become stronger if more and more farmers of a particular locality join the trade. It emerges that there is ample scope to develop and strengthen linkage between farmers, bank and NGOs.

#### • R&D ISSUES

During the survey it was felt that though farmers do not face any major problem in getting good quality materials at affordable price but they aspire for new varieties of ornamentals to gain a competitive edge in marketing. Hence, they feel generating attractive new varieties of crops like gerbera, carnation etc. is one of their sustained needs. They also felt that work should be done in the area of post harvest technology as it will help in enhancing the shelf life of cut flowers which is crucial for longevity. With respect to crop management practices, farmers opine that work should be done to assess the water requirement of different crops as moisture level affects productivity. Since most of the farmers have faced the problem of soil borne pathogens they expressed that developing control measures of fungal disease particularly in polyhouse condition would highly beneficial.

#### MARKETING

Fig. 6

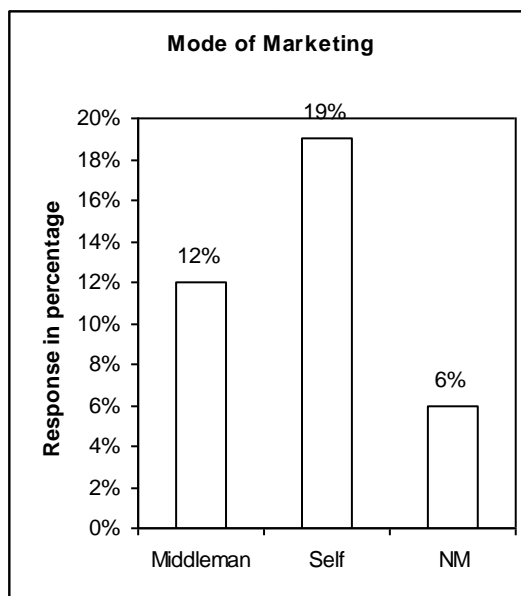
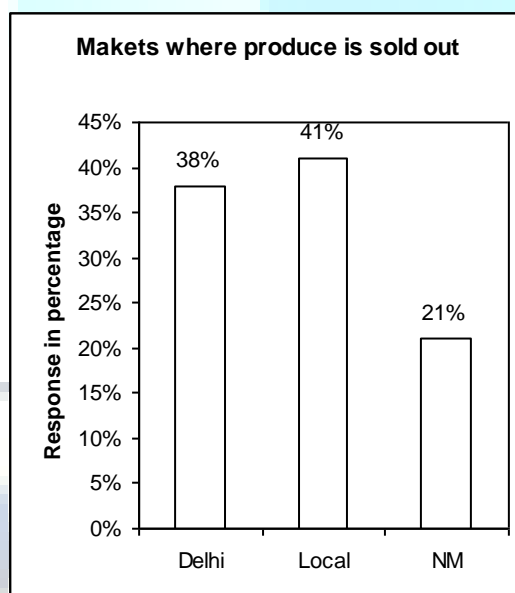


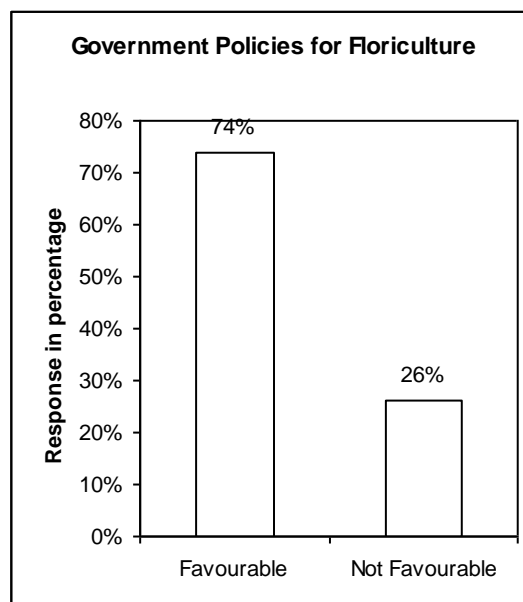
FIG. 7



Delhi is the major flower market for the region. Hence the cut flower produce is mostly sent to Delhi market. The marketing is done either through a middle man or self. Though there is involvement of middle man but the payment is prompt, this however reduces their share of returns. In case of self marketing a family person is dedicatedly deputed in the Delhi market. The farmers expressed that there is no major problem of marketing but often the rates fluctuate which results in uncertainty in return. Further, the flower markets strictly adheres to the grading norms and thus the condition of the produce plays an important role in determining the price, as good quality materials are sold at premium rates and price drastically fall if the flowers are slightly withered.

- GOVERNMENT POLICIES

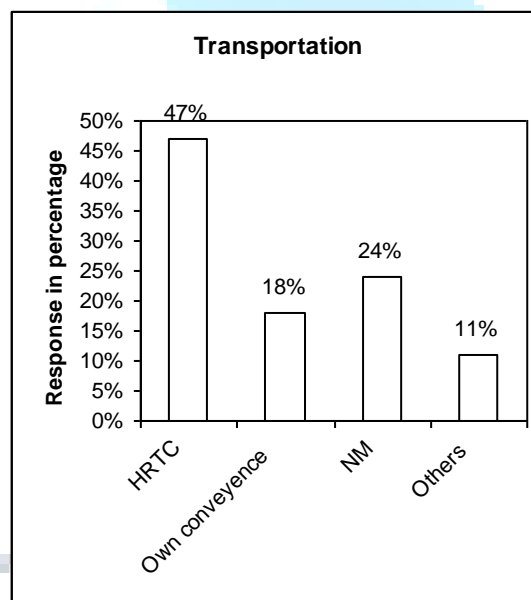
FIG. 8



About 74% of the farmers expressed that Govt policies are favourable and they have been benefitted particularly in construction of green houses. Some of the planters feel that Govt. should provide subsidy on self fabricated cheap polyhouses as well. Apart from polyhouse support Govt. also provide good quality planting materials of different ornamentals from various Govt. agencies/departments. Looking into the high returns, Govt. of Himachal Pradesh is now promoting floriculture in a big way and it is emerging as the preferred choice of trade in the state.

- TRANSPORTATION

FIG. 9



Most of the planters felt that transportation is a major problem and that they are using the Himachal Road Transport Corporation bus services to send their produce to the market. As flowers are very delicate and have limited shelf life, the mode of transportation effect their returns. Most of the planters expressed that cold chain is a critical need of the area as it would help them to keep their material fresh and attractive for a longer time.

## DISCUSSION AND SUGGESTION

**1. EXPANSION OF EXISTING PRODUCTION AND PRODUCT RANGE:** Looking into the prospect of floriculture world wide and considering the favourable attributes of Himachal Pradesh, the States needs to gear up expansion of commercial floriculture at a large scale.

Thrust could be laid on : hi-tech cultivation of orchids, arthurium, gladiolus, tuberose, and foliages; developing state-of-the-art nurseries for generating high quality planting materials to attain the status of regional hub for supply of elite materials; making novel products for decorations and as gift items using dried flowers and foliages

**2. TARGETING NEW EMERGING FLOWER MARKETS:** It has been observed that except for Saudi Arabia and UAE, India has not been able to make its presence felt in the regional floriculture markets such as Japan, Singapore, Korea, and Russia. While China, Thailand and Malaysia are consistent suppliers. Therefore, more targetted efforts are required by the Indian floriculture industry to make a significant mark in the regional, new and emerging markets. Since flowers of Himachal are well known for its quality, Himachal Govt. should emphasise on the cultivation of flowers having export potential.

**3. CREATING COLD STORAGE FACILITIES:** The first and foremost requirement is to develop a state-of-the-art Integrated Cold Chain, right from the point-of-origin (growers) to the point-of-consumption (customers). This will help in retaining the freshness of flowers and enhance their shelf life. Although it will slightly raise the total production cost, but will be several fold advantageous in long run as there will be less wastage and farmers will get premium prices for their fresh produce.

**4. ENCOURAGING PRIVATE SECTOR FOR COINVESTMENTS:** Government of Himachal may consider framing of favourable policies for participation of private sector for coinvestments in the supply-chain infrastructure.



**5. DEVELOPING THE NON-TRADITIONAL PRODUCTION AREAS:** Expansion of floriculture in non-traditional areas. There are several areas which are congenial for flower production but are either in neglected condition or still under traditional cropping pattern. Bringing these areas under floriculture may help in meeting the growing needs of both domestic and international market.

**6. DEVELOPING COST EFFECTIVE POLYHOUSES:** By employing low cost indigenous technologies for modern floriculture suiting to the agro-climatic condition of Himachal will reduce the production cost and hence will increase the net returns.

**7. CREATING TRAINED MANPOWER:** Trained manpower is crucial to meet the demand of expanding floriculture. This can be achieved by establishment of training centres on modern techniques for commercial floriculture and skill development.

**8. ESTABLISHING A NETWORK OF SUPPORT SYSTEMS:** Establishing a network of support systems with the involvement of Government, private sector and research institutions / universities will be another strategy for development of the floriculture sector in the state. A "consortium" approach may be encouraged among the units for branding, grading, packaging, transporting, quality control, supply assurance, market development, market promotion, and research and development.

**9. SETTING UP NEARBY AUCTION CENTRES:** As most of the farmers go to Delhi auction centres. State Govt. needs to set up regional auction centres to remove transportation and marketing hurdles. A great deal of attention will have to be given to the rules governing the auction, transparency in the transactions, and dispute resolutions. Auction should be managed by growers and buyers, and government should act only as a facilitator. A system of dedicated transportation also needs to be organised on commercial lines facilitating transfers from production sites to auctions and auctions to the market at an economical cost. Lastly, efforts should be made to develop and strengthen backward linkages on a continuous basis to benefit from trade.

Himachal floriculture industry has inherent strengths such as favourable geographical situation, soil and environment and labour costs. With the positive investment sentiments of Indian corporate players and smaller players consolidating their efforts, Himachal's floriculture sector is expected to blossom in the coming years.

## ACKNOWLEDGEMENT

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## NOTE

The views expressed in the article are those of the authors and not of the Department of Scientific & Industrial Research, under whose support a Diagnostic Study to assess technology and management needs of floriculture was carried out.

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**CHALLENGES AND PROBLEMS ENCOUNTERED BY WOMEN ENTREPRENEURS IN NELLORE DISTRICT****C. PRAKASH****ASST. PROFESSOR****RAO'S INSTITUTE OF MANAGEMENT STUDIES****BUJABUJA NELLORE****R.VANI****HEAD OF THE DEPARTMENT****RAO'S INSTITUTE OF MANAGEMENT STUDIES****BUJABUJA NELLORE****E. VENKATESH****ASST. PROFESSOR****JAGANS INSTITUTE OF MANAGEMENT STUDIES****RAMALINGAPURAM****ABSTRACT**

Women in India constitute around half of the country's population. Hence they are regarded as the "better half of the society". This paper tries to find challenges and problems faced women entrepreneur in Nellore district. Women entrepreneurs are actively involved in business due to push and pull factors. Which encourage women to have a Separate profession and supported on their own legs. A sense towards own decision-making on their life, profession and career is the motivational factor behind this urge. Saddled with household chores and domestic responsibilities women want to get own under the influence of these factors the women entrepreneurs choose a profession as a challenge and try hard to do something new. Such situation is described as pull factors. While in push factors women engaged in business activities due to family compulsion and the responsibility is thrust upon them. Many women have the quality but they never got a platform to show their real ability. Women in India are taking more responsibilities like take care of their children and managing home with care, love and affection. In the family level mingling various activities in a much effective manner, without hurting of feelings and inconvenience is carried out by the women. The study is an exploratory research. The data used in the paper are both the Primary data as well as secondary data. The primary data collected with the help of unstructured questionnaire. The secondary data were collected from published journals, magazines and surfing the Net. Some of the important problems identified are women's Family ties, Male dominated society, Lack of education, Social barriers, scarcity of raw materials, Problem of finance, Tough competition, High cost of production, Low risk-bearing capacity, Limited mobility, Lack of entrepreneurial aptitude, Legal formalities, Exploitation by middle men and Lack of self confidence. The paper concludes that the problems of women entrepreneurs can be eradicated by appropriate training programs, providing incentives, support of financial institutions, encouragement and motivation from government, social recognition of their entrepreneurial abilities, and family's moral support.

**KEYWORDS**

Women entrepreneur, problems, Decision making, incentives, support from government and financial institutions.

**1. INTRODUCTION**

Will the turn of the century, man has enjoyed a dominant position in the society. In the official proclamation, they are at par with men. But in real life the truth prevails otherwise. Women are not treated as equal partners both inside and outside four walls of the house. In fact they are treated as *abala*, i.e., weak and dependent on man. The Indian women enjoy a disadvantageous status in the society. Some facts are low literacy rate (40%), low work participation rate (28%) and low urban population rate (10%) of women compared to 60%, 52% and 18% respectively of their male counterparts well conform their disadvantageous position in the society. But change in position technological innovation and modern way of thinking can reduce the disparity between man and women, and bring about equality and equity between them, the need of the hour in women empowerment both through provision of employment and enterprise creation. Typologically, the former leads to endogenous empowerment and the latter give rise to exogenous empowerment.

**CONCEPTUAL OVERVIEW**

Women Entrepreneurs may be defined as the women or a group of women who initiate, organize and operate a business enterprise. Government of India has defined women entrepreneurs as an enterprise owned and controlled by a women having a minimum financial interest of 51% of the capital and giving at least 51% of employment generated in the enterprise to women. Like a male entrepreneurs a women entrepreneur has many functions. They should explore the prospects of starting new enterprise; undertake risks, introduction of new innovations, coordination administration and control of business and providing effective leadership in all aspects of business.

They have made their marks in business because of the following reasons:

- They want to improve their mettle in innovation and competitive jobs.
- They want the change to control the balance between their families and responsibility and their business levels.
- They want new challenges and opportunities for self fulfillment.

**ROLE OF WOMEN AS AN ENTREPRENEUR'S**

**1) IMAGINATIVE:** It refers to the imaginative approach or original ideas with competitive market. Well-planned approach is needed to examine the existing situation and to identify the entrepreneurial opportunities. It further implies that women entrepreneur's have association with knowledgeable people and contracting the right organization offering support and services.

**2) ATTRIBUTE TO WORK HARD:** Enterprising women have further ability to work hard. The imaginative ideas have to come to a fair play. Hard work is needed to build up an enterprise..

**3) PERSISTENCE:** Women entrepreneurs must have an intention to fulfill their dreams. They have to make a dream transferred into an idea enterprise; Studies show that successful women work hard.

**4) ABILITY AND DESIRE TO TAKE RISK:** The desire refers to the willingness to take risk and ability to the proficiency in planning making forecast estimates and calculations.

**5) PROFIT EARNING CAPACITY:** she should have a capacity to get maximum return out of invested capital.

**A Woman entrepreneur has also to perform all the functions involved in establishing an enterprise.** These include idea generation, and screening, determination of objectives, project preparation, product analysis, determination of forms of business organization, completion of formal activities, raising funds, procuring men machine materials and operations of business.

**Fredrick Harbiscon, has enumerated the following five functions of a women entrepreneur's:**

- Exploration of the prospects of starting a new business enterprise.
- Undertaking a risk and handling of economic uncertainties involved in business.
- Introduction of innovations, imitations of innovations.
- Co ordination, administration and control.
- Supervision and leadership.

In nutshell, women entrepreneur are those women who think of a business enterprise, initiate it organize and combine the factors of production, operate the enterprise, undertake risk and handle economic uncertainties involved in running a business enterprise.

With education and training, the women have gained confidence to do all work, which was the prerogative of man and do it excellently, rather better than men. Over the years, the educated women have become ambitious, acquired experience and basic skills of competency and self-assurance.

#### LEADERSHIP QUALITIES

Some of the outstanding qualities of women entrepreneurs are as follows:

- Accepting challenges
- Driven oriented
- Well Enthusiastic
- Good Hard working nature
- She wills a good Motivator
- High Skillful in any activity
- Unquenchable optimism.
- Determination to excel
- Keenness to learn and imbibe new ideas

#### PSYCHOSOCIAL BARRIERS

Although some women entrepreneurs have excelled in their enterprise, the fear of success haunts women in general. Some psycho-social factors impeding the growth of woman entrepreneurship are as follows:

1. Poor self-image of women
2. Inadequate motivation
3. Discriminating treatment
4. Faulty socialization
5. Role conflict
6. Cultural values
7. Lack of courage and self-confidence
8. Inadequate encouragement
9. Lack of social acceptance]
10. Unjust social-economic and cultural system
11. Lack of freedom of expression
12. Afraid of failures and criticism
13. Susceptible to negative attitudes
14. Non-persistent attitude
15. Low dignity of labour
16. Lacking in leadership qualities, Le., planning, organising, controlling, coordinating and directing.

#### WOMEN EMPOWERMENT

The Government of India had ushered in the new millennium by declaring the year 2001 as 'Women's Empowerment Year' to focus on a vision 'where women are equal partners like men'. The most common explanation of 'women's empowerment' is the ability to exercise full control over one's actions. The last decades have witnessed some basic changes in the status and role of women in our society.

The discrepancy in the ideology and practice of the empowerment policy of women in India constitutes its continued social, economic and social backwardness. Women make up 52% of our country's population. Hence there can be no progress unless their needs and interests are fully met. Empowerment would not hold any meaning unless they are made strong, alert and aware of their equal status in the society. Empowerment would become more relevant if women are educated, better informed and actively involved in entrepreneurial activities

Despite all the social hurdles, many women have become successful in their works. These successful women have made name & wealth for themselves with their hard work, diligence, competence and will power. Following is the list of few top Women Entrepreneurs in India:

#### **Indra Nooyi- Current position: CFO, PepsiCo**

Indra Nooyi, 56, is the current chairman and CFO of the second largest food and beverage business, PepsiCo. Born in Chennai, Indra did her Bachelor's in Science from Madras Christian College in 1974 and a Post Graduate Diploma in Management (MBA) from Indian Institute of Management, Calcutta in 1976. Beginning her career in India, Nooyi held product manager positions at Johnson & Johnson and textile firm Metturr Beardsell. Nooyi joined PepsiCo in 1994 and was named president and CFO in 2001. She has been conferred with prestigious Padma Bhushan for her business achievements and being an inspiration to India's corporate leadership.

#### **Naina Lal Kidwai-Current position: Group General Manager & Country Head – HSBC, India**

Naina Lal Kidwai, 55, is presently the Group General Manager and Country Head of HSBC India. Naina has a Bachelor's degree in Economics from Delhi university and an MBA from Harvard Business school. In fact, Kidwai was the first Indian woman to graduate from Harvard Business School. She started her career with ANZ Grindlays. Presently, she is also serving as a non-executive director on the board of Nestle SA. Kidwai is also global advisor at Harvard Business school. Indian government conferred Padma Shri award on Naina for her contributions in the field of Trade and Industry.

#### **Kiran Mazumdar Shaw-Current position: CMD, Biocon**

Kiran, 59, is the founder Chairman and Managing Director (CMD) of Biocon Limited. Born in Bangalore, Shaw completed her Bachelors in Zoology from Mount Carmel College, Bangalore University. She later did her post-graduation in Malting and Brewing from Ballarat College, Melbourne University. She worked as a trainee brewer in Carlton and United Breweries, Melbourne and as a trainee maltster at Barrett Brothers and Burston, Australia. She started Biocon in 1978 and spearheaded its evolution from an industrial enzymes manufacturing company to a fully integrated bio-pharmaceutical company. Today Biocon under Shaw's leadership has established itself as a leading player in biomedicine research with a focus on diabetes and oncology. Kiran is also a member of the board of governors of the prestigious Indian School of Business and Indian Institute of Technology Hyderabad. Kiran received the prestigious Padma Shri (1989) and the Padma Bhushan (2005) from the government of India.

#### **Chanda Kochhar-Current position: MD & CEO – ICICI Bank**

Chanda Kochhar, 51, is currently the MD & CEO of India's largest private bank ICICI Bank. Rajasthan born chanda got Masters Degree in Management Studies from Jamnalal Bajaj Institute of Management Studies, Mumbai. She received the Wockhardt Gold Medal for Excellence in Management Studies as well as the J. N. Bose Gold Medal in Cost Accountancy. Chanda Kochhar is married to Deepak Kochhar, a wind energy entrepreneur and her Business schoolmate.

**Indu Jain-Designation – Chairperson (former), Times Group**

Indu Jain, 76, used to be the chairperson of India's largest and most powerful media house – The Times Group. A strong votary of women's rights and women entrepreneurship, Indu contributed immensely to the growth of Times group. Now, her two sons Samir and Vineet are running the company. Indu Jain is also founder President of the Ladies wing of FICCI (FLO). Indu is also the Chairperson of the Bharatiya Jnanpith Trust, which awards India's most prestigious and highest literary award, the Jnanpith award. She addressed the United Nations in 2000 at the Millennium World Peace Summit of Religious and Spiritual Leaders, a speech in which she stressed the need for oneness among faiths and went on to chair a special session of the conference.

**Simone Tata-Current position: Chairperson (Former), Lakme Chairperson (Present), Trent Limited**

French by birth and educated in Switzerland, Simone is wife of Naval Homey Jahangir Tata and step mother to Ratan Tata. She is better known as 'Cosmetic Czarina of India'. She has the distinction of changing a small subsidiary of Tata Oil Mills into the largest cosmetic brand in India – Lakme, which became synonymous with indigenous Indian cosmetics. In 1996 Tata sold off Lakmé to Hindustan Lever Limited (HLL), and created Trent from the money it made through the sale. Presently, Simone is the chairperson of Trent Limited.

**Neelam Dhawan-Current position: MD, HP-India**

A woman with 'never-say-die' spirit, Neelam Dhawan is presently the Managing Director of Hewlett-Packard (HP), India. Neelam is an iconic figure in Indian IT industry. She is an inspiration for women working in IT sector. She dared to enter the IT world in early 1980s when there were just a handful of women in this industry. At the start of her career she yearned to be a part of major players in the FMCG space such as Asian Paints and Hindustan Lever. Unfortunately, these organizations did not want a woman to be a part of their marketing and sales efforts and hence she was rejected at the time. But a determined Neelam refused to give up and fought back with laurels galore. Before joining HP, India as Managing Director (MD), Neelam was Managing Director (MD) of Microsoft, India. She had successful and rewarding stints with other leading players like IBM and HCL.

**Sulajja Firodia Motwani- Current position: JMD – Kinetic Motors**

Motwani is the Joint Managing Director of Kinetic Motors. Sulajja has single-handedly designed and developed marketing strategies to spearhead the company's growth forward. Sulajja worked in a California-based Investment Company before coming to India to join her grandfather's business. Sulajja's good looks have been recognized by India Today group which named her the 'Face of the Millennium' and she has been selected as the 'Global Leader of Tomorrow' by the World Economic Forum.

**Priya Paul-Current position: Chairperson, Apeejay Park Hotels**

Priya joined the family business at the age of 22 and worked under her father as Marketing Manager at the Park Hotel, Delhi. After the death of Surrendra Paul, she succeeded him in 1990 as the Chairperson of the Hospitality Division of the Apeejay Surendra Group. Her contribution to the hospitality industry has got recognition from the government of India which conferred on her Padma Sri award in 2012.

**Mallika Srinivasan-Current position: Director, TAFE (Tractor and Farm Equipment)**

Mallika has an MBA from Wharton School of Business, Pennsylvania. She joined TAFE in 1986 and has since been responsible for accelerating turnover from 85 crores to 2900 crores within a span of two decades. Her innovative business ideas and excellent leadership qualities have won her laurels from every quarter. She was awarded 'Businesswoman of the year 2006' award by ET.

**Ekta Kapoor-Current position: JMD & Creative Director, Balaji Telefilms**

Ekta Kapoor is the daughter of legendary star of yesteryears Jeetendra and brother of Bollywood actor Tusshar Kapoor. Ekta has created a niche for herself in TV serial and film production. She can easily be termed as the most successful female producer of entertainment world. Ekta has produced many successful films including Kyo Kii... Main Jhuth Nahin Bolta, Kuch To Hai Love Sex aur Dhokha, Once Upon a Time in Mumbai, Shor in the City, Ragini MMS, Kyaa Super Kool Hai Hum and The Dirty Picture.

**Ritu Kumar-Current position: Fashion Designer**

Ritu Kumar is one of the big names in Indian fashion industry. Ritu has carved a niche for herself in designing a variety of wardrobes including swimwear, eveningwear, traditional Indian wear, casual wear and formal evening gowns. She has the distinction of designing costumes of three winning Miss Indias. Her son Ashvin Kumar is a director, who has made films like Road to Ladakh (2002) and short film Little Terrorist (2004), which was nominated for the 2004 Academy Award for Live Action Short Film, and in which she did the costume design.

**Shahnaz Hussain-Current position: CEO, Shahnaz Herbals Inc**

Shahnaz Hussain is the biggest name in herbal cosmetics industry in India. She has introduced a number of trend setting herbal products. Currently, the Shahnaz Hussain Group has over 400 franchise clinics across the world covering over 138 countries. Her pioneering work got recognition from Government of India when she was conferred with prestigious Padma Shri award in 2006.

**Jyoti Nayak-Current Position: President Shri Mahila Griha Udyog Lijjat Papad**

Jyoti Naik, is currently the President of Shri Mahila Griha Udyog Lijjat Papad, an Indian women's cooperative based in Mumbai. The Khadi and Village Industries Commission of India has conferred the Best Village Industry award on Lijjat Papad from the period 1998-99 to 2000-01. Jyoti Naik was conferred Businesswomen of the Year (2001-02) for corporate excellence by the Economic Times.

**Ravina Raj Kohli-Current position: Founder & Executive Director, JobCorp**

Ravina Raj Kohli is an international media veteran with an experience of 24 years spanning across television and radio broadcasting, advertising, filming and journalism. Ravina is also Indian television's first woman CEO. She was CEO of Star news until 2004. Before Star, Ravina worked at Sony Entertainment Television as Head of Content and Communication and with the Kerry Packer owned Channel 9 on the Doordarshan platform as CEO. She has earned a Diploma from the London School of Journalism, as well as a Bachelor's Degree in Psychology, Economics and Literature from Bangalore University.

## 2. REVIEW OF LITERATURE

Sarngadharan and Beigum Resia (1995) studying the institutional support and problems faced by women entrepreneurs in Kerala confirm that women entrepreneurs confront numerous problems like outside financial support being meager, marketing purchase of raw materials, competition from larger units, slackness in demand as major problems in promoting and running their enterprises.

Awasti D.N. (2005) conducted a case study of women owned micro and small enterprises within India's self Employed Women's Association (SEWA) and reports that women change in two ways when they organize on the basis of work to join a union or form a cooperative. First their self perception evolves, they realize that they actually are workers that as such they contribute to the nation's economy and so become conscious of the fact that they have more roles than those traditionally emphasized by society i.e. as mother-wife and housekeeper. Second women come to disregard their differences of caste, religion or community and manifest relatively high levels of solidarity especially in times of crisis.

Manimekalai and Rajeswaris (2008) study on women entrepreneurs running micro enterprises in Trichirappally rural that women were engaged in trade and service units. Majority of them were sole proprietorship. The raw material and marketing were mostly within the district or state and a number of agencies helped the women entrepreneurs in starting and running the enterprise including banks district industries centre, the family and friends and relatives.

According to some analytical frame work, women Entrepreneurs are essential for achieving for the economic growth of the nation. There are certain obstacles which hinder the growth of the nation should be avoided. Encouragement should be in such a manner which allows women to participate and to take up all kinds of business as an entrepreneur. Government should provide proper training to women entrepreneurs. Government should use sophisticated methods to impart knowledge in all functional areas. Promoting Women entrepreneurship is surely a successful path to develop Indian economy. Apart from these women required psychological motivation also.

According to some school of thought they conclude that, now India is in better position because of introduction of women as an entrepreneur. This is mainly because of change of attitude of people towards women, courageous and risk-taking capabilities of women support from society people, changes and

relaxations in government policies, granting various up-lift schemes to women entrepreneurs' etc. extension to these findings there are certain other factors which facilitates to get success as an entrepreneur.

### 3. RESEARCH METHODOLOGY

#### OBJECTIVES

1. The main objective of the research to find the problems and challenges faced by women entrepreneurs in Nellore district.
2. To know the characteristics influencing women entrepreneurs for success.
3. To suggest how to overcome from the problems.

**TYPE OF RESEARCH:** Descriptive research

**SAMPLING TECHNIQUE:** Non probability Convenience sampling

**DATA SOURCES:** Data is collected through two sources; they are primary and secondary data.

1. The primary data is collected through structured questionnaire and interview method.
2. Secondary data is collected with the help of journals articles, surfing net and other published materials.

**Sampling Unit:** Women Entrepreneurs in Nellore district.

**Sampling Size:** Total 30 women entrepreneurs in Nellore District including Nellore, Kavali, Venkatagiri, Gudur, Naidu Pet, Suler pet, Tada, Kota.

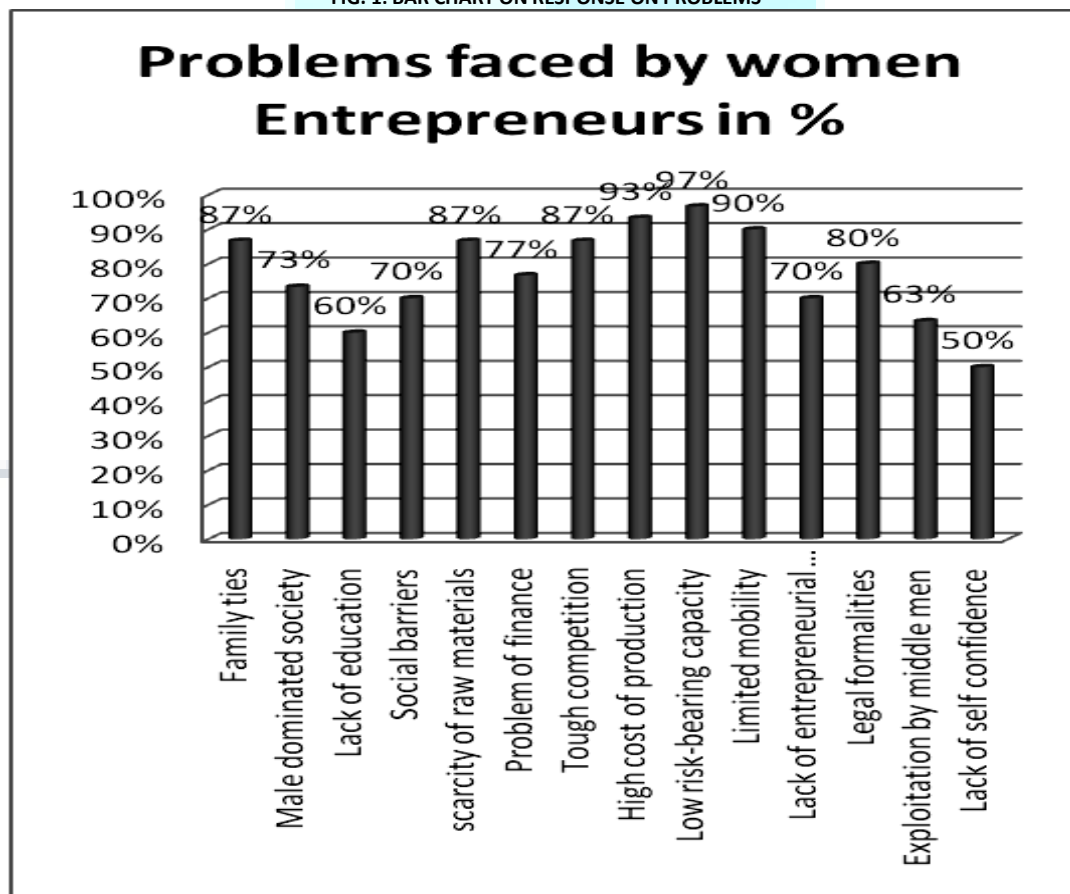
### 4. ANALYSIS AND FINDINGS

Women entrepreneurs facing no. of problems from the beginning enterprise. The problems of Indian women have more responsibilities towards family and society. Women in India are faced with many problems to get ahead their life in business.

TABLE 1: RESPONSE ON PROBLEMS

Problems and challenges	No. of respondents	%age of respondents
Family ties	26	87%
Male dominated society	22	73%
Lack of education	18	60%
Social barriers	21	70%
Scarcity of raw materials	26	87%
Problem of finance	23	77%
Tough competition	26	87%
High cost of production	28	93%
Low risk-bearing capacity	29	97%
Limited mobility	27	90%
Lack of entrepreneurial aptitude	21	70%
Legal formalities	24	80%
Exploitation by middle men	19	63%
Lack of self confidence	15	50%

FIG. 1: BAR CHART ON RESPONSE ON PROBLEMS





**FAMILY TIES**

Women in India are very emotionally attached to their families. They are supposed to attend to all the domestic work, to look after the children and other members of the family. They are over burden with family responsibilities like extra attention to husband, children and in laws which take away a lots of their time and energy. In such situation, it will be very difficult to concentrate and run the enterprise successfully. The family memers encouragement is nessasary to over come for family ties, to understand their busy work in entreprenurial activites.

In my study 87 Percent of Women entrepreneurs are facing this problem.

**MALE DOMINATED SOCIETY**

Women in India constitute around half of the country's population. Hence they are regarded as the "better half of the society". Even though our constitution speaks of equality between sexes, male chauvinism is still the order of the day. Women are not treated equal to men. Their entry to business requires the approval of the head of the family. Entrepreneurship has traditionally been seen as a male preserve. All these puts a break in the growth of women entrepreneurs.

73 Percent of women entrepreneurs are faicng this problem of male domination.

**LACK OF EDUCATION**

Women in India are lagging far behind in the field of education. Low literacy rate (40%) of women compared to men (60%). Those who are educated are provided either less or inadequate education than their male counterpart partly due to early marriage, partly due to son's higher education and partly due to poverty. Due to lack of proper education, women entrepreneurs remain in dark about the development of new technology, new methods of production, marketing and other governmental support which will encourage them to flourish.

60 Percent of respondents are responded regarding Lack of education.

**SOCIAL BARRIERS**

The traditions and customs prevailed in Indian societies towards women sometimes stand as an obstacle before them to grow and prosper. Castes and religions dominate with one another and hinders women entrepreneurs too. In rural areas, they face more social barriers. They are always seen with suspicious eyes.

**SCARCITY OF RAW MATERIALS**

The scarcity of raw materials, sometimes nor, availability of proper and adequate raw materials sounds the death-knell of the enterprises run by women entrepreneurs. Women entrepreneurs really face a tough task in getting the required raw material and other necessary inputs for the enterprises when the prices are very high.

**PROBLEM OF FINANCE**

Women entrepreneurs stiffer a lot in raising and meeting the financial needs of the business. Bankers, creditors and financial institutes are not coming forward to provide financial assistance to women borrowers on the ground of their less credit worthiness and more chances of business failure. They also face financial problem due to blockage of funds in raw materials, work-in-progress finished goods and non-receipt of payment from customers in time.

**TOUGH COMPETITION**

Usually women entrepreneurs employ low technology in the process of production. In a market where the competition is too high, they have to fight hard to survive in the market against the organised sector and their male counterpart who have vast experience and capacity to adopt advanced technology in managing enterprises

**HIGH COST OF PRODUCTION**

Several factors including inefficient management contribute to the high cost of production which stands as a stumbling block before women entrepreneurs. Women entrepreneurs face technology obsolescence due to non-adoption or slow adoption to changing technology which is a major factor of high cost of production.

**LOW RISK-BEARING CAPACITY**

Women in India are by nature weak, shy and mild. They cannot bear the amount risk which is essential for running an enterprise. Lack of education, training and financial support from outsidess also reduce their ability to bear the risk involved in an enterprises.

**LIMITED MOBILITY**

Women mobility in India is highly limited and has become a problem due to traditional values and inability to drive vehicles. Moving alone and asking for a room to stay out in the night for business purposes are still looked upon with suspicious eyes. Sometimes, younger women feel uncomfortable in dealing with men who show extra interest in them than work related aspects.

**LACK OF ENTREPRENEURIAL APTITUDE**

Lack of entrepreneurial aptitude is a matter of concern for women entrepreneurs. They have no entrepreneurial bent of mind. Even after attending various training programmes on entrepreneurship women entrepreneurs fail to tide over the risks and troubles that may come up in an organisational working.

**LIMITED MANAGERIAL ABILITY**

Management has become a specialised job which only efficient managers perform. Women entrepreneurs are not efficient in managerial functions like planning, organising, controlling, coordinating, staffing, directing, motivating etc. of an enterprise. Therefore, less and limited managerial ability of women has become a problem for them to run the enterprise successfully.

**LEGAL FORMALITIES**

Fulfilling the legal formalities required for running an enterprise becomes an upheaval task on the part of an women entrepreneur because of the prevalence of corrupt practices in government offices and procedural delays for various licenses, electricity, water and shed allotments. In such situations women entrepreneurs find it hard to concentrate on the smooth working of the enterprise.

**EXPLOITATION BY MIDDLE MEN**

Since women cannot run around for marketing, distribution and money collection, they have to depend on middle men for the above activities. Middle men tend to exploit them in the guise of helping. They add their own profit margin which result in less sales and lesser profit.

**LACK OF SELF CONFIDENCE**

Women entrepreneurs because of their inherent nature, lack of self-confidence which is essentially a motivating factor in running an enterprise successfully. They have to strive hard to strike a balance between managing a family and managing an enterprise. Sometimes she has to sacrifice her entrepreneurial urge in order to strike a balance between the two.

**5. RECOMMENDED ACTION PLAN**

- ✓ For the growth of women entrepreneurs, some of the associations of women entrepreneurs have been setup both at national and international level like-
- **Women entrepreneur wing of Natinal Alliance of Young Entrepreneurs (NAYE):-** it's aim create unity among the women entrepreneurs and encourage them to participate actively in the country's industrialisation. It urges the central and state government to provide special incentives and facilities to women entrepreneurs, such as Liberal allocation of land and sheds, easier followup credit, training etc.,
- **World Association of Women Entrepreneurs (WAW):-** Its aim is to bring together all women who are qualified to take up an active and leading part in employer organisations along with their male colleagues.
- **Associated Country of the World (ACWW):-** it provides a net work through which member groups can support and help another. These are mainly rural entrepreneurs.
- National commision of self employed women in the informal sector:- this commission has suggested, state governments should earmark polts for women entrepreneurs, special infrastructure facilities should be provided to womens, licences should be granted on priority basis to women, reservation for Government purchases and price preferences should be offered to momen entrepreneurs.



- ✓ Women entrepreneurs are facing difficulties in getting loans from banks and financial institutions for setting up of their new projects, expansion, modernisation, technology upgradation and diversification of existing project. To overcome this difficulty, financial institutions and banks are providing specialised schemes to women entrepreneurs such as,
  - Mahila Udyoga Nidhi scheme of small industries development bank of India.
  - Shree shakti package of State Bank of India.
- ✓ Promote entrepreneurship various government agencies conduct specialised programs exclusively for women entrepreneurs. National Institute of Entrepreneurship and small business development is an apex body of training and research in Entrepreneurship, some of the programs are-
  - National rural employment program
  - Integrated rural development program
  - Rural landless employment guarantee program
- ✓ Government is providing proper encouragement and assistance for setting up of marketing cooperatives.

## 6. CONCLUSION

In Ancient days India was a male dominated country. Now-a-days this set up has been changing day by day. The changes happen in terms of increased educational status and varied aspirations for better living. Changes in the life style of Indian women should be necessary. Indian families should be like westerners, because a woman here takes more responsibilities in children's growth and she should maintain home with love and affection.

Still some more changes need to be done in terms of motivation, incentives and encouragement. The women should have recognition in the society, family should give moral support, and banks should give support financially. Not only banks financial institutions and women empowerment policies of government should boost their moral and self confidence in them.

## 7. LIMITATIONS OF THE STUDY & SCOPE FOR FURTHER RESEARCH

The limitations of the study include fewer numbers of women entrepreneurs in Nellore district, who have accessibility nature and who feels shy do not express their feelings to the outside world or who don't give complaints their neighbors. There is scope for further researches in this modern era there will be better involvement of women in industrial sector, Geographical locations and education system of women.

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**CAR NUMBER PLATE DETECTION AND RECOGNITION****JOYASHRI BASAK****STUDENT****DEPARTMENT OF COMPUTER SCIENCE****SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY****MAJHITAR****DR. RATIKA PRADHAN****HEAD****DEPARTMENT OF COMPUTER APPLICATION****SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY****MAJHITAR****ABSTRACT**

Car number plate detection and recognition is a very important field of digital image processing. Although, many researchers have already been worked on it but still it is not has been properly work on every image. In this paper we have analysis some existing algorithm or methods. On this basis of the analysis we have proposed an algorithm. This algorithm have five module: Pre-processing of images, localization of license plate, screw correction, segmentation of characters, number identification using template matching.

**KEYWORDS**

Detection, Localization, Recognition.

**1. INTRODUCTION**

We know that there are currently more than half a billion cars on road worldwide. Every car has its own identification number which is called the licence plate number. This number plays an important role in Public traffic. It is not possible for a person to monitor all the vehicles which are passing with their speed and note down their licence number. So detection of those license plate and recognition there character is a very important research topic now a day. License plate recognition applies image processing and character recognition technology to identify vehicles by reading their license plates. Anti-terrorism and public security is increasing worldwide, so the global law enforcement has been deploying vehicle license plate recognition systems. Mostly vehicles used by criminals are either stolen vehicles or vehicles hung with stolen license plates. Mostly vehicle make accident and run away from their leaving no trace. Using this recognition we can trace them. License plate recognition is also significant to save the lives and the properties of the chauffeurs, the passengers and to improve the stability and the authority of the law execution in transportation. The two major values license plate recognition adds to systems are automation and security.

**2. LITERATURE SURVEY**

We have analyst some papers on this field. This are stated below.

Ronak P Patel[1] have proposed an algorithms. They use Morphological operation, Thresholding operation, Edge detection, Bounding box analysis for number plate extraction, character separation using Segmentation and character recognition using Template method. In this methods have disadvantages of angle of image and it cannot detect two row license plate. Kuo-Ming Hung[2] uses the probability distribution of the license plate between the two lights barking in the captured image. we use the morphology method Black Top-Hat to enhance the level of separation of the license plate characters. But if the light of head light of the car behind is not bright enough, it will result in weak edge characteristics of the character and LP background. That will cause the LP region to be treated as noise and being filtered out, and effect the positioning of the LP. Kumar Parasuraman [3] has proposed algorithm consists of three major parts: Extraction of plate region, segmentation of characters and recognition of plate characters. For extracting the Plate region, edge detection algorithm and vertical projection method are used. In segmentation part, filtering, thinning and vertical and horizontal projection are used. And finally, chain code concept with different parameter is used for recognition of the characters. But by this technique angled image cannot be detected properly. Er. Kavneet Kaur[4] have proposed algorithm has three major parts:

vehicle number plate extraction, character segmentation and Optical Character Recognition (OCR). Number plate extraction is that stage where vehicle number plate is detected. font type, noise in image, tilting etc are big issue in their proposal. Prathamesh Kulkarni[5] use feature based methodology for localization of Indian number plates. And then features of number plates are used to find the probable number plate locations. The major sources of error were the tilt of the number plate, the non-English script and extreme variation in the dimensions of the characters. Zyad Shaaban[6] proposed three stages: detection and extraction of a license plate area by video camera segmentation of the plate characters and digits and character and digit recognition. It has the problem of recognizing the colour of plates and the old types of plates. Cosmo H. Munuo[7] uses the steps, license plate; localization, sizing and orientation, normalization, character recognitions and geometric analysis. There are some other papers which are listed below.

TABLE 1: COMPARISON TABLE AMONG VARIOUS RESEARCH WORK

Sr. No.	Year of Publication	Author	Paper Title	Methods	Research Gap
1.	2012	Arulmozhi, K. Centre for Inf. Technol. & Eng., M.S. Univ., Tirunelveli, India Perumal, S.A.; Siddick, A.; Nallaperumal, K.	Image enhancement techniques on Indian license plate localized image for improved character segmentation	Using LPR algorithms consists of three steps 1)location of license plate 2)segmentation It also use skew technique ,Adaptive threshold ,Otso threshold	It only works on the image modification. There has no discussion on character recognition.
2.	2011	VinhDu Mai; Dept. of Comput. Sci. & Technol., Tongji Univ., Shanghai, China ; Duoqian Miao ; Ruizhi Wang ; Hongyun Zhang	An improved method for Vietnam License Plate location	Morphology operation on grayscale image, image subtract operation on grayscale image, image binarization based on threshold, edge detection use Canny operator, morphology operation on binary image, finding the license plate (LP) angle & rotating LP based Radon transform and bilinear interpolation, and then cutting exactly license plate region based on measuring properties of Vietnam license plate regions	It only works on image of license plate. It does not tell the various size of character recognition of image of license plate
3.	2013	Jinn-Li Tan ; ECE Dept., Univ. Teknol. Malaysia, Skudai, Malaysia ; Abu-Bakar, S.A.R. ; Mokji, M.M.	License plate localization based on edge-geometrical features using morphological approach	Gaussian operation followed by Sobel vertical edge mask. Prior to that, gamma correction is applied to increase the detection of edges. morphological operations and calculate geometrical features of these regions and use rule-based classifier to correctly identify the true plate region.	It does not discuss about character recognition
4.	2009	Kulkarni, P.; Dept. of Electron. & Telecommun., Univ. of Pune, Pune, India ; Khatri, A.; Banga, P.; Shah, K.	A feature based approach for localization of Indian number plates	A two-step approach for localization is presented. In the first step, the features of characters are used to find the probable characters locations. In the second step, the features of number plates are used to find the probable number plate locations	The major sources of error were the tilt of the number plate, the non-English script and extreme variation in the dimensions of the characters, which can be aptly removed by enhancing the approach further.
5	2010	Babu, C.N.K.; C. M. S. Coll. of Eng., CMS Nagar, Namakkal, India ; Siva Subramanian, T.; Parasuraman, K.	A feature based approach for license plate-recognition of Indian number plates	Adaptive median filter is applied to remove the noise from the image.	It does not work on double row license plate

### 3. LICENSE PLATE LOCALIZATION AND DETECTION

#### A. Preprocessing

The image is captured using a digital camera. The image file is saved in jpg or jpeg format. The input isolated image is filtered to improve the quality of the image or to reduce the resolution of the image by using filters.

#### B. Edge Detection

Edge detection is a fundamental step in several fields such as pattern recognition, image processing and computer vision and the first step of image analysis and understanding. Edges define the boundaries between regions in an image, which helps with segmentation and image recognition. The classification of edge detection introduced is based on the behavioural study of these edges with respect to the following differentiation operators: Gradient edge Detectors (first derivative or classical), Zero crossing (second derivative), Laplacian of Gaussian (LoG), Gaussian edge detectors, colour edge detectors. In this paper, Prewitt detector operator is used to obtain the edge detection image.

#### C. Plate Extraction

The input image is converted to grey scale. Then the grey scale image is then converted into binary image. Here we use bounding box to take the license plate region. With the proportion of height and width select the license plate region. The following steps:

- Step1: Determine the vertical borders of the rectangle plate by applying the horizontal run length on edged binary image. Then the vertical run length encoding is applied.
- Step2: Determine the vertical borders of the rectangle plate by applying the vertical run length on edged binary image. Then the horizontal run length encoding is applied.
- Step 3: Apply the vertical and horizontal histograms on the images obtained from step 1 and 2

#### D. Normalization

There are several methods to compute the skew angle for the vehicle license plate: horizontal skew, vertical skew and combination of both horizontal and vertical skew. We have the skew detection operation and element the skew angle.

#### E. Segmentation

The plate image determined using the above steps is converted into binary image. Then bounding box operation is done on the binary image and segments the characters in separate box. Each box is then resized into the same size of template images.

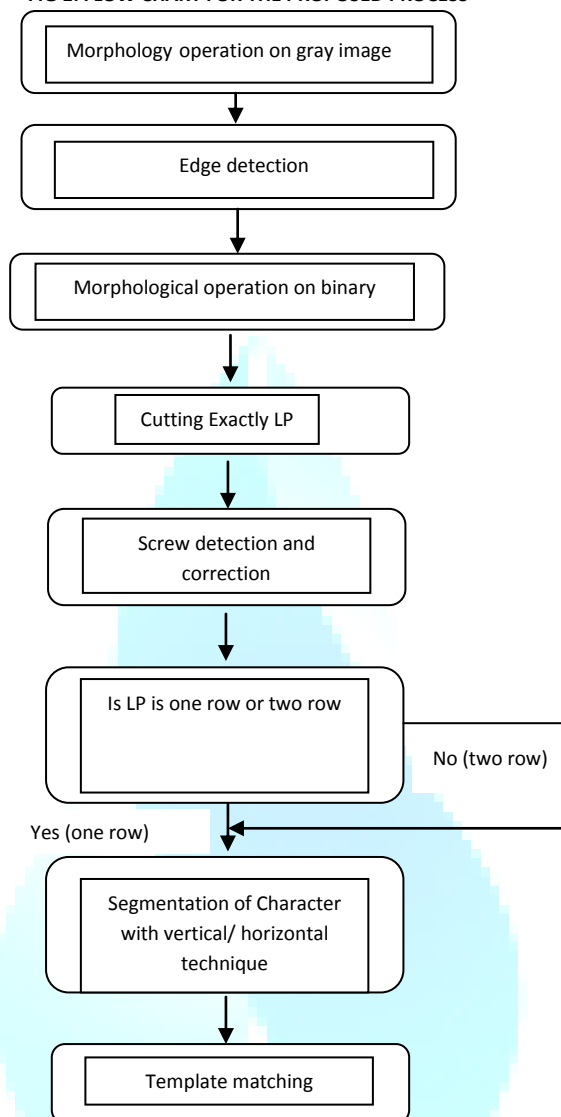
#### F. Template matching

Normalized character image compare with each template character image and find correlation between segmented character and template character. Selecting the most relevant image and write into text file.

### 4. PROPOSED WORK

License plate detection and recognition is an image processing technology and it is a very important field of research. It identifies the vehicle with their license plate number. It keeps the huge data of the vehicles without any human interaction. Basically this work can be consists of four phases:-Pre-processing of image, number plate extraction, character segmentation, character recognition. The proposed work can be shown through a flow chart as below:

FIG 1: FLOW CHART FOR THE PROPOSED PROCESS



## 5. CONCLUSION

On the basis of literature survey we have taken some problem which were not yet solved. In this paper we tried to solve those problems. On the basis of the proposed algorithm we can solve the existing problem

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# AN ANALYTICAL STUDY ON DIMENSIONS OF TRAINING & DEVELOPMENT AND ITS IMPACT ON ORGANISATIONAL EFFECTIVENESS WITH REFERENCE TO SELECTED IT COMPANIES IN BANGALORE

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## ABSTRACT

*The study is aimed at analyzing the dimensions of Training and Development and its impact on organizational effectiveness and productivity in selected IT Companies in Bangalore, Karnataka. Study also examines the utilization, purpose, difficulties and satisfaction level of respondents, based on survey and statistical tools administered to the study. It explores the impact analysis of Training and Development on Organisational effectiveness that can benefit the IT industry to accept the new learning culture to facilitate the users and benefit by expanding their knowledge horizon and enhanced competency. Further the study suggests the need to provide training a new approach for the Organisational effectiveness, so that the IT industries use the appropriate facilitation tools and techniques of training to obtain required productivity and output effectiveness. The study aims at establishing correlation between training organizational effectiveness and productivity with special emphasis on selected IT companies in Bangalore. Researchers have administered SPSS statistical tool to evaluate the relationship between the training initiatives and the amount of Organisational effectiveness derives on each initiatives pounded on each occasion.*

## KEYWORDS

training & development, organizational efficiency, productivity, IT Companies, Karnataka.

## 1. INTRODUCTION

Training is the process for providing required skills to the employee for doing the job effectively, skillfully and qualitatively. Training of employees is not continuous, but it is periodical and given in specified time. Generally training will be given by an expert or professional in related field or job.

Training is required at every stage of work and for every person at work. To keep one updated with the fast changing technologies, concepts, values and environment, training plays a vital role. Training programmes are also necessary in any organisation for improving the quality of work of the employees at all levels. It is also required when a person is moved from one assignment to another of a different nature. Taking into account this context, this unit aims at providing insight into the concept, need and methods of training, also areas of evaluation of training, retraining and dimensions of organisational learning. Training is a process of learning a sequence of programmed behavior. It is the application of knowledge & gives people an awareness of rules & procedures to guide their behavior. It helps in bringing about positive change in the knowledge, skills & attitudes of employees. Training is investment in getting more and better quality work from your talent.

Training both socially, physically and mentally are very necessary in facilitating not only the level of productivity but also the achievement of organizational plans and strategy.

The aim of training and development programs is to improve organizational capabilities and employee ability. When the organization invests in improving the skills and knowledge for its employees, the investment will lead to more productive and effective employees. Successful Training and development programme focuses on employee performance or team performance.

## 2. REVIEW OF LITERATURE

Employee training and development does not entail only obtaining new abilities, skills and knowledge but also the possibility to promote entrepreneurship, initiate employees to changes, encourage the changes of their attitude, introduce the employers to important business decisions and involve them actively in the process of decision making within the context of learning organisation, it is not sufficient for the worker only to add value to the organization based on his knowledge but he also has to receive knowledge. He gives as much knowledge as he receives. Organizations that invest in the training and development of their employees reap many benefits. But so do employees and the society in which they live.

**Oatey (1970)** Training improves a person's skill at a task. Training helps in socially, intellectually and mentally developing an employee, which is very essential in facilitating not only the level of productivity but also the development of personnel in any organization.

**Yoder (1970)** Training and development in today's employment setting is far more appropriate than training alone since human resources can exert their full potentials only when the learning process goes for beyond the simple routine.

**Hesseling (1971)** Training is a sequence of experiences or opportunities designed to modify behavior in order to attain a stated objective.

**Kane (1986)** if the training and development function is to be effective in the future, it will need to move beyond its concern with techniques and traditional roles. He describes the strategic approaches that the organization can take to training and development, and suggests that the choice of approach should be based on an analysis of the organization's needs, management and staff attitudes and beliefs, and the level of resources that can be committed. This more strategic view-point should be of use in assessing current efforts as well as when planning for the future.

In the empirical research conducted by **Watad & Ospina (1999)**, they identified the establishment and implementation of training and development. Found that training and development programmes should be based on training needs identified by their analysis, that money and time invested in training and development should be related or linked to the mission or core business strategy of the organization.



**Oribabor (2000)** submitted that training and development aim at developing competences such as technical, human, conceptual and managerial for the furtherance of individual and organization growth.

**Isyaku (2000)** postulated that the process of training and development is a continuous one. Man is dynamic in nature, the need to be current and relevant in all spheres of human endeavors make staff development a necessity, to keep track with current event and methods.

According to **Wright & Geroy (2001)**, employee competencies change through effective training programs. It not only improves the overall performance of the employees to effectively perform the current job but also enhance the knowledge, skills and attitude of the workers necessary for the future job, thus contributing to superior organizational performance. Through training the employee competencies are developed and enable them to implement the job related work efficiently, and achieve firm objectives in a competitive manner. Further still, dissatisfaction complaints, absenteeism and turnover can be greatly reduced when employees are so well trained that can experience the direct satisfaction associated with the sense of achievement and knowledge that they are developing their inherent capabilities.

### 3. BACKGROUND OF THE STUDY

The link between training and an organization's effectiveness is strongly supported by research. Researcher has found that companies that invest more in training have higher revenues, profits, and productivity growth than firms that invest less in training. A review of research on training and organizational effectiveness found that training is positively related to human resource outcomes (e.g. motivation, behaviours, employee attitudes,), organizational performance outcomes (e.g. performance and productivity), and to a lesser extent productivity.

### 4. RESEACH METHODOLOGY

This section deals with description of study procedures and the methods employed in the study. Areas covered include the research design, population, sample and sampling techniques, data collection procedures and analysis.

#### 4.1 PROBLEM STATEMENT

To study the impact of Training and Development on organizational Efficiency and productivity with special reference to selected IT Companies in Bangalore.

#### 4.2 OBJECTIVES OF THE RESEARCH

The main objective of this research is to study the impact of Training and Development on organizational Efficiency and productivity.

The specific objectives are as follows:

1. To Study the type of training received and its impact on employee satisfaction with training for employees of selected IT industry
2. To Study the length of training will positively impact satisfaction with training for employees in the IT industry.
3. To Study the relationship between leadership and team building with job satisfaction of employees in the IT industry.

#### 4.3 RESEARCH QUESTIONS

1. What account for the low support for impact satisfaction positively with training for employees in IT industry.
2. What actions are necessary to get the support for impact satisfaction positively with training for employees in IT industry.
3. Is there any link between good training with Organisational efficiency?

#### 4.4 RELEVANCE OF STUDY

The significance of the study is to:

1. Improve understanding of the role of training and development in the achievement of organizational objectives in IT Companies in Bangalore.
2. Add to literature on organizational effectiveness in IT Companies.

#### 4.5 POPULATION OF THE STUDY

Population refers the group about whom the researcher wants to know more and from whom a sample will be drawn. This is often defined in terms of demography, geography, position, designation, need for training, frequency of attending training etc.

IT Companies in Bangalore are considered as major group for selecting respondents to the Study. 48 respondents from selected three companies who designed training programme for the employees and to groom them for future roles.

The targeted population for the study thus includes middle level managers, team leads and all heads of the various departments at the different level of heirarchy.

#### 4.6 SAMPLE AND SAMPLING TECHNIQUE

A sample size is a finite part of a statistical population whose properties are studied to gain information about the whole. When dealing with people, it can be defined as a set of respondents (people) selected from a larger population for the purpose of a survey (Neuman,1997).

The researcher adopted both the Survey and Purposive sampling technique. The survey sample technique ensured that each member of the targeted population has equal chance of being selected. Under the purposive or judgment sampling technique, the researcher purposively draws a sample from the population which he thinks is a representative of the population.

#### 4.7 DATA COLLECTION

Because the study focuses more on Training and Development of IT employees, the importance of primary data is evident; here the views of respondents will be sort direct. Initial visit to the IT Companies was to introduce T & D, familiarize researcher with the Objectives of Training as well as to seek their consent for the study.

#### 4.8 SCOPE (DELIMITATION)

Dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies. However, this study is limited to selected to IT Companies in Bangalore. This is due mainly to proximity, time and financial constraints in carrying out this research.

#### 4.9 LIMITATIONS OF THE STUDY

1. The researcher had to understand the timing of training and trainers approach to reach out the respondents to elicit the responses for the research.
2. To carry out the research simultaneously and continually, researcher was not pre-financed and time to facilitate data collection and analysis.

### 5. ANALYSIS AND DISCUSSIONS

Impact of training and development on organizational effectiveness and productivity in IT Companies emerged as the most critical workforce challenges in the present competitive modern organizations. The problem of training and development on organizational efficiency and productivity in IT Companies has become even more pronounced in Indian IT industry. Organizations devote more resource and time on retaining existing talented employees. The critical issues in training and development on organizational effectiveness and productivity in IT Companies assess the various influencing factors that IT Employess need to address in future.

The following Table - 1 shows the identified factors of training and development on organizational effectiveness and productivity in IT Companies:

TABLE – 1: FACTORS INFLUENCING TRAINING AND DEVELOPMENT ON ORGANIZATIONAL EFFICIENCY AND PRODUCTIVITY IN IT COMPANIES

Sl No	Factors
1	Employee counselling
2	Conflict mediation
3	Team building
4	Crisis management
5	The art of coaching
6	Career counselling
7	Leadership skills

**ANOVA**

Impact and influence of **dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies.**

H<sub>0</sub>: There is no significant (statistically) difference in rank orders/ preferences of respondents between 48 responses of respondents with respect to dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies.

H<sub>1</sub>: There is a significant (statistically) difference in rank orders/ preferences of 48 responses of respondents with respect to dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies.

TABLE 2: MEAN, STANDARD DEVIATION AND TEST STATISTICS OF DIMENSIONS OF TRAINING &amp; DEVELOPMENT AND ITS IMPACT ON ORGANISATIONAL EFFECTIVENESS WITH REFERENCE TO SELECTED IT COMPANIES

No.	Descriptive Statistics			Test Statistics <sup>a,b</sup>	
	Factor	Mean	SD	Asymp. Sig.	Decision
TD_1	Employee counselling	4.86	0.47	0.314**	Not Sig
TD_2	Conflict mediation	4.85	0.49	0.319**	Not Sig
TD_3	Team building	4.13	0.45	0.310**	Not Sig
TD_4	Crisis management	4.15	0.46	0.349**	Not Sig
TD_5	The art of coaching	4.17	0.40	0.355**	Not Sig
TD_6	Career counselling	4.59	0.38	0.398**	Not Sig
TD_7	Leadership skills	4.87	0.49	0.363**	Not Sig

**Interpretation**

From the above Table 1, the mean of TD\_1,TD\_2,TD\_3,TD\_4,TD\_5,TD\_6 & TD\_7 which indicate that the respondents are in agreeableness with the factor **dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies**, as the values are almost nearer to the response 'Strongly Agree'. Moreover, the standard deviation for all the statements TD\_1, TD\_2, TD\_3, TD\_4, TD\_5, TD\_6 & TD\_7 are in the range of 0.45 indicate that the there is not much deviation from the responses as expressed by the respondents with respect to the agreeableness of the factor **dimensions of Training & Development and its impact on Organisational Effectiveness with reference to selected IT Companies**.

**CHI – SQUARE TEST**TABLE – 3: CONSOLIDATED RESULTS OF  $\chi^2$  TEST

Variable	Relative Factors	$\chi^2$ Value
TD_1	Employee counselling	34.39
TD_2	Conflict mediation	32.63
TD_3	Team building	11.28
TD_4	Crisis management	15.13
TD_5	The art of coaching	10.63
TD_6	Career counselling	31.92
TD_7	Leadership skills	39.65

**Critical Value for all the factors is 4.957 and the Degree of Freedom is 2**

In order to find the relationship between the selected independent variables such as Employee counselling, Conflict mediation, Team building, Crisis management, the art of coaching, Career counselling, Leadership skills sufficient resources and Organisational support have been taken into consideration for analysis. Since the study centers on the dependent variable i.e., the training and development variables respond to Organisational effectiveness, a chi-square test was employed and some of the results of the test are shown in Table - 3.

As mentioned earlier, an attempt has been made to analyze the relationship between the independent variables and the dependent variable. For this purpose the respondent's feedback has been classified based on training dimensions viz, Employee counselling, Conflict mediation, Team building, Crisis management, the art of coaching, Career counselling, Leadership skills.

**FINDINGS**

Findings of the study:

- 81% of the respondents see the influence of T&D in expanding in the immediate future (3 years)
- 50% of the respondents believe their training offerings will grow in the next two years
- Virtual learning is set to take center stage, with eLearning (85% will offer it), collaborative training (67%) and online (63%) being the formats identified as necessary for success
- 87% agreed/strongly agreed that the majority of learning will be collaborative going forward
- All respondents agreed/strongly agreed that learning in the future will be done in short timeframes, using 'micro modules' to provide more focused learning and achieve better results

**SUGGESTIONS**

- 1) High morale – employees who receive training have increased confidence and motivations;
- 2) Lower cost of production – training eliminates risks because trained personnel are able to make better and economic use of material and equipment thereby reducing and avoiding waste;
- 3) Lower turnover – training brings a sense of security at the workplace which in turn reduces labor turnover and absenteeism is avoided;
- 4) Change management – training helps to manage change by increasing the understanding and involvement of employees in the change process and also provides the skills and abilities needed to adjust to new situations;
- 5) Provide recognition, enhanced responsibility and the possibility of increased pay and promotion;
- 6) Help to improve the availability and quality of staff.

**CONCLUSION**

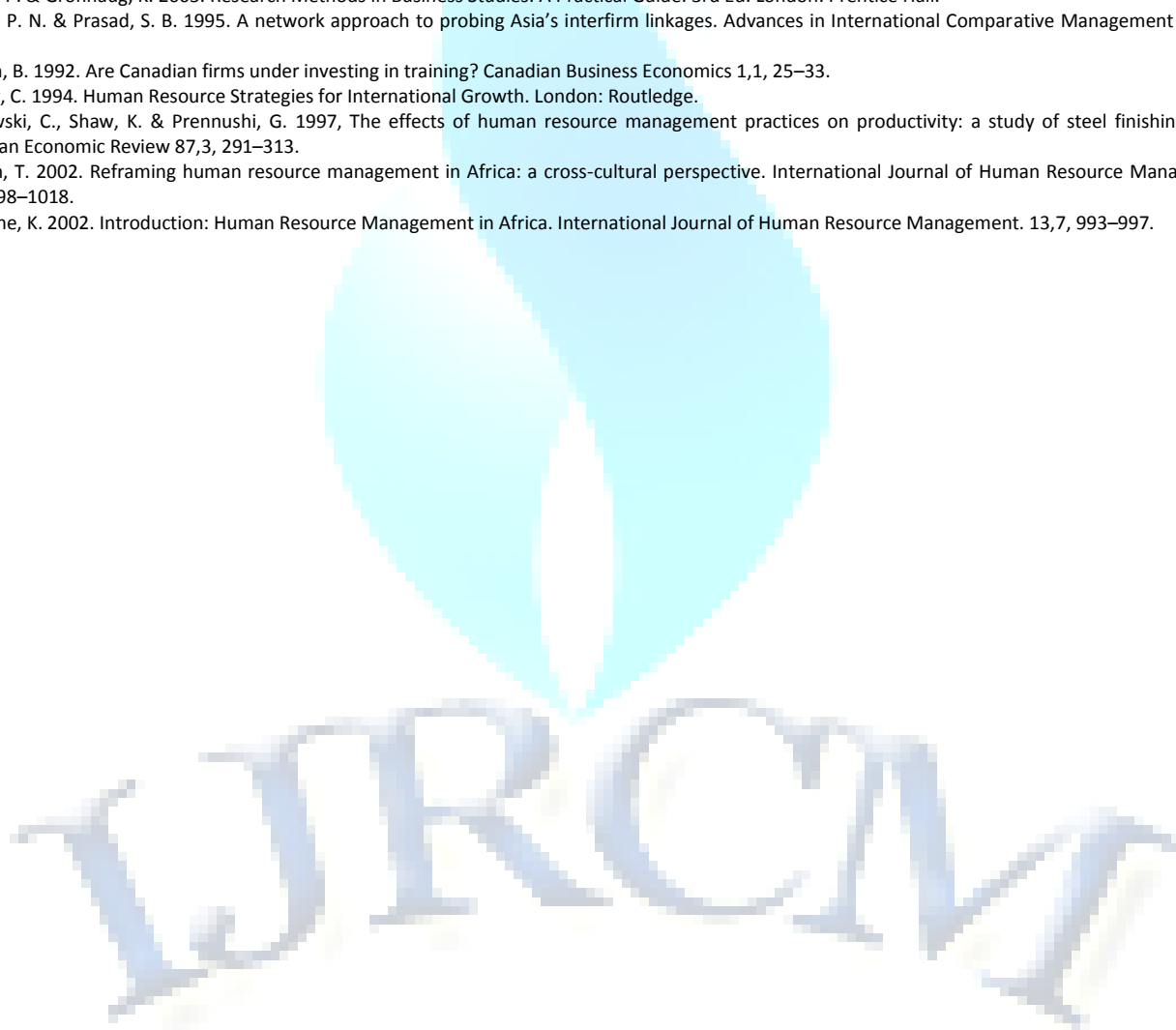
Companies today are forced to function in a world full of change and complexity, and it is more important than ever to have the right employees in order to survive the surrounding competition.

Employee counselling, Conflict mediation, Team building, Crisis management, The art of coaching, Career counselling and Leadership skills do have greater impact and application on employees day to day work in the organisation.

It is possible that employee responses could vary based on geographic location, nature of training content received, impact of leadership, application of knowledge at work. While the focus of this research was to study the role of training, incentives, and benefits received by IT employees on job commitment, it is possible that other factors including relationship with supervisors, availability of mentors, job enrichment opportunities, and opportunities to meet professional and social needs of employees could particularly impact commitment among IT Employees.

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**EMPOWERING CHILDREN WITH SPECIAL NEEDS THROUGH ASSISTIVE TECHNOLOGY IN THE CLASSROOM**

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**ABSTRACT**

A person with disabilities is viewed as the "weaker, helpless and inferior part" of the society but one forgets that they are still a "vital part" of our existing society. Most people have predispositions about disabled person or a child with special needs and highlight the incapacities rather than thinking about their strengths. These individuals with disability have foregone the misery and dependency centuries ago, with new technology and assistive devices they have regained their status in the society. Assistive Technology (AT) device is used just as normal as a non-disabled person use new machines and technology for his convenience. Once the thought of attaining education seemed impossible for the special needs child, but today Assistive Technology has broken all the barriers and has provided equal opportunity for each individual. The present study tries to understand how the Assistive Technology devices have empowered the child with special needs and analyse the impact over their need for academic skills. It also evaluates the performance of the Child with Special Needs who is learning in the inclusive schools or special schools with the help of assistive devices. The present study has shown that the Children with special needs in both the schools (Inclusive and Special) realized the positive effect of Assistive Technology device in their academic functioning and other activities as well. The result suggests that children with special needs, teachers and parents are aware and has accepted the use of Assistive Technology devices and modified curriculum integrated with Assistive Technology devices to experience the overall positive development of the child with special needs.

**KEYWORDS**

Disability, Assistive Technology, Children with special needs.

**INTRODUCTION**

Disability is a term referred to a condition of a person who is undergoing restriction in his physical, social, psychological, cognitive, emotional and developmental process of his life. The hindrance in these processes is the result of some impairment in the body function and structure. According to Disability World Health Organization "A disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. An Impairment is a problem in body function or structure; an Activity Limitation is a difficulty encountered by an individual in executing a task or action; while a Participation Restriction is a problem experienced by an individual in involvement in life situations. Thus disability is a complex phenomenon, reflecting an interaction between features of a person's body and features of the society in which he or she lives." There are various types of disability and range of disability, some are visible and some are hidden disability, According to the person with disabilities (equal opportunities, protection of rights and full participation) Act, 1995, "person with disability" means a person suffering from not less than forty per cent of any disability as certified by a medical authority and there are seven types of disabilities: Blindness, Low vision, Leprosy-cured, Hearing impairment, Locomotor disability, Mental retardation and Mental illness. The national trust for welfare of persons with autism, cerebral palsy, mental retardation and multiple disabilities Act, 1999 covers the following disabilities: Autism, Cerebral palsy, Mental retardation and Multiple disabilities.

A person without any disability is able to perform any activity of daily living satisfactorily and has opportunity to obtain food, shelter, social needs, education and employment independently without the physical support of others but a person with disability is declined from the prospects of accomplished life due to his condition which do not meets the required ability of a non-disabled person. These functional deficits inhibit the person with disability and he may go through social and psychological trauma, distress and depression. In such circumstances Child with Special Needs requires more attention and support to perform activities ranging from daily life activities to fulfilling educational needs. The person with disabilities (equal opportunity, protection of rights and full participation) Act, 1995 has given the responsibility to the members of the society to give equal opportunity to persons with disabilities for their full participation in everyday life. General teachers and special educators have also initiated to provide modified teaching aids and study materials for the children who face learning problems. The impact of technology on education has been commendable. Assistive Technology devices are now an integral part of Special schools as well as Inclusive schools; it has been adapted well into the classroom. This advancement has helped the students to work upon their deficit and gain interest on improving their academic skills. With the easy access of Assistive Technology it has become easier for the children with special needs to attain higher education and get vocational training as well to earn their livelihood. The Assistive Technology for the disabled has contributed immensely and made education accessible by bridging the gaps between the schools and the Children with special needs. With the use of Assistive Technology the Modification of the environment is possible by converting it into a barrier free environment for the person with disability. A student with special needs who uses assistive device now performs task quickly, easily and most important independently. Such benefits of the Assistive Technology also brings along adaptation and modification to their curriculum which will enhance the calibre work. The need of Assistive Technology for the child with disability is understood by the special educators, teachers, parents and professionals; thereby it increases the opportunities for better education, social interactions, and also potential for meaningful employment. It also supports the child with special needs to regain knowledge in the least restrictive environment. A combination of special education along with support of assistive devices gives quality education to these children and encourages them to not to confine themselves to their inabilities.

**ASSISTIVE TECHNOLOGY DEVICES AS A BOON**

According to Individuals with Disabilities Education Act (IDEA), 1997 Assistive technology is defined as any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain or improve functional incapacities of children with disabilities. There are various assistive devices which have been launched up till now to perform broad spectrum of activity and execution of task. Government and Private Manufacturing companies have launched different ranges and types of disabilities which are individualistic and suitable for all kinds of disabilities. In the classroom with the help of special educator and the resource person the Children with special need can easily get adapted to the assistive devices to fulfil their



educational requirement. An assistive device helps and improves the functioning and performance of the Children with special need in the classroom. The devices used can be complex or simple depending upon the need of Children with special need. The main aim of providing assistive devices to Children with special need in the classroom is to support them and encourage them to perform efficiently. The range of devices available for Children with special need is broad and they are always assessed for their readiness to accept the devices in their lives. Assistive Technologies are the tools and strategies that act to liberate the use of technology for all students as well as to provide new ways to "assist" interactions and learning. They act to "augment abilities and bypass or compensate for a disability" (Lewis, R.B, 1994). The National Dissemination Centre for Children with Disabilities suggest that Assistive Technology enables children with disabilities to participate more fully in all aspects of life (home, school, and community) and helps them access their right to a —free appropriate, public education|| in the —least restrictive environment. The benefits of Assistive Technology are that it encourages the Children with special needs to participate in social interaction, has equal opportunity to attain education, and gain vocational training for employment. It enhances their performances not only in the class but also outside the classroom. Depending upon individual Children with special needs an Individualised Education Programme (IEP) is prepared and sees for the need of assistive devices for them. The need of Children with special needs varies and to follow the efficiency of the assistive devices one must see if it is helpful in improving Reading, writing spelling, Mathematical computation, Written expression, organization, Communication, Mobility, Recreational activities, co-curricular activities, Seating/positioning, Seeing, hearing, Self-care, Levels of independence, Cognitive processing.

## LITERATURE REVIEW

The present study was conducted to evaluate effectiveness and acceptance of Assistive Technology among the children with special needs in the Inclusive schools and Special Schools. Many researchers on disability has been done which has emerged with an idea and based their research on the relation between Assistive technology and its effect on Children with special needs. Such thinking was conceived by Terence W. Cavanaugh Author of Assistive Technology and Inclusion, in his study he explained "Assistive Technology devices can decrease student's isolation and allow them to become part of regular subject area classrooms." The intervention in the special and inclusive school has empowered the children with disability; it has helped the parents to regain their hope in their special needs child. Today special schools and inclusive schools have started including Assistive Technology devices to improve teaching level and student's performance level. Due to the massive development of Assistive Technology devices in education sector, in American states it is required to give specific instruction for all teachers in Assistive Technology. Further, the council for exceptional children has assembled a panel of experts and generated a list of assistive technology competencies that every teacher of students with learning disabilities should master (Lahm & Nickels, 1999). The use of Assistive Technology in classroom does not limit itself to reading writing but also helps in other developmental domains such as daily organization, communication, co-curricular activities, mobility, seating and positing, seeing, hearing, participating in group discussion, level of independence etc. Apart from these inside the classroom activities Assistive Technology which are used for mobility and positioning helps Children with special needs to atleast step out of their house and reach schools and further it is the responsibility of the schools to guide them and provide them with technology which will be used for learning in the classroom. With the increasing emphasis on assistive technology in the schools, teachers must ensure that all students-including those from ethnically diverse background or poorer students-have ready access to assistive technologies that will enhance their learning (Brown, Higgins, & Hartley, 2001). To make education accessible and easy, many Assistive Technologies has been identified and launched by the researchers. Several theorists have discussed the utilization of speech recognition systems to enhance (or in some cases facilitate) a student's written language (Raskind & Higgins, 1998; William, 2000). Assistive Technology is meant for replacing inability and difficulties caused due to impairment in the person and lead their lives to less complexities and restrictions in participation; therefore Assistive Technology must be part of early intervention programme for the Children with special needs. Assistive Technology affords many young children with disabilities with the necessary learning supports to learn and achieve, especially with regard to developing emergent literacy skills that provide the foundation for later success when entering public schools (Parette, Stoner, watts, & Wojcik, 2006).

## OBJECTIVES

The main objectives of the study are following:

1. To know the types of the disabilities in the inclusive schools and special schools of Delhi.
2. To know the availability of Assistive Technology devices in both the schools of Delhi.
3. To know the use and acceptability of Assistive Technology devices among the children with special needs.
4. To know the awareness of various Assistive Technology devices among te children with special needs.

## RESEARCH METHODOLOGY

### SAMPLE

The sample for the current study constitute of children with special needs, special educator, teachers, parents and principle. The study was conducted over two special schools namely National association for the blind and Tamana special school and only one Inclusive school namely Akshay Pratishthan which are all located in Delhi. The sample was randomly selected and brief information was given regarding the study. The research was managed through a comprehensive and elaborative visits and meetings to the three schools on different occasions.

### TOOLS

A qualitative approach is utilized to gather information and understanding through Interview, Observation and Written materials (IEP and Case report). The responses will be coded under the same theme which includes responses from interview and observation; thorough intensive reading of case report and Individualized Education Program (IEP) will be done. Tools used in the present are Observation method (Participant and non-participant), Interview (Formal and Structured Interview of teachers, principle and special educator, parent and children with special need) and written materials (Individualized education programme and Childs case report).

### PROCEDURES

Researcher was engaged in the Non-Participant method were adopted for observation and then gradually starts with participant observation method. The responses were recorded in writing. Both the methods of observation were recorded separately and for 30 minutes each. The method participant observation gives in personal first-hand information and experience which was needed the most to know the different disability and what teaching learning materials along with Assistive Technology has been implemented in the classroom. Then participants were engaged in the semi structured interview and it was entirely conducted within the school campus. Furthermore it was necessary to include information from the official documents such as each Child with Special Needs' case report and Individualized Education Program (IEP). After interviewing the participants the researcher asked for the case report and Individualized Education Program (IEP) of 10 children with special need from the academic coordinator to go through it and evaluate the past and current position of the children with and without Individualized Education Program (IEP) devices. All the records and data obtained from observation, interview method and the materials from the schools were evaluated and the responses were coded accordingly for the analysis

## ANALYSIS AND INTERPRETATION

Content analysis was performed for this qualitative research study. Multiple levels of coding was done and grouped under common themes.

### CODE 1. CHILD WITH HEARING IMPAIRMENT AND ASSISTIVE TECHNOLOGY DEVICE USED

Interpretation of combined result from interview, observation and official material: The three major classroom factors to be considered while teaching hearing impaired child are Vocal volume, listening distance, and background noise. Initial stage the non-participant observation reports that the children with hearing impairment in the inclusive school are trying to cope up with the general classroom environment. They are seated nearest to the teacher and while intervening through participant observation it was realised that teachers uses the total communication approach for teaching. With the help of hearing aids supplemented



with lip reading, signs, finger spelling, cues, mime it provides effective learning. Children with special need uses Assistive Technology devices such as pocket size hearing aids, ITC, CIC for hearing and it has been very beneficial for them. While taking interviews we came know that at the early stage of their lives many of the children with special need couldn't manage the hearing aids and refused to use it but now after regular support and training given by the special educator and audiologist the children with special need has accepted the devices and has improved their attention, retention, social interaction and grades in the class. The written materials such as Individualized Education Program (IEP) were prepared for them and the information from it suggested that the hearing aids for children with special need were recommended on the individual needs as it varies from child to child and those has hearing aids has been a positive impact on all the functional activities of the children with special need. Case report has given an idea about the status of the children with special need in the past and which has benefited in comparing it with current status of each child with special need. It shows that maximum number of children with special need has improved majorly and has been regular in school.

#### **CODE 2. CHILD WITH VISUAL IMPAIRMENT AND ASSISTIVE TECHNOLOGY DEVICE USED**

Interpretation of combined result from interview, observation and official material: The child with visual impairment included blindness and low vision. During the non-participant method it was observed that the special educator manages 3-4 students at a time to give them individual attention. Each child with visual impairment had their own assistive devices such as braille writing with stylus, Taylor frame, and abacus. In the participant observation researchers realise that to use the Assistive Technology device one must have readiness for it. A child with special need who scores well on writing readiness has better performance on braille learning. It seems very tough to handle the braille but after interviewing the children with special need and special educators it was known that learning to use assistive devices is just normal as when the non-disabled tries to learn something new. For the children with special need those assistive technologies are the primary requirements as it simplifies everything for them. Individualized Education Program (IEP) suggested to them has the regular curriculum and modified NCERT curriculum which means content has transformed into braille script for children with special need. Other Assistive Technology devices for child with visual impairment are magnifier, spectacles, enlarged text on computers, braille books and papers, talking books, computerized braille embosses and printers, Arithmetic and algebra frame, raised maps, charts and globes. With the proper usage of these Assistive Technology devices the children with special need of both inclusive schools and special schools has benefited and improved their academic skills. Case report of individual child with special need shows drastic improvement from the time of admission and the current position.

#### **CODE 3. CHILD WITH MENTAL RETARDATION AND ASSISTIVE TECHNOLOGY DEVICES USED**

Interpretation of combined result from interview, observation and official material: In the inclusive school while engaging in the non-participant observation it was seen that children with mild mental retardation are a part of inclusive education through NIOS they can give 10<sup>th</sup> class board examination and children with profound and severe mental retardation they are given training of functional academics- literacy and numeracy which of functional utility. During the participant observation it was understood functional academics are referred to literacy and numeracy skills includes reading, writing and basic mathematical computation. One of the Assistive Technology devices used by the children with special need is computers which improve literacy, language development, mathematical, organizational, and social skill development, this technology benefits everyone. Through Interview it was known that an Assistive Technology device has helped children with mental retardation overcome barriers towards independence and inclusion. Individualized Education Program (IEP) was made for each child with special need and has planned separate assistive devices for reading purposes the special educator suggested books on tape, picture/print stories, line marker, and for writing purpose pencil grip, raised lined paper; adapted writing tool, tactile paper alternative keyboard, templates of letters and words, tape-recorder. While going through case report of children with mental retardation it came across that initially parents and children with special need were not eager to send them for attaining education but after looking at their improvement due to use of assistive technology, children with special need and their has shown positive feedback and are always ready to participate in every school activities.

#### **CODE 4. CHILD WITH MULTIPLE DISABILITIES AND ASSISTIVE TECHNOLOGY DEVICES USED**

Interpretation of combined result from interview, observation and official material: During non-participant observation in the inclusive schools and special schools the some children with special need tackles with more than one disability, it can be sensory associated with physical impairment. With the use of Assistive Technology it becomes easier for those children to handle both the impairment at a single time and also acquire academics skills. When in participant observation researcher set in the classroom with the child who has locomotor impairment and uses assistive device wheelchair for mobility and accompanied with low vision and device used was spectacles. It was observed that wheelchair user was given sufficient space for mobility, and to attain education the combination of two or more assistive device were used efficiently by the child with multiple disabilities. While taking interview the responses indicated that; to accomplish the goals of educational needs children with special need are satisfactorily coping with their disabilities with the help of Assistive Technology devices. Individualized Education Program (IEP) shows the individual requirement of assistive devices and has planned devices in a way which has brought improvement in almost all the academic skills. Case report has also enabled us to compare the children with special need performance before and after, which currently showed the children with special need has been continuously improving.

### **DISCUSSION**

The Children with Special Need in both the schools (Inclusive and Special) realized the positive effect of Assistive Technology device in their academic functioning and other activities. They have understood the advantages of accepting the assistive devices because they now know it has given them equal opportunity to anticipate in the curriculum as well co-curriculum activities, initiated independent participation and increase the probability of higher education by declining the limitation and restriction caused by disability.

### **SUGGESTIONS**

It is believed that any research based on any field of studies gives opportunity for further research. The researcher suggests the following guidelines which can undertake for further researches:

1. The present study is not quantitative based research and does not give any numerical data for analysis. Hence, more comprehensive study can be conducted by the use of many tools and techniques for data collection.
2. Due to short span of time, it is not possible to administer the test on a large sample, so the present study was administered on one inclusive school and two special schools. Further studies can be conducted on the whole region of Delhi's special school and inclusive school.
3. The study showed the effect of Assistive Technology among the children with disability in the classroom so it can also be undertaken in the home setting and outside classroom. The test can be changed according to the age of the students.
4. The present study can also be undertaken in a comparative form for inclusive school and special school.
5. The present study can also be undertaken in a comparative form for boys and girls with special needs.

### **EDUCATIONAL IMPLICATION**

1. By establishing a relationship between the parents of the Children with Special Need and Children with special need, the parents can train themselves to use Assistive Technology to give proper guidance to their Children with special need
2. Special educator can arrange and give suggestion to parents of Children with special need or care givers to modify the devices usable by a disabled child.
3. Special educator must also pay a special attention in developing the readiness among the Children with special need to work and play along Assistive Technology devices.
4. Parents of Children with special need are suggested to help and guide their Children with special need to accept and learn to handle the Assistive Technology devices without the support of others so that Children with special need can work independently even when they are not around like in classroom setting.

**CONCLUSION**

This study unravels the before and after mind-set of the child with disability in the classroom using assistive technology. It can be concluded that the objectives of the study is met successfully. The current research has to say that students with or without disability deals with various challenges but with the help of Assistive Technology devices a child with disability can face the obstacles and can overpower it as easily as the non-disabled child. It will take time to get more advanced Assistive Technology but for now children with disability in inclusive or special schools have advantages due to assistive technology. The special schools and the inclusive schools has done a good job in providing Assistive Technology to these children and has motivated them to gain confidence, self-esteem and independent living. Special educator and the professionals (language and speech therapist, audiologist, counsellor, physiotherapist and occupational therapist) have given adequate training to Children with special need and their parents so that they can use the Assistive Technology efficiently.

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## A SURVEY ON HAND GESTURE RECOGNITION

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## ABSTRACT

Hand gesture recognition system can be used for interfacing between computer and human using hand gesture i.e. Human computer interaction (HCI). It is applicable in the areas like virtual environment, smart surveillance, sign language translation, medical system, Robot control and navigation system etc. The recognition is based on computer vision (CV) or using hardware and sensors like data glove. The paper tries to present simple and basic approaches that are used to recognize sign languages like Nepali sign language that uses a single hand for its manual alphabet representation. It elaborates various techniques that are used for hand gesture segmentation or background elimination. Recognized manual alphabet set of Nepali sign language can be further used in system built for learning Nepali sign language for the beginners, translating manual alphabets to text that can be used to understood by a lay man prior to the knowledge of manual alphabet set of Nepali sign language. Manual alphabet is basically used when a gestural representation for a word does not exist. The manual alphabet recognition can be a sub-module of a system that can be designed to find the semantics of the spelled word.

## KEYWORDS

Computer Vision, Nepali Sign Language, Human Computer Interaction.

## INTRODUCTION

In computer science, gesture recognition is used to recognize a movement of part of the body to express an idea or meaning. Hand gestures are form of nonverbal communication, which is either static or dynamic. Hand gesture recognition system captures hand gesture using camera as the input devices, recognizes the gesture and then unfolds its meaning. Sign language recognition is one of the areas of application for hand gesture recognition. Sign language is the representation of the letters of a writing system, and sometimes numeral systems, using only the hands. These manual alphabets (also known as finger alphabets or hand alphabets), have often been used in deaf education, and have subsequently been adopted as a distinct part of a number of sign languages; there are about forty manual alphabets around the world. Historically, manual alphabets have had a number of additional applications - including use as ciphers, as mnemonics, and in silent religious settings. Manual alphabet has been introduced into certain sign languages by educators, and as such has some structural properties that are unlike the visually motivated and multi-layered signs that are typical in deaf sign languages. In many ways fingerspelling serves as a bridge between the sign language and the oral language that surrounds it. Fingerspelling is used in different sign languages and registers for different purposes. It may be used to represent words from an oral language which have no sign equivalent, or for emphasis, clarification, or when teaching or learning a sign language. For example, fingerspelling for consonant set of Nepali Sign language is represented using single hand gesture as shown in Figure 1.

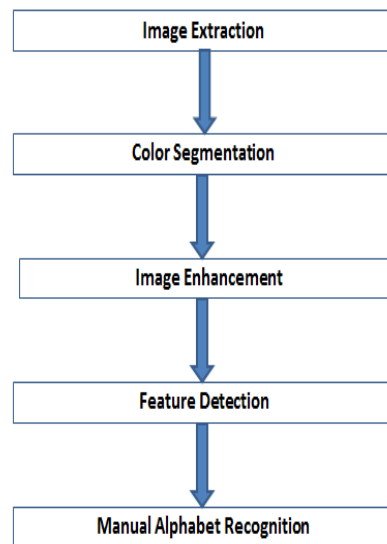
FIG. 1: NEPALI SIGN LANGUAGE FINGER SPELLING FOR CONSONANT



In order to make the human-machine communication more flexible and user friendly automatic hand gesture recognition appears to be the suitable means. Hand gesture recognition system is used to detect, track and recognize a movement of hand through capturing the image that is used to express an idea or meaning of particular event.

It makes use of digital image as input and then recognizes the meaning of that gesture with the application of advanced digital image processing techniques. The steps to recognize the manual alphabet of any sign language is given in figure 2.

FIG. 2: DIFFERENT PHASES OF MANUAL ALPHABET RECOGNITION SYSTEM



The first phase of the recognition starts with image extraction or image acquisition that is the process of extracting the image to be processed. In some of the real time system a still camera is used to capture the video and extract the image from the captured video. Video processing or indexing the video is another broad area in computer vision. For ease of understanding let us conclude by considering that the manual alphabet recognition system takes digital image as an input. Second step is to extract the hand posture from the acquired image for further recognition. Image segmentation deals with partitioning an image into non-overlapping clusters or regions according to the requirement of the processing methods. After the process of segmentation some noise or distortion may be encountered in the segmented image. Image enhancement is required to improve the quality of the segmented image before performing detection. Morphological operation can be performed to extract various features of the segment hand posture. Finally using the bags of feature the hand posture can be classified as one of the manual alphabet of Sign Language or by matching the acquired hand posture to a huge database of already known Sign Language data set to find nearly matching alphabet can also be done. Gesture recognition is useful for processing information from humans which is not conveyed through speech.

The various application area of hand gesture recognition other than Sign language recognition is as follows:

**For socially assistive robotics:** By using proper sensors (accelerometers and gyros) worn on the body of a patient and by reading the values from those sensors, robots can assist in patient rehabilitation. The best example can be stroke rehabilitation.

**Alternative computer interfaces:** Foregoing the traditional keyboard and mouse setup to interact with a computer, strong gesture recognition could allow users to accomplish frequent or common tasks using hand or face gestures to a camera.

**Immersive game technology:** Gestures can be used to control interactions within video games to try and make the game player's experience more interactive or immersive.

**Medical Purpose:** As some surgeries are to be performed in very critical areas of human body parts, machine can be used to perform the same task and hand gesture can be used to control such machine.

Hand gesture is frequently used in people's daily life. It's also an important component of body languages in linguistic. So a natural interaction between human and computing devices can be achieved if hand gestures can be used for communication between human and computing devices. Hand gesture recognition making use of digital images has been a research topic for many years. However, the use of cameras for automatic gesture recognition is still a developing field. Since, many of the developed hand gesture recognition system has not yet provided 100% accuracy and recognized all possible hand gestures and requires some constraints, it is still an area of interest for the researchers.

The crucial part in the hand gesture recognition is image segmentation which can also be referred as background subtraction or foreground detection. The segmentation of image to extract the required object from the given image itself is one the area of interest. There are various approaches that have been derived for doing so. This paper tries to highlight the various techniques that are used for background subtraction or background subtraction.

#### 1.1 VARIOUS METHODS FOR IMAGE SEGMENTATION

Image segmentation is the way of partitioning an image into a non-overlapping clusters or regions according to the processing methods that follows it. The main focus in segmentation is according to the application which requires segmentation for extracting the object of interest in the image. In hand gesture recognition the object of interest in the image is the hand that needs to be further processed.

Some segmentation can be performed manually by experts, but its time consuming process and may delay the detection of rejection at a crucial stage. The segmentation that is performed manually leads to inconsistency. Segmentation procedure to give proper and accurate result demands simple and complete automatic algorithms.

Segmentation algorithm should be statistically robust to any type of noise and computationally efficiently to handle large sets of data.

Some of the segmentation methods are discussed below:

**1.1.1 Edge Based models:** Different object in the image can be segmented by using the edge information. By identifying the sharp changes in the image the edges of various objects are extracted. It is easy to implement and computationally very fast. It requires a threshold value for extracting the edges. This technique is very much sensitive to noise and may not give satisfying result as it generates broken segments which further need to be reconstructed. This technique highly relies on the threshold value provided to it so selection of threshold value is a crucial part.

**1.1.2 Region-Based Models:** In this method the objects are segmented using the region growing and merging technique. Here a particular region is identified and then the region is grown and merged as it continues to segment the image. This technique considers the statistics of the entire image and is robust to any type of noise. As this technique does not considers the information provided by the object boundaries irregular, noisy boundaries and holes in the segmented object may occur. This technique may be enhanced by combining region and edge based method.



1.1.3 Color cue segmentation: Skin color segmentation can be defined as the process of discrimination between skin and non-skin pixels. There are some difficulties in robustly detecting the skin color. The ambient of the light and shadows can affect the appearance of the skin-tone color. Moreover different camera produce different color values even from the same person and moving object can cause blurring of colors. The main part in skin color segmentation is to choose the suitable color space. Red, Green, Blue (RGB) color space is the most common color space used to represent images, normalized RGB still suffer by uneven illuminations. HSV and YCbCr color spaces have the luminance and chromaticity information. The separation of the brightness information from the chrominance and chromaticity in the HSV and YCbCr color spaces reduces the effect of uneven illumination in an image. Therefore, both color spaces are typically used in video tracking and surveillance.

## 1.2 VARIOUS METHODS FOR BACKGROUND MODELING OR BACKGROUND ELIMINATION

Some of the techniques for non-uniform background elimination are as follows:

1.2.1 Principal Component Analysis (PCA): Principal component analysis is used to model the background by significantly reducing the data's dimension. The various variations of PCA are as follows:

- Principal Component Analysis (PCA)
- RPCA via Robust Subspace Learning (RSL)
- RPCA via Principal Component Pursuit (PCP)
- RPCA via Templates for First-Order Conic Solvers (TFOCS1)
- RPCA via Inexact Augmented Lagrange Multiplier (BRPCA)
- RPCA via Bayesian Framework (BRPCA)

PCA provides robust model of the probability distribution function of the background. Some of the limitations of the model are that the size of the foreground object must be small and must be dynamic. It is applicable to the gray scale images. It cannot handle various illumination changes correctly.

1.2.2 Histogram equalization and contrast enhancement: Histogram equalization is used to enhance the contrast of the image such that it spreads the intensity value over full range. In this technique, pixel values below specified values are mapped to black and pixel values above a specified value are mapped to white.

1.2.3 Morphology: Mathematical Morphology (MM) is used to analyze geometric structure based on set theory, lattice theory, topology and random functions. Topological and Geometric concepts like size, Shape, convexity and geodesic distance are characterized by Mathematical Morphology.

## RELATED WORKS

Related work has been done in this particular field and there are different prospect. Further work is still going on. Some of the related topics are as given below:

Sr. No.	NAME OF PAPER	METHOD
[1]	Real-Time Hand tracking and Gesture Recognition for Human-computer Interaction	Real time algorithm to track and recognize hand gesture for interacting with the video game. steps: Hand segmentation, Hand tracking and gesture recognition from hand features. Only four gesture class is recognized. It helps users to substitute traditional interaction metaphors.
[2]	Hand Gesture Recognition using Multi-scale color features, hierarchical models and particle filtering	Hand postures are represented in terms of hierarchies of Multi-scale color image features of different scales with qualitative inter-relations in terms of scale, position and orientation. The use of color features gives much higher robustness to situations where there is poor gray-level contrast between the object and the background.
[3]	Hand Gesture recognition for human machine interaction	visuals interaction environment through hand gesture recognition, using general purpose hardware and low cost sensors. 26 hand postures are recognized and system achieved. Recognition average rate of 90% is proved to be suitable for real time application.
[4]	A Real Time Hand Gesture recognition Method	Robust real-time hand gesture recognition method is proposed. Specific gesture is used to trigger the hand detection followed by tracking. Left, Right, Up, Down, Open and Close or Stop gesture is defined
[5]	Review and Evaluation of commonly-Implemented Background subtraction Algorithm	Presents commonly implemented background subtraction algorithm and has evaluate them qualitatively. Testing is done using various synthetic and semi-synthetic video sequences. Background subtraction from the acquired video of a still camera is performed. It provides review of various real, synthetic and semi-synthetic video sequences comparing of various background subtraction algorithm is performed
[6]	Vision Based Hand Gesture Recognition	Review of various vision based hand gesture recognition is presented based on 3D model based approach and appearance based approaches highlighting their advantages and shortcoming. It shows the various application areas of hand gesture recognition.
[7]	Survey on Various Gesture Recognition techniques for interfacing machines based on Ambient Intelligence	Approaches for hand gesture recognition has been divided into Data-glove based and Vision based approaches. It also discusses face detection, eye detection techniques also. The various classification according to template based methods, appearance based methods and feature based methods are explained.
[8]	Hand Gesture Recognition using Histogram of Orientation Gradient and Partial Least Square Regression	Techniques for recognizing a small vocabulary of human hand gesture, Histogram of Orientation Gradient (HOG) description is used as feature set. Only seven hand gesture is considered to analyze the feasibility of HOG descriptors and PLS reduction for hand gesture recognition.
[10]	Morphology Based non-uniform background removal for particle analysis	Various techniques such as segmentation, edge detection and contrast enhancement using histogram equalization for background elimination has been compared. It focuses on removal of background in microscopic image processing. When non-uniform background illumination exist in an image morphological operator, adaptive histogram equalization and edge detection techniques are used for particle analysis

## CONCLUSION

Hand gestures are a form of nonverbal communication, which allow a person to communicate a range of thoughts and feelings with or without speech. Human-centered means of interacting with computers have gained interest. The paper aims at highlighting the various steps for hand gesture recognition mainly focusing the crucial part that is considered to be image segmentation or background elimination or background subtraction. The methodology discussed is used to extract hand gesture from complex background in handling the various constrains.

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## AN EMPIRICAL ANALYSIS ON ONLINE SHOPPING SATISFACTION AND LOYALTY OF CUSTOMER WITH SPECIAL REFERENCE TO TAMILNADU

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### ABSTRACT

*Internet is changing the way customers shop and buy goods and has rapidly evolved into a global occurrence. It has implemented critical marketing cost thereby sinking the price of the product and thrust a company further into a higher level of competitive market situation. In Tamilnadu, the numbers of internet users has been growing rapidly in recent years and has become an important platform to link customers with retailer. In this intellect the aim of this study is to identify the key factors influencing customer satisfaction and customer loyalty through online shopping. By using convenient sampling method 100 respondents are selected in Tamilnadu. Percentage analysis, Mean score, Standard Deviation, Chi-square test was used for analyzing the data. The numbers of online shopping motivation only continue to develop because of the growing popularity in online shopping and buying. In this study using different socio-economic variables customer's satisfaction and customer's loyalty are measured. The study concludes that there is a high level of customer's satisfaction and customer's loyalty in reference to online shopping in Tamilnadu.*

### KEYWORDS

online shopping, customer satisfaction, customer loyalty.

### INTRODUCTION

The Internet and the worldwide enclose most have been the most exciting development in the field of information and communications technology in current years. Internet and Web technologies have deeply changed the way business interacted, transacted and communicated with consumers. The Internet has also changed the way we consume products and our means of satisfying the demand for our ease. The Internet has made it easier for us to acquire the goods. Internet commerce exploded and become a normal element of day life of consumers.

Online commerce has many advantages when compared to regular shopping. The most fundamental advantage is the convenience. The Internet was popularized in the 1980s when Microsoft and IBM came out with the personal computers. The era of online shopping totally transformed the computer in ways few would have went online. In the late 1990s and early 2000s online shopping become more accessible for a lot of people and its popularity surged the consumers. In today's society, people are responsibility all kinds of their financial operation ranging starting buying holiday gifts to buying cars and paying their bills above the net.

According to UCLA middle for Communication Policy (2001), online shopping has become the third most popular Internet movement, directly followed by e-mail using/immediate messaging and web browsing. Online shopping can be through at home and one need not have to concern on transfer congestion, extended lines and other conventional aspects. With increasing Internet access, the use of e-commerce services by the population is active worldwide and locally in India. The majority modern evaluation of e-commerce expenditure in India (taken in August 2012) is 7 billion dollars [mavenclickz.com] and 3rd largest internet market in the world.

### ONLINE SHOPPING - DEFINED

Online shopping or online retailing is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Alternative names are: e-web-store, e-shop, e-store, Internet shop, web-shop, web-store, online store, online storefront and virtual store. Mobile commerce (or m-commerce) describes purchasing from an online retailer's mobile optimized online site or app.

An online shop evokes the physical analogy of buying products or services at a bricks-and-mortar retailer or shopping center; the process is called business-to-consumer (B2C) online shopping. In the case where a business buys from another business, the process is called business-to-business (B2B) online shopping.

- ❖ In 1990 Tim Berners-Lee created the first World Wide Web Server browser.
- ❖ It opened for commercial use in 1991.
- ❖ In 1994 other advances took place, such as online banking and the opening of an online pizza shop by pizza Hut.

### ONLINE SHOPPING IN TAMIL NADU, INDIA

Tamil Nadu is one of the 28 states of India. Its capital is Chennai (formerly known as Madras), the largest city. Tamil Nadu is a land most known for its monumental ancient Hindu temples. Tamil Nadu lies in the southernmost part of the Indian Peninsula and is bordered by the union territory of Puducherry, and the states of Kerala, Karnataka, and Tamil Nadu. It is bound by the Eastern Ghats in the north, the Nilgiri's, the Annamalai Hills, and Kerala on the west, by the Bay of Bengal in the east, the Gulf of Mannar, the Palk Strait in the south east, and by the Indian Ocean in the south.

Tamil Nadu online shopping is easy, convenient and less time-consuming. You will just have to choose your favorite product, call or email or just drop a note at the website that you have entered and the product will be delivered to you within a very short span of time. You will just need a Credit or Debit Card or net banking with requisite money, order online and have the product at your home. There are various products to buy, shop online in Tamil Nadu. There is one place to shop online in Tamil Nadu, India-Seasonsway.com, and the one stop solution for all our requirements.

### CUSTOMER SATISFACTION - ONLINE SHOPPING

It is a regular term used in marketing; it can be considered how the service or product meets the probability of customer. There are a number of behaviors to develop guest satisfaction in the restaurant industry. The solution is making positive all company have a pleasant knowledge. Crating and retaining satisfied

customer is important for the success of business. Fonvielle (1997) argued that high customer satisfaction is a competitive improvement for business as it contributes to repetitive purchasing. Researchers include pointed that the higher customer satisfaction the higher will be customer loyalty, intention of repetitive purchasing, positive word of mouth and market share (Fornell 1992).

## CUSTOMER LOYALTY

A loyal customer is a customer who repurchases from the same service source every time possible, who continues to suggest and who maintains a positive attitude towards the service provider. Customer remains to be loyal to the service or product as far because he is receiving good service from them. According to Butcher et al., (2001) excluding repeat purchase, four dimensions of loyalty can be distinguished in the service literature: 1- positive word-of-mouth, 2- resistance to switch, 3- identifying with the service and 4- preference for a particular service provider we can make customer loyalty by treating society how they want to be treated.

Customer loyalty encourage consumers to shop of holder, and feel positive regarding a shopping experience, helping attract consumer to memorable brands in the face of a competitive environment. What factors make a customer become loyal and keep patronizing the same hotel? Research indicates that factors contributing to hotel loyalty include satisfaction (Kandampully et al., 2003), quality service (Cranage, 2004), customer recognition (Magnini & Honeycutt, 2005), price and the term customer loyalty is used to describe the behavior of repeat customers. several customers perform a particular company a great service by offering favorable word of mouth publicity regarding a product, telling friends and family, so addition them to the number of loyal customers.

## LITERATURE REVIEW

Archana and Subha (2012) examine the underlying force of service quality influence on passenger's satisfaction in aircraft transport. A positive organize on service quality through which dimensions have the most and least important force on service quality in international air travel. The passengers of three classes, economy, business and premium. There are different factors of in-flight service quality to be important according to the customer seat class. The majority important dimensions as supposed by airline passengers in In-flight digital service quality. Those passengers' satisfactions on different airline company on source of the service delivered. Sulthana Barvin (2014) has the customer satisfaction of online also conventional shopping. Customer's satisfaction has become a crucial point of division in online and conventional shopping where consumers make weekly, fortnightly on monthly trips and then spend more on these trips than other times in particular in countries like India where competition in online is very fierce. The numbers of strictly online stores motivation only continue to grow because of the evolving attractiveness in online shopping and buying. Veto Datta et.al (2013) have presented the sustainability of a company depends on loyalty of its customers. The customer satisfaction and creating food industry. Customer satisfaction the focus of the measure these attributes through KFC. The relationship among experiential value, customer satisfaction and customer loyalty throughout different dimension of restaurant trade. Waqar ul Haq et.al (2012) have examined to evaluate public and private sector banks of Pakistan by evaluating their customer satisfaction. Have been conducted in Pakistan on such areas like price, technology, reliability, customer service, location and infrastructure. The customer satisfaction varies from person to person and, bank managers. In order evaluate customer satisfaction more strongly. Saravana Bhavan, et.al, (2013) have framed the internet with the worldwide enclose been the most exciting developments in the field of information and communication technology in recent years. It has become a dynamic virtual medium for selling and buying of information, products or services, because of the growth and development of retail brands has experienced considerable change over the last few decades. There are around 71 million Internet users in India (IAMAI, 2009). The approach with behaviour of consumers towards online shopping:

## THE RELATIONSHIP BETWEEN ONLINE SHOPPING, CUSTOMER SATISFACTION, CUSTOMER LOYALTY



## OBJECTIVES OF THE STUDY

- To analyse the demographic factors of the online shopping customer in Tamilnadu.
- To analyse the customer satisfaction level with online shopping in Tamilnadu.
- To analyse the impact of various quality dimensions on customer satisfaction and customer loyalty with online shopping.

## SCOPE OF THE STUDY

The study has been made to find out the customer satisfaction and customer loyalty in online shopping with special reference to Tamilnadu. The study also gives information about the theoretical aspects of online shopping.

## METHODOLOGY

The study is an empirical analysis based on the survey method. Both primary and secondary data are collected for the purpose of this study. Primary data had been collected through questionnaire. Secondary data was collected from books, Journal, magazines and websites. By using convenient sampling method 100 respondents are selected in Tamilnadu.

## STATISTICAL ANALYSIS

The questions were phrased in the form of statements scored on a 5-point Likert type scale, ranking from 1 "Strongly Disagree" to 5 "Strongly Agree". For analyzing the data, a necessary tool such as percentage analysis, mean, standard deviation, Chi-square test has been used.

TABLE-1: AGE WISE DISTRIBUTION OF THE RESPONDENTS

	Option	Percent	Mean	SD
Valid	21-25	25%		
	26-30	30%		
	31-35	21%	2.54	1.283
	36-40	14%		
	Above 41	10%		
	Total	100%		

It is inferred from the above table majority of the respondents of 30% online customers were age group of 26-30 years. Followed by 25% of the customers were in the age group of 21-25 years, 21% were in the age group of 31-35 years, 14% of were in the age group of 36-40 years. And 10% of customers were in the age group of less than 41 years. So, an inference could be drawn as majority of customers were developed adequate and they perform reasonably in customer's online shopping satisfaction and loyalty.

**TABLE-2: GENDER WISE DISTRIBUTION OF THE RESPONDENTS**

	Option	Percent	Mean	SD
Valid	Male	51%		
	Female	49%	1.49	0.502
	Total	100%		

From the above table it is known that out of the total customers taken for study, 51% of the customers are male and 49% of the customers are female. It is concluded that majority of the respondents using online shopping customer's satisfaction and customer's loyalty both for self and their family are male. From the above percentage; it is also clear that female customers' preference for online shopping is comparatively less.

**TABLE-3: QUALIFICATIONS WISE DISTRIBUTION OF THE RESPONDENTS**

	Option	Percent	Mean	SD
Valid	Undergraduate	41%		
	Postgraduate	38%	1.80	0.765
	Others	21%		
	Total	100%		

The above table shows that out of the total respondents taken from the study, 41% of the customers are under graduates, and 38% of the customers are post graduates, and 21% of the customers have other educational qualifications. It can be concluded that majority of the respondent's preferring online shopping customers are under graduates because of their experiences, decision making, analyzing the products feature and some other reasons.

**TABLE-4: MARITAL STATUS WISE DISTRIBUTION OF THE RESPONDENTS**

	Option	Percent	Mean	SD
Valid	Married	57%		
	Unmarried	43%	1.43	0.498
	Total	100%		

The above table shows that out of the total respondents taken from the study, 57% of the respondents are married, and 43% of the respondents are unmarried. It can be concluded that majority of the respondents

**TABLE-5: INCOMED WISE DISTRIBUTION OF THE RESPONDENTS**

	Option	Percent	Mean	SD
Valid	5000-10000	20%		
	10001-15000	21%		
	15001-20000	14%	3.03	1.432
	20001-25000	26%		
	Above 25001	19%		
	Total	100%		

The above table revealed that 26% of the respondents were earning monthly income between Rs.20001-25000, 21% of the respondents were monthly income range between Rs.10001-15000, 20 % of the respondents were monthly income of Rs.5000-10000, 19% of the respondents were monthly income of above 25001, 14% of the respondents were monthly income less than Rs.15001-20000. So, it has been inferred that majority of the respondents were earning between Rs.20001-25000.

**TABLE-6: CHI-SQUARE TEST FOR LOCATION OF THE CUSTOMER ONLINE SHOPPING SATISFACTION AND LOYALTY**

S.No	ITEMS	Chi square value	P value
	<b>ONLINE SHOPPING</b>		
1	Online shopping is not popular in Tamilnadu culture	83.800	0.000
2	Freedom of choice is available through online shopping	79.800	0.000
3	Online shopping provides most satisfying and unique shopping experience	23.660	0.000
4	Online shopping is preferred due to shift towards modern culture	52.160	0.000
5	Tamilnadu culture do not accept new innovations like online shopping	134.240	0.000
	<b>CUSTOMER LOYALTY</b>		
6	I will continue to use this website for shopping	38.000	0.000
7	I will recommend others to use this website for shopping.	147.400	0.000
8	I will continue my purchase from the website in the near future.	56.000	0.000
9	I recommend others to use the e - shopping services.	5.000	0.059
	<b>CUSTOMER SATISFACTIONS</b>		
10	I will say positive things about online shopping	22.580	0.000
11	Well satisfied with purchasing through online shopping	50.000	0.000
12	Overall, I am satisfied with my e-shopping experience	<b>4.580</b>	<b>0.101*</b>
13	Satisfied with the information provided in online shopping	35.120	0.000
14	My preference given to buy in online shopping is sensible one	11.060	0.004
15	I will say positive things about online shopping	22.940	0.000

Notes: \*Rejected null hypothesis @ 5% significant level

Interpretation: Since the p value is greater than 0.05 the null hypothesis is accepted at 5% level of significance. Hence conclude that there is no significant relationship between location of customer online shopping satisfaction and loyalty.

## CONCLUSION

A number of studies have identified the significance of customers' satisfaction and loyalty in service of online shopping. From the above research we concluded that between age group of 26 to 30 mostly prefer the online shopping. The price and service quality, environment and cooperate very important function in creating a well online shopping experience for every age group of people. Online shopping is an immeasurable increasing technology. If it is properly utilized with confident safety and security for the transactions, it purpose add into a highly competitive and dynamic location. The numbers of online shopping motivation only continue to develop because of the growing popularity in online shopping and buying. In this study using different socio-economic variables customer's satisfaction and customer's loyalty are measured. The study concludes that there is a high level of customer's satisfaction and customer's loyalty in reference to online shopping in Tamilnadu.

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## A STUDY OF CONSUMER BEHAVIOUR ON TWO-WHEELERS WITH SPECIAL REFERENCE TO BAJAJ PRODUCTS IN SALEM

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### ABSTRACT

The study covers BAJAJ products and it includes ten vehicles namely spirit, Safire, Bajaj M-80, M-80 4-S, Scooters, Boxer CT, Boxer AT, Caliber, Caliber Aspire and Pulsar. In the modern age, two-wheelers play a vital role. It is needless to say only because of two-wheelers day-to-day transactions are covered (domestic needs as well as business needs). Two-wheelers save money, time and energy also. "Free way foul-up, when two-wheels will suddenly become so much better and slimmer than four". So the two-wheeler is a comfortable automobiles and everybody can drive it. It is also carry heavy loads. Hence two-wheelers has significant role in this modern economy. There are wide ranges of different brands of two-wheelers available in the market. Hence an attempt is made by the researcher to study the consumer preferences towards various brands of two-wheelers prevailing in the market with respect to bajaj. Bajaj is currently India's largest two and three-wheeler manufacturer and one of the biggest in the world. Bajaj has long left behind its annual turnover of Rs. 7.2 crores (1968), to currently register an impressive figure of Rs. 421.6 crores (US 936 MILLION \$).

### KEYWORDS

consumer behaviour, Bajaj products.

### 1.1 INTRODUCTION

From the dawn of ages mankind for their fulfillment of needs that is food, shelter, business excursion. Education, sharing their feelings for celebrating festivals moved from place to place on foot. Later on man used animals like camel, horse, donkey and bullocks for their travels and thus formed bullock-cart, chariot etc. in 1839 bicycle was invented by Kirkpatrick Macmillan and the same has been used by common man till now. It is mainly based on consumer preference for different brands of two wheelers with regard to bajaj. The research also reveals that different brands and preferences for the various income groups. The agent and manufacturers while implementing the plan should take into consideration, the consumer's opinion about different types of brands, which they deal in.

### 1.2 HISTORY OF TWO-WHEELERS

The automobile industry covers a span of more than two centuries. The earliest recorded automobile was built in 1688 by Ferdinand Verbiest a Belgian. In 1885 Kari Fried Rich Benz developed petrol driven car. Later on trucks, motorcycles and other types of vehicles were also invented. Research and Development activities help the industry to introduce various new models using new designs and new materials.

Now, fuels and engines (machines) were also constantly being introduced. The two wheelers have a long history. In 1885 Gottlieb Daimler designed the first motorcycles. It traveled 19 kph. British production of motor cycles started in 1899. West Germany was ahead of other countries in the production of motorcycles. It produced 1000 machines in 1894. Now the Japanese are in a dominant position producing fast and fuel efficient motorcycles and scooters.

### 1.3 MOTORCYCLE

The internal combustion engine was first employed on a two-wheeled vehicle by the German Engineer Gottlieb Daimler in 1885. His motorcycle had a single cylinder, air-cooled, four-stroke engine. The earliest motorcycle to be commercially produced was made by Hildebrand and Wolf Muller of Munich in 1894. Its 760 CC. Single Cylinder, water-cooled Engine propelled it up to 39 kmh /24 mph).

Early motorcycles were not popular. A push-start was necessary to start the engine, there was no change-speed mechanism, power was so low that pedal assistance was sometimes required on hills, and the belt drive slipped in the wet. No was there any springing. However, from about 1907 Kickstarters, Clutches, Gearboxes, Chain drive and spring were gradually introduced, turning the motorcycle into a practical low cost form of transport. Pedals are still fitted to assist the engine of the moped, a motorcycle with an engine of less than 50 cc. capacity.

### 1.4 MOTOR SCOOTER

The Auto-ped, a motorized version of the child's platform scooter, was introduced in the U.S.A. in 1915, and by 1919 was being made in Europe, But it was not very successful. The motor scooter reappeared after the Second World War as a feature of Italy's industrial revival. The Piaggio company's vespa ("wasp") in Italian), based on the war time scooters used by airborne troops, set off a world-wide boom in motor scooters that lasted until the advent of cheap light weight motorcycles in the 1960s,

### 1.5 HISTORY OF BAJAJ

The Bajaj Group came into existence during the turmoil and the nearly euphoria of India's freedom struggle. Jamnalal Bajaj, founder of the Bajaj Group, was a confidante and disciple of Mahatma Gandhi, and was deeply involved in the effort for freedom. The integrity, dedication resourcefulness and determination to succeed which are a characteristic of the company today, are often

Kamalnayan, the eldest son of Jamnalal Bajaj, succeeded his father in 1942, at the age of twenty –seven. Putting the nation before business, he devoted himself to the latter only after Indian achieved independence in 1947. But when he did so, he put his heart and soul in to it. Within a short while, he not only consolidated the Group, but also diversified into various manufacturing activities, elevating the a Group to the status it enjoys till this day.

Rahul Bajaj today heads the Group. He has been the Chief Executive Officer of Bajaj since 1968 and is recognized as on e of the most outstanding business leaders in India. As dynamic and ambitious as his illustrious predecessors, he has been recognized for his achievements at various national and international forms.

### 1.6 SCOPE OF THE STUDY

It is mainly based on consumer preference for different brands of two wheelers with regard to bajaj. The research also reveals that different brands and preferences for the various income groups. The agent and manufacturers while implementing the plan should false into consideration, the consumers opinion about different types of brands which they deal in.

The study covers BAJAJ products and includes two wheelers which are as follows:

Brand Name	Capacity	Feature of product
Spirit	60 CC	Ungear
Saffire	100 CC	Ungear
M-80	74 CC	Gear
M-84 40-S	74 CC	Gear
Scooters	150 CC	Gear
Boxer CT	100 CC	Gear
Boxer AT	100 CC	Gear
Caliber	112 CC	Gear
Caliber Croma	112 CC	Gear
Aspire	112 CC	Gear
Pulsar	150 CC	Gear

### 1.7 IMPORTANCE OF THE STUDY

The purchase of any two-wheeler the consumer has to consider the following factors:

1. Brand Name
2. Cost
3. Special facilities like time saving, comfortable, no risk safe to drive etc.

In this modern age, two-wheelers play a vital role, it is needless to say only because of two-wheelers day-to-day transaction are covered domestic needs as well as business needs. Two-wheelers save money, time and energy also. "Free way foul- up, when two wheels will suddenly become so much better and slimmer than four". So the two-wheeler is a comfortable automobile and anybody can drive it. It is also carry heavy loads. Hence two wheelers has significant role in this modern economy,

There is wide range of different brands of two-wheelers available in the market, hence, an attempt is made by their searcher to study the consumer preference towards various branch of two-wheelers prevailing in the market with respect to Hero Honda.

### 1.8 OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To analyse the relationship between the brand preferences with regard to income, age and occupation etc., of respondents
2. To find out whether the consumers are influenced by advertisement or by any other means.
3. To know the purchase pattern of various income groups and category of consumers.
4. To know the level of satisfactions derived from the two-wheeler.
5. To offer suggestions if any to modify the products.

### 1.9 LIMITATIONS

- 1) Due to time and cost constraint, the study is confined only to 100 samples
- 2) Some of the consumers had been reluctant to give complete information about their product.
- 3) Lack of time was the constraint for deep and through study

### 1.10 METHODOLOGY

The study is based on both primary and secondary data. Primary data are collected by means of a well- designed questionnaire by interviewing all of our respondents. Secondary data are collected by means of books, pamphlets, magazines etc., sample of 100 were collected by following convenient sampling method. The entire analysis is clearly illustrated by means of pie diagram, charts and graphs in the appropriate places.

### 1.11 OPERATIONAL DEFINITION

BAJAJ	
CC	Cubic Capacity
Kph	Kilometer per hour
R & D	Research and Development

### 1.12 RESEARCH AND DEVELOPMENT

Bajaj Auto has a huge, extensive and very well- equipped Research and Development wing geared to meet two critical organizational goals; development of eco-friendly in India and abroad, and development of eco-friendly automobile technologies. While the manpower strength of the R & D represents a Cross-section of in-depth design and engineering expertise, the company has been investing heavily in the latest, sophisticated technologies to scale down product development life cycles and enhance testing capabilities. Bajaj Auto R & D also enjoys the specialized expertise of leading international design and automobile engineering companies working in specific areas.

### 1.13 R & D OBJECTIVE AND SET UP

The objective of BAJAJ Auto' R & D is to contribute towards making life a better experience for society as a whole. At BAJAJ Auto .we intend to achieve this objective by giving priority to environmental concerns, which include minimizing toxic emissions and optimizing the use of natural resources while also keeping in mind the exact requirements of the customers in a fast changing world racing towards modernization. BAJAJ intend to use R & D not only to develop products better and faster, but also to evolve technologies that are eco- friendly, more fuel- efficient and cost effective.

BAJAJ strength in R & D comprises 500 dedicated professional who work as team members on platform concept. These platforms comprises of engineers skilled in product engineering, manufacturing engineering, component development, project management and quality assurance. The primary objective of these platforms is to develop newer, better more efficient and less polluting vehicles for both the Indian and International Market.

BAJAJ foreign technology partners, like Kawasaki, Kubota and Tokyo R & D Collaborate closely with the platform teams with transfer of the latest technology and R&D assistance. Our designs are also subjected to an exacting and critical assessment from our technology partners.

### 1.14 NEW PRODUCT LAUNCHES

In the New Economy, the product development process must give to priority to certain critical issues such as eliminating any design errors right at the start of the process. Thus the mantra is "design right, first time". This is imperative to avoid unnecessary wastage of time and productivity. After arriving at the right design, prototypes are developed expeditiously. Then these are tested meticulously for performance and durability all parameters in order to finalise the design.

### 1.15 INTERNATIONAL MARKETING

Based on the own brand of globalisaion, the company built its distribution network over 60 countries worldwide and multiplied its exports from 1% of total turnover in fiscal 19+89-90 to over 5% in Fiscal 1996-97

The countries where bajaj products have a large market are USA, Argentina, Colombia, Peru, Bangladesh, Srilanka, Italy, Swedon, Germanhy, Iran and Egypt. Bajaj leads Colombia with 65% of Scooter (market) in Uruguay with 30% of the motorcycle market and in Bangladesh with 95% of the three- wheeler market.

### 1.16 CONCEPTS RELATED WITH CONSUMER BEHAVIOUR

Garers Hille Woodruff defines "Consumers are people in families and other kinds of household who buy and use products services in order to satisfy their personal needs and wants.

#### 1.16.1 CONSUMER

A consumer is an individual who consumes goods manufactured by firms or created by nature (air, water etc.) and services offered by Government or Firms, Hospital, Educational Institutions etc. "Consumer is our Boss is a slogan of many company". Consumer becomes the pivot of all business decisions.

A buyer makes a purchase of a particular product or a particular brand and this can be termed "product buying motives".

#### 1.16.2 CHARACTERISTICS OF CUSTOMER

Customer characteristics such as their number, geographical dispersion, frequency and regularity of purchase, average quantities bought and their susceptibility to different selling methods greatly influences the channel selection. Conditions conducive to direct sale or through short channels are small number of customers, their geographical concepts, large units of purchase and in frequent and regular purchase were the customers are large in number, geographically dispersed and purchase small quantities frequently and irregularly, lengthier marketing channels are indicated. However, the most important question is where the customer expects to find the product.

Building customer satisfaction

Through QUALITY, Value and Service

Firm Infrastructure						
Human resources management						
Technology Development						
Procurement						
Inbound	Operations	Outbound	Margin	Service	Logistics	& Sale
Primary Activities						

#### 1.16.3 IMPORTANT INGREDIENTS IN THE MARKET FORMULA FOR SUCCESS

- 1) Customer Value
- 2) Consumer Satisfaction
- 3) Quality

#### 1.16.4 DEFINITION OF BUYER BEHAVIOR

"Buyer behavior refers to the people's or organization conduct, activities and actions together with the impact of various influences on them towards , making decisions on purchase of product and services in market."

This definition suggests that Buyer behavior concerns study of activities and actions of people and organizations that purchase goods and services for use. It involves gathering and analyzing information on these activities.

- 1) There are number of factors that influence the buyer behavior or buyer behavior is influenced by the buyer's environment
- 2) Buyer behavior is essentially and typically a decision making process

Behavior is a way of action. It is basically goal oriented. In other words our behavior is generally motivated by a desire to attain a goal.

#### 1.16.5 CONSUMER BEHAVIOR

"Consumer behavior is the conduct or behavior that consumers exhibit before they purchase a product, during the purchase period, while using that product, and even after the product has been used (evaluating product performance)".

### 1.17 SUGGESTIONS

- i. Some of the customers feel that the price of the vehicle is high. Hence effective steps must be taken to offer the vehicle at reduced cost. So that everybody can easily purchase the vehicle.
- ii. Easy availability of spare parts for specific vehicles may increase the number of customers.
- iii. As far as the starting matter is concerned the introduction of self start system at cheaper price will be of very helpful for the customers.
- iv. Customers feel that if attractive gifts are given sales may be increased to a great extent.
- v. Customers of student community feel that more attractive colours should be added.
- vi. Improvement should be made with regard to the existing style so that it will attract more customers
- vii. Some of the purchasers of the vehicle feel that improvement should be made for more mileage.
- viii. The bajaj dealers should make financial arrangements to their customers at low rate of interest to promote sales.
- ix. It should be necessary to increase the service centers for bajaj products.
- x. The dealers must make arrangements to get suggestions from the customers with regard to service of the vehicles.
- xi. Some customers feel that provision of adequate workshop is required to attend accident vehicles.
- xii. The number of years given to the guarantee and warranty period for bajaj products should be increased.

**1.18 CONCLUSIONS**

The two-wheeler industry is a major employer. It also provides support to many ancillaries and small-scale suppliers. In the absence of a statutory public transport system powered two-wheelers are as much the common man's vehicles as the bicycle. Personalized transportation by two-wheelers is not luxury, but a necessity now-a-days. Hence the government has to take a practical view of the situation. Bajaj motor company first introduced Scooters in the beginning. Later it entered into motor cycle division. Now motor company comes with three kinds of motors Cycle, Scooter and m-80 the multi utility vehicle. It seems certain that the market expects to see new products with advanced technology to give them fuel economy and riding comfort. But above all they expect a ocean change in the style and looks of the product as they are exposed more and more to the international market.

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**A STUDY OF INTERNET BANKING PROCESS AND PRACTICE OF STATE BANK OF INDIA****DR. MANOJKUMAR J. GAIKWAD****HEAD****DEPARTMENT OF COMMERCE****VASANTRAO NAIK COLLEGE****SHAHADA****ARVIND K. RAUT****HEAD****DEPARTMENT OF COMMERCE****G. D. M. ARTS, SHRI. K. R. N. COMMERCE & M. D. SCIENCE COLLEGE****JAMNER****ABSTRACT**

Internet Banking enables a customer to do banking transactions through the bank website on the internet. It is system of accessing account and general information on bank products and service through a computer while sitting in anywhere, office, home, etc. This is also called virtual banking. In today's modern are internet computer has beginning to capture the banking sector, we can see many nationalized banks the complete hand written work is done with the help of the internet. The internet banking is very necessary at present situation. Banking has own important in the economic progress of the country. Actually banking is the breath of the modern commercial world. On-line banking computer provides so many quick facilities to the work like print at passbook, print up demand draft (DD) banking cheques pay order and calculating interest of every kind of bank account through internet banking related computer bank employees search the missing account number with in a second, so that a customer can do his deposit and withdrawal as pass possible.

**KEYWORDS**

internet banking, customer, on-line banking.

**INTRODUCTION**

The roots of the State Bank of India lie in the first decade of 19th century, when the bank of Calcutta, later renamed the Bank of Bengal, was established on June 02, 1806. The Bank of Bengal was one of three Presidency banks, the other two being the Bank of Bombay (incorporated on April 15, 1840) and the Bank of Madras (incorporated on July 1, 1843). All three Presidency banks were incorporated as joint stock companies and were the result of the royal charters. These three banks received the exclusive right to issue paper currency in 1861 with the paper currency Act, a right they retained until the formation of the Reserve Bank of India. The presidency banks amalgamated on Jan.27, 1921 and the re-organized banking entity took as its name Imperial Bank of India. The Imperial Bank of India renamed a joint stock company.

Pursuant to the provisions of State Bank of India Act 1955, the Reserve Bank of India, which is India's Central Bank, acquired a controlling interest in the Imperial bank of India. On April 30, 1955 the Imperial Bank of India becomes the State Bank of India. The government of India recently acquired the RBI's stake in SBI so as to remove any conflict of interest because the RBI is the country's banking regulatory authority.

Online banking is becoming much more common. You can pay your bills online and access a record of your checking account transactions online. Online banking is a great feature, and most banks do offer it. Online banking makes everything you do with your finances a bit easier. You can access the information anywhere that you have access to the Internet. It makes your financial life much easier to manage.

**SALIENT FEATURES OF ONLINE BANKING**

- 100% secure banking.
- View / print account statement.
- View Demat / GOI band holding.
- Transfer found to between your own accounts.
- Remit found yours friends and relative across India through NEFT.
- Recharge Top up your prepaid mobile connection.
- Pay your utility bill insurance premium.
- Pay your income tax and other direct / indirect taxes.
- Book train /airline tickets and shop at various online portals.
- Card to card money transfer.
- Open fixed deposit account.
- Stop payment of cheque.

**BENEFITS OF E-BANKING**

E-banking helps us in overcoming the drawbacks of manual system, as computers are capable of storing, analyzing, consolidating, searching and presenting the data as per the user requirements with lot of speed and accuracy.

Number of benefits accrues to the various parties with the development of e-banking.

**BENEFIT TO THE BANKS**

- E-banking services help in increasing profits.
- E-banking provides competitive advantage with boundary less network to the banks.
- Due to e-banking banks carry on business less with paper money and more with plastic money; have online transfer of funds, thus economizing on the cost of storage of huge stocks of currency notes and coins.
- By connecting with ATM and PO terminals, risk of cash overdraw can be eliminated in case of ATM credit and debit cards.
- E-banking websites can act as a revenue earner through its promotional activities.
- Customers can avail e-banking facility from anywhere, therefore saving the need not to invest more on building infrastructures.
- Websites that offer financial convergence for the customer will create a more involved banking customer who will more frequently utilize the banking websites.



**BENEFIT TO THE CUSTOMERS**

- E-banking provides 24 hours service to the customers for cash withdrawal from any branch.
- Quick and steady access to information.
- Online purchase of goods and services and payments can be made for various purposes.
- The customer can view his account balance, can get a statement of his account, can apply for loans, check the progress of his investments, review interest rates and collect other important information.

**BENEFIT TO THE MERCHANTS, TRADERS AND OTHERS**

- It ensures assured quick payment and settlement to the various transactions made by the traders.
- It provides a variety of services to the businessmen on par with the international standards with low transaction cost.
- Cost and risk problems involved in handling cash which are very high in business transactions are avoided.
- It leads to the growth of global and local clientele base with the development of e-Banking.
- Other benefits include improved image, improved customer service, eliminating paper work, reduced waiting costs and enhanced flexibility.

**ABOUT ONLINE SBI**

State Bank of India is India's largest bank with a network of over 13000 branches and 5 associate banks located even in the remotest parts of India. State Bank of India (SBI) offers a wide range of banking products and services to corporate and retail customers. Online SBI is the Internet banking portal for State Bank of India. The portal provides anywhere, anytime, online access to accounts for State Bank's Retail and Corporate customers. The application is developed using the latest cutting edge technology and tools. The infrastructure supports unified, secure access to banking services for accounts in over 13,000 branches across India. The Retail banking application is an integration of several functional areas, and enables customers to:

- Issue Demand Drafts online
- Transfer funds to own and third party accounts
- Credit beneficiary accounts using the VISA Money Transfer, RTGS/NEFT feature
- Generate account statements
- Setup Standing Instructions
- Configure profile settings
- Use e-Tax for online tax payment
- Use e-Pay for automatic bill payments
- Interface with merchants for railway and airline reservations
- Avail DEMAT and IPO services

The Online SBI corporate banking application provides features to administer and manage corporate accounts online. The corporate module provides roles such as Regulator, Admin, up loader, Transaction Maker, Authorizer, and Auditor. These roles have access to the following functions:

- Manage users, define rights and transaction rules on corporate accounts
- Access accounts in several branches with a single sign-on mechanism
- Upload files to make bulk transactions to third parties, supplier, vendor and tax collection authorities.
- Use online transactional features such as fund transfer to own accounts, third party payments (both Inter and Intra bank), and draft issues
- Make bill payments over the Internet.
- Authorize, modify, reschedule and cancel transactions, based on rights assigned to the user
- Generate account statement
- Enquire on transaction details or current balance

In addition to the above the Internet banking application also provides the following value added services:

- Tax payments to central and state governments through site to site integration.
- Supply Chain Finance(e-VFS- Electronic Vendor Finance Scheme)
- Direct Debit Facility
- E Collection Facilities for:
  - Core Banking Transactions
  - Inter Bank Transactions for incoming RTGS/NEFT Transactions
  - Internet Banking Transactions for SBI & Associate Banks
  - Direct Debit facility where suppliers can directly debit their customer's account through Internet Banking.

**CONCLUSION**

State Bank of India and this group such as SBH, SBP, SBM, SBT and SBB&J, uses online banking system, they are to use information technology for improving services. It also contains awareness about Internet Banking best practices and its safety use. There are certain salient features of Internet Banking like 100 per cent secure banking, view / print account statement, Transfer found to between your own accounts, Card to card money transfer etc. There are some advantages of online banking like we can pay our bill online at any time, we can view transaction on our account, Customers are completely satisfied by the service and products provided by the bank. Some of them need to use Information, Technology for improving services. The banks of SBI groups have ability to provide required services to customer within time; due to their online process. The manager itself solves the queries of account handling to account holders. The security for internet banking, customers is 100% reliable. State Bank of India (SBI) offers a wide range of banking products and services to corporate and retail customers. Online SBI is the Internet banking portal for State Bank of India. The portal provides anywhere, anytime, online access to accounts for State Bank's Retail and Corporate customers. The application is developed using the latest cutting edge technology and tools.

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**FIRM'S DEBT MATURITY STRUCTURE IN PETRODOLLAR COUNTRIES: THE CASE OF KSA LISTED COMPANIES**

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**ABSTRACT**

*We examine in this paper debt maturity determinants in a different context, petroleum country. We test the validity of different internal and external factors susceptible to have an influence on debt maturity choices. Inversely to previous studies, we find that even if Saudi economy is relatively corrupted and underdeveloped, low-profitable and low-quality Saudi listed companies can obtain long-term banking debts.*

**KEYWORDS**

agency, corruption, debt, information asymmetry, matching, maturity.

**JEL CODES**

G32, G33.

**INTRODUCTION**

In the context of perfect market, debt maturity policy, as for other financial policies, does not matter and has no impact on firm value [Modigliani and Miller (1958), Modigliani and Sutch (1967), Stieglitz (1974)]. However, real world is complicated and can't be simply described by perfect market hypotheses. In this context financial managers develop some basic rules, golden rules, including the matching rule or principle. It consists to match assets' maturity to liabilities' maturity. This concordance aims to stem financial disequilibrium and protect firms from three main risks: the default risk, interest rate risk, and liquidity risk [Morris (1976)]. Despite these virtues, real facts show that firms with long-term projects often borrow on a short-term basis [Berger et al.. (2005)]. Research on this topic showed that the matching policy is not always efficient and under certain environmental conditions or intrinsic factors, firms should abandon this rule and adopt alternative financing choices, i.e. revolving short-term debt policy. For instance, theory predicts that a firm whose principal asset is the present value of its growth opportunities, i.e. intangible asset, doesn't optimally borrow against that asset [Myers (1977)]; Hart and Moore (1994) show that debt's maturity is inversely related to assets' specificity. Information asymmetry [Barclay et al.. (1995), Goswami et al.. (1995)], agency problems (Myers (1977), Barnea et al.. (1980), Jonhson (2003)), taxes [Boyce et al.. (1979), Brick et al.. (1985)], and signaling [Flannery (1986), Diamond (1991)] affect equally maturity choices and may constrain the matching principle efficiency. Further studies presume that some Meta factors have an indirect influence on debt maturity choices. La Porta et al.. (1998) find that firms in civil law countries use more short-term debts, and firms in common law countries use more equity and long-term debt. Fan et al.. (2012) find that firms in more corrupted countries are more levered and use more short-term debt; common law countries have lower leverage, so higher equity, and more long-term debt. Demircuc-Kunt et al.. (1999) show that firms in developed countries have more long-term debt, and La Porta et al. (1998) find firms in poor developing countries tend to have more short-term debts. These latter studies show that firms in developing countries, despite their pressing need for long-term financing, can't smoothly get it. Can high petroleum revenues counterbalance these negative effects of underdevelopment anomalies and make firms in petroleum economies more comfortable and able to obtain necessary long-term financing? Or, in different terms: do high petroleum revenues have a positive effect on debt maturity structure and are they capable to offset negative incidences of corruption, underdevelopment and institutional deficiencies? This is what we try to discuss in this study.

**LITERATURE REVIEW****Internal factors**

**Matching principle:** Hart et al.. (1994) show that debt's maturity is generally related to the nature of assets: long-term debts are used to finance fixed assets, and current liabilities are used for financing current assets. This is what we mean by matching principle or hedging policy.

This matching between debt's and asset's maturities is a form of payment programming, or scheduling, in the way that makes them consistent with depreciation of assets value [Myers (1977)]. It protects the firm from three main risks: the default risk, interest rate risk, and liquidity risk (Morris (1976)...). If debt's maturity is shorter than assets' maturity, the firm faces two types of risk: a bankruptcy risk when the firm does not get enough profits to repay debt's annuities; and a liquidity risk when the firm can't roll over its debt. Conversely, if the debt's maturity is longer than the assets' maturity, it is possible that the firm does not retain sufficient cash-flow to payback the outstanding debt after the total depreciation of assets financed by it. In line with this latter idea, Hart et al.. (1994) presume that slower asset depreciation means longer debt maturity. As for interest rate risk, Morris (1976) predicts that the hedging policy neutralizes interest rate risk and protects the firm from interest rate fluctuations.

Nevertheless, under certain environmental conditions or asset specific factors, the firm adopts a revolving short-term debt policy instead of the hedging policy. For instance, theory predicts that firms whose principal asset is the present value of its growth opportunities, i.e. intangible asset, do not optimally borrow against that asset (Myers, 1977). In contrast asset's specificity is controversial. If we interpret specificity as assets that the firm finds it hard to replace, Hart et al. (1994) show that as the degree of specificity rises, the debt becomes longer term, that is to say that hedging policy is first-best. However, if we mean by specific assets those having low liquidation value, as the degree of specificity rises debt becomes shorter term [Hart et al. (1994)]. Besides internal factors, under inflation, economic expansion and other external factors, as we will see later, revolving credit policy takes over hedging policy and becomes more efficient despite the positive effect of hedging policy on the over mentioned forms of risk [Morris (1976), Modigliani (1993), Myers, Brealey and Schaefer (1977), Mitchel (1987)].

As we have seen in the last phrases, assets' maturity is not the unique determinant of debt's maturity and the hedging policy is not usually optimal. In addition of the over mentioned factors, alternative external and internal factors, taxes, liquidation cost, transaction costs, agency cost ..., may affect debt's maturity choice. Nevertheless, we must emphasize firstly that in the context of perfect market, debt maturity policy, as for other financial policies, does not matter and has no impact on firm value [Modigliani and Miller (1958), Modigliani and Sutch (1967), Stieglitz (1974)].

**Leverage:** Brennan et al. (1978) find a positive relationship between optimal levered-firm value and time to maturity of debt, and a negative relationship between optimal leverage ratio and time to maturity of debt, which means that leverage and maturity are substitutes. However, they get these results because they consider the incremental effects of a single debt issue, and, in reality as they say, short-term debt may be rolled over, and, in the absence of transaction costs, it will be optimal to issue and redeem debt continuously. In this way bankruptcy may be avoided while the tax savings are still enjoyed. Barclay et al. (2003), based on Smith (1986), show that this negative relationship may be avoided under regulatory oversight. Smith (1986) predicts that regulatory oversight limits managers' discretion over corporate investment decisions and thus controls aspects of the underinvestment problem. Thus, for regulated firms, optimal leverage is expected to be higher and optimal debt maturity is expected to be longer.

**Taxes:** Boyce et al. (1979) find, under interest rate variation over time, no transaction costs, and risk neutrality, that debt maturity structure affects after-tax discount rates. Otherwise, tax savings depends on the debt maturity structure. Specially, long-term debts are optimal in the case of increasing interest rates.<sup>1</sup> This latter result is also confirmed by Brick et al. (1985) who show that if there exists a tax advantage to debt and nonstochastic interest rates<sup>2</sup>, long-term debt will increase the present value of the tax benefits if the term structure of interest rates adjusted for risk is increasing. Conversely, a decreasing term structure, according to Brick and Ravid, calls for short-term debt. And all of them, Brick et al. (1985), and Boyce et al. (1979), prove that debt maturity policy is irrelevant when the term structure of interest rates is flat.<sup>3</sup> Such a result confirmed by Lewis (1990) who predicts that if taxes are the only financial market friction, debt maturity structure will have no impact on the firm value provided that there is no difference between tax rate on short-term debt interests and tax rate on long-term debt interests.

Besides these over mentioned factors, let's say classical factors, literature afferent to debt maturity structure advances a panoply of other internal factors derived essentially from one market friction, asymmetric information problem.

**Asymmetric information:** Barclay et al. (1995) find strong support for the hypothesis that firms with larger information asymmetries issue more short-term debt. Furthermore, Goswami, et al. (1995) develop a model based not on transaction costs, but on the asymmetric information probability distribution, and demonstrate that debt-maturity depends on the timing of asymmetric information concentration. They precisely find that if asymmetric information is concentrated around long-term cash-flows, firms use long-term debt contracts joined with dividend restriction provision; and when asymmetric information is concentrated around short-term cash-flows, firms prefer long-term debt contracts deprived of dividend restriction provision. Finally, if asymmetric information has a uniform distribution, firms adopt short-term debt financing strategy.

**Agency costs:** Barnea et al. (1980) suggest that in a situation of information asymmetry, we can reduce part of agency costs, other asymmetric information anomaly, via the adoption of short-term financing strategy, because firms can, under this strategy, take advantage from the continuous revelation of information and upgrade debt contract provisions.

Myers (1977) proposes, in order to control the underinvestment problem, a reflection of agency problem, the adoption of short-term financing strategy. He demonstrates that if the debt matures before the firm has the opportunity of exercise its real investment options, the firm's potential disincentive to invest is eliminated. Therefore, short-term debt can be more convenient for firms whose investment opportunity sets contain more growth options, such an idea advocated also by Bodie and Taggart (1978), Barnia et al. (1980), Barclay and Smith (1995), Johnson (2003), and Barclay et al. (2003)<sup>4</sup>. However, if firms have few growth options, they should issue more long-term debts, instead of short-term debts, in order to control another source of agency conflicts, the managerial discretion [Stulz (1990) and Hart and Moore (1998)]. A proposition not well supported by Smith (1986) who argues that optimal leverage is expected to be higher and optimal debt maturity is expected to be longer because of regulatory oversight, not because of the few number of growth options.

**Signaling:** In the context of asymmetric information, outsiders cannot identify the real quality of firms, so cannot separate high quality ones from others. This ambiguity pushes them to attribute the same risk, and the same quality, to all firms, the mean quality, what is not fair: Low quality firms will be overvalued, and high quality firms will be undervalued. In order to reveal their true qualities and avoid the pooling valuation, hampered firms do not accept this unfairness and take some actions that cannot be imitated by beneficiaries and will be treated by the market as good signals that disclose the true quality of the issuer. The debt's maturity is one of many relevant financial signals advanced by the literature. One of the main contributions in this manner is Flannery's model (1986). He considers, in a risk neutral environment, two types of firms that are initially observationally equivalent, but holders of private information, insiders, know that one type is riskier than the other. Progressively, new information will be revealed to the market and creditors will know more about projects' type of risk. At the end of the first period, those firms choosing initially short-term financing and having riskier projects will be forced to roll it over at high interest rate and incur additional transaction costs. In his model, Flannery (1986) shows that, if there is no transaction costs, debt market will have a pooling equilibrium in short-term debt, and no one will issue long-term debt, despite the fact that assets have a long maturity.<sup>5</sup> However, if transaction costs are not zero, firms with favorable private information make a tradeoff between transaction costs and interest rate reduction, or value increase; and firms with unfavorable private information make a tradeoff between transaction costs and interest rate increase, or value reduction. When transaction costs incurred by the adoption of short-term debt financing policy are higher than the additional value resultant from the pooling valuation, low quality firms will have no interest in imitating high quality ones, and the debt market will have a separating equilibrium: high quality firms use short-term debt and low quality firms use long-term debt.<sup>6</sup> Nevertheless, other researches demonstrate that the separating equilibrium is viable even in the absence of transaction costs and the debt maturity can constitute a relevant signal. Kale and Noe (1990) demonstrate that the separating equilibrium is possible due to the value changes correlation, and Diamond (1991) shows that it is possible because of liquidation costs. Differently to Flannery's model, Diamond's model supposes that firms are not initially observationally equivalent and not all projects have positive net present values, but only insiders know the true qualities of their projects. No additional transaction costs are required at the end of the first period, but during the first period new information will be revealed and creditors learn more about projects' quality, and they may refuse to roll-over credits if they discover that the financed project is a negative net present value one. For that reason, firms make an arbitrage between the revenue due to future favorable news and the liquidation cost. For firms having the highest credit rating, i.e. low risk, the assessed revenue due to future favorable news encompasses the cost of liquidation risk, so they choose short-term financing.<sup>7</sup> Those with favorable intermediate risk rating may choose long-term debt at a higher rate to reduce their greater liquidity risk of being unable to roll over short-term debt after one period. Finally, very low rated firms must use short-term debt uniquely, they cannot get long-term debt.

**Transparency:** Whether the viability of short-term debt strategy is due to the existence of transaction costs, positive correlation between cash flows, or liquidation risk, the main cause of the abandonment of the matching principle and the adoption of a short-term financing strategy remains the asymmetric

<sup>1</sup> However, by taking into account call and put provisions, they argue that conditional bonds, callable or puttable, are mutually advantageous, i.e. for lenders and borrowers, and take over non-callable long-term bonds.

<sup>2</sup> The same result is proved by Brick et al. (1991) even if interest rates are stochastic.

<sup>3</sup> This result is not sustained by Brick and Ravid (1991) who show that there is a wide range of cases for which long-term would maximize the amount of leverage for constant level of default risk including flat term structure, and even sometimes decreasing term structure. Nevertheless, these results are related to the valuation approach, the return to maturity, and when they use another approach instead of it, the local expectations hypothesis, these results become ambiguous.

<sup>4</sup> For Bodie and Taggart (1978) even in the presence of this agency problem, the firm can choose long-term financing in order to avoid transaction costs or credit rationing.

<sup>5</sup> Such a result supported by Kane, Marcus and McDonald (1985) who predict that optimal debt maturity is zero when there are no transaction costs.

<sup>6</sup> Even if flotation costs are not sufficiently high, high quality firms can shorting debt's maturity in order to accumulate flotation costs and force low quality firms to adopt a different credit policy.

<sup>7</sup> Negative relationship between debt's maturity and quality (profitability) demonstrated by Flannery's and Diamond's model is consistent with Titman and Wessels (1988) and Fama and French (2002) findings supporting the existence a negative relationship between leverage and profitability, which support the substitutability between leverage and maturity noted by Brennan and Schwartz (1978).

information problem. Transparency is the obverse of asymmetric information and has opposed effect. With an increasing transparency, Berger et al. (2005) show that average maturity for low-risk firms would increase relative to the case of asymmetric information because firms that are revealed to have negative NPV projects would be denied credit and so would have no effect on the observed relationship between maturity and risk rating. Moreover, as transparency improves, creditors can identify easily riskier projects, and low risk firms need not bear the transaction costs of rolling over short-term debt. In addition to the positive effect of transparency improvement on debt-maturity, Sharpe (1991) shows that long-term debt may shift loan repayments to states in which incentive constraints are non-binding, and avoid credit rationing or prematurely liquidation the firm can face under short-term financing strategy.

**Firm size:** Stohs et al. (1996) find that long term debt is issued by larger, less-risky firms in relatively low-growth industries. Titman et al. (1988) and Demircug-Kunt et al. (1999) find that large firms have more long-term debt as a proportion of total assets and debt compared to smaller firms, notably in countries with effective legal systems. Internal guaranties, the proportion of net-fixed-assets, as well as implicit and explicit external guaranties, deposit insurance and government subsidies, are positively related to the use of long-term debts [Demircug-Kunt et al. (1999)].

Internal factors<sup>8</sup> are not the unique determinants of debt maturity choice. External exogenous factors may have, equally, an influence on the debt maturity decisions and make part of its determinants.

#### **External factors**

**Effective law:** Incentive problems, i.e. conflicts of interest between corporate insiders and external investors, are important factors that shape corporate policy and productivity [Fan et al. (2012)], including debt maturity policy, as we have seen earlier. Among the techniques proposed to alleviate these problems and increase financial policy efficiency, we find reinforcement provisions constraining managerial discretion, i.e. restraining dividends, indebtedness, ... However, as marked by La Porta et al. (1998), the extent to which contracts can be used to mitigate these problems depends on the legal system, which consists of both the content of the laws and the quality of its enforcement. Less risky financial instruments, i.e. those restraining managerial discretion and less complicated, are likely to dominate in countries characterized by weak contents and low quality of enforcement, and vice versa. Considering that short-term debts are safer than long-term debts [Myers and Majluf (1984)], the former are likely to dominate in high corrupted economies and the latter are expected to dominate in low corrupted economies. La Porta et al. (1998) find that legal systems based on common law offer better protection to outside investors than civil law. So, firms in civil law countries use more short-term debts, and firms in common law countries use more equity and long-term debts. Fan et al. (2012) find that firms in more corrupted countries are more levered and use more short-term debt; common law countries have lower leverage, so higher equity, and more long-term debt; and countries with explicit bankruptcy code have higher leverage and more long-term debt. Demircug-Kunt et al. (1999) find that firms have longer debt maturities in countries where the legal system has more integrity, but the legal system in itself does not matter.

**Development level:** La Porta et al. (1998) find that the quality of law enforcement, unlike the legal rights themselves, improves sharply with the level of income, which mean that firms in poor developing countries tend to have more short-term debts. Inline with this result, Demircug-Kunt et al. (1999) show that firms in developed countries have more long-term debt, and a greater proportion of their total debt is held as long-term debt, whatever the firm size, despite that firms in developing countries have higher proportions of net fixed assets to total assets.

**Financial system structure:** In countries with active stock markets, larger pension funds and insurance sectors firms will have more long-term financing [La Porta et al. (1998), Demircug-Kunt et al. (1999)]. Firms in countries with larger, developed, banking sectors tend to use more short-term debt, since this form of financing enables intermediaries to use their comparative advantage in monitoring [La Porta et al. (1998), Demircug-Kunt et al. (1999)]. Nevertheless, the existence of deposit insurance [La Porta et al. (1998)] and banks' economies of scale and ability to monitor covenants [Demircug-Kunt et al. (1999)], permit banks to offer longer-maturity debts. Exceptionally, Demircug-Kunt et al. (1999) find that small firms in countries with a large banking sector have less short-term debt and their debt is of longer maturity.

**Economic cycle:** Modigliani (1993) presumes that short-term debts are more convenient than long-term debts in case of high inflation. Nominal interest rate, i.e. the cost of debt, as we know, includes inflation rate. So, high inflation means categorically high nominal cost of debt, and since long-term financing deprives the firm from the possibility of interest rate adjustment even when inflation rate decreases significantly, short-term financing takes over.<sup>9</sup> A presumption supported implicitly by Morris (1976) who shows that short-term debts take over long-term debts in case of economic expansion, and we know that inflation rate increases in expansion phases. Empirical findings are also inline with this approach. For instance, Mitchel (1987) finds that the increase of nominal interest rate uncertainty is the main cause of the decrease of the debt maturity during 1960-1980; and Demircug-Kunt et al. (1999) find that inflation is negatively related to the use of long-term debt. Nevertheless, there is renewed interest in the possible role of short-term debt in recent financial crises, what can reduce its advantage and constrain its use, but till now it is not clear if short-term debt is a cause or just a symptom of these recent financial crises [Diamond and Rajan (2001a, 2001b), and Efraim et al. (2013)].

#### **Alternatives to short-term debt**

As we have seen, short-term debt financing is proposed to resolve several problems resultant from market frictions. However, we should state that this multifunctional use of short-term debt doesn't mean that it is a panacea. It has, in counterpart of its advantages, many drawbacks. Kare (1996) emphasizes that short-term debt decision forms a dilemma because short-term debt reduces agency costs, but increases, in the same time, transaction costs. Alike, it can be treated as a positive signal [Flannery (1986)], but it increases liquidation risk [Diamond (1991)]. In order to go around this obstacle, reduce agency problems without supporting additional transaction costs, Barnea et al.. (1980), Boyce and Kalotay (1979), and Kare (1996) propose the conversion provision, the call option, the sinking fund provision ... as alternatives to short-term debt. As for signaling use, Robbins et al. (1986) show that short-term financing and long-term debt with call option can be used as good signal that cannot be imitated by low quality firms. And under liquidation risk hypothesis, Diamond (1993) and Berglof et al. (1994) find that a mix of short-term and long-term debt is sometimes preferred to a maturity structure limited to one or other of the two forms. Finally, at the macroeconomic level, i.e. external factors, La Porta et al. (1998) findings support the hypothesis that countries develop substitute mechanisms for poor investor protection. Some of these mechanisms are statutory, such as mandatory dividends or legal reserve requirements; some others make part of governance techniques, such as ownership concentration, good accounting standards, and shareholder protection measures.

## **OUTLINE OF THE EMPIRICAL TESTS**

### **The Sample**

Our study focuses on the debt maturity structure of Saudi companies. Since theoretical literature pretends that possibly influencing factors are internal and external, we start by a brief description of Saudi macro-indicators subsequently followed by the sample description.

<sup>8</sup> In fact, certain factors are not purely internal but just partially, like taxes and information asymmetry, We consider them internal since they are at least a priori under control, owners can choice the form a firm, i.e. S or C; or partially control via signals of information publication.

<sup>9</sup> Unless the firm chooses variable interest rates.



TABLE NO. 1: SAUDI ARABIA GENERAL ECONOMIC INDICATORS

**References:** assembled from different sources: column 1,4,5, IMF country report N°.13/229, 2013; column 2, World development indicators, the World Bank website; column 3, Regional Economic Outlook: middle east and central Asia, IMF, 2013, and the World Bank indicators; columns 6, 7, Transparency international, CPI-Brochures 2009-2012; and columns 8, 9, Heritage foundation, Index executive summary 2009-2012.

Year		2009	2010	2011	2012
Nominal GDP (billions of U.S. dollars)		429	527	670	711
GDP growth (annual %)		1.8	7.4	8.6	5.1
GNI per capita (current US\$)		18350	19360	21210	24524
Consumer price index		4.1	3.8	3.7	2.9
Fiscal Balance (Percent of GDP an deficit -)		- 5.4	3.6	11.2	12.4
Corruption perceptions index (CPI)	Rank	63	50	57	66
	Score (best = 10 or 100)	4.3	4.7	4.4	44
Heritage foundation/Wall Street Journal Index of Economic Freedom	Rank	59	65	54	74
	Overall score (best = 100)	64.3	64.1	66.2	62.5

Saudi Arabia is an OPEC founder member<sup>10</sup>. It is the first OPEC oil producer in 2013 and the second world producer, after Russia<sup>11</sup>; it has the second largest OPEC proven crude oil reserves, after Venezuela; and it is classified by the World Bank among the high income country group.<sup>12</sup>

TABLE NO. 2: SAMPLE COMPANIES (NON-FINANCIAL LISTED COMPANIES)

**References:** Saudi stock market website.

Sector	Number	Percentage
Banks and financial services	11	6.7
Petrochemical industries	14	8.5
Cement	13	7.9
Retail	13	7.9
Energy and utilities	2	1.2
Agriculture and food industries	16	9.8
Telecommunication & Information Technology	5	3.0
Insurance	35	21.3
Multi-Investment	7	4.3
Industrial Investment	14	8.5
Building & Construction	16	9.8
Real Estate Development	8	4.9
Transport	4	2.4
Media and Publishing	3	1.8
Hotel & Tourism	3	1.8
All listed companies	164	100
<b>Sample companies (non-financial companies)</b>	<b>118</b>	<b>72</b>
Firms recently introduced (after 2012) or with insufficient or unclear data	15	
<b>Net number</b>	<b>103</b>	

Table number two resumes the sample firms. It includes all Saudi listed companies classified by economic sectors. However, this overall population of Saudi listed companies includes a number of financial companies, i.e. banks and insurance companies, which have special nature, and will be excluded from the sample, and take into account non-financial firms uniquely, which are 118 companies and represent 72% of the total number. We exclude from this last number recently listed companies and those with insufficient or unclear data (15), and we get a net number equal to 103.

We extract the necessary information from available annual reports for the over mentioned listed companies, reports for 2010-2012. This restricted number of years forms the main constraint for this study and limits enormously the number of econometric techniques that can be used, as well as the number of hypothesis that can be tested.

#### Dependant variable

In order to define debt's maturity, we must firstly fix the threshold date beyond it debt will be classified long term; and secondly, choose the appropriate debt's maturity proxy. Referring, for instance, to Antonios et al. (2006), there is no universal definition of short-term or long-term debt. Following accounting conventions, some studies, for example Scherr et al. (2001), consider a debt as long-term if it is payable after a year, while others define it as long-term if it is payable after three [Barclay (2003), Barclay and Smith (1995), Datta et al. (2005)] or five years [Schiantarelli et al. (1997), Datta et al. (2005)]. In this study, we follow the same approach and we adopt SOCPA's<sup>13</sup> definition of current and non-current liabilities: current liabilities include all liabilities payable within one year from the financial position date. Likewise short and long term definition, there is equally no consensus on a standardized debt maturity proxy. The empirical literature contains several proxies. Barclay (2003), Antonios et al. (2006), and Deesomak et al. (2009) define debt maturity as the proportion of long-term debt to total debt, where long-term includes debt of more than one-year maturity. For Guedes and Opler (1996) and Berger et al. (2005), maturity is the time in years until full repayment of the loan is scheduled, with one included to avoid taking the log of a value close to 0. Stohs and Mauer (1996, 2001) use weighted average maturity of liabilities. Hamson (1990) presumes that duration is the best measure of debt's maturity, but it is difficult to calculate, because it needs the maturity date, the interest rate, and the refunding method. In this study we assess that the proportion of long-term debt (with interest) to total debt (with interest), adopted by Barclay (2003), Antonios et al. (2006), and Deesomak et al. (2009), is a relevant proxy, (DEBMATBLN). It has two attractive features: it is uncomplicated and measures efficiently the variable we want to test. Nevertheless, as noted by Berger et al. (2005), this proxy, based on debt maturity structure, does not distinguish between newly issued 1-year debt and old long-term debt with 1 year remaining; as it does not reflect susceptible effects of some unstable environmental factors. For example, we cannot test the effect of high inflation rate or economic cycle on debt maturity decision because the latter may precede the high inflation period or the expansion phase. However, it can be used to assess the effect of stable factors, as development level, and corruption. In order to circumvent this problem, Berger et al. (2005) use new issued debt instead of debt maturity structure, but in Saudi context this data is not available, and we cannot use it. Note that long-term banking debt include, in our study, classic long-term banking debt, proportion of long-term debt expiring in the current

<sup>10</sup> General information, Organization of the Petroleum Exporting Countries (OPEC), 2012.

<sup>11</sup> OPEC Annual statistical bulletin, Organization of the Petroleum Exporting Countries (OPEC), 2013.

<sup>12</sup> World development report 2014 : risk and opportunity, managing risk for development, The World Bank, 2013.

<sup>13</sup> Standard of public disclosure, Saudi Organization for Certified Public Accountants (SOCPA).



accounting year, Islamic forms of long-term banking financing equivalent to some extent to classic banking debts, long-term 'Murabaha', and industrial long-term debts supported by the government.

#### Explicative variables

**Asset maturity structure:** The matching principle suggests that firms match their debt's maturity to their assets' maturity. For Guedes and Opler (1996), asset's maturity is measured as gross property, plant, and equipment (PPE)/ depreciation. This measure is in a number of years, not a fraction, and fits well with debt maturity proxy they used, the term to maturity of the debt. Stohs and Mauer (1996), and Johnson (2003) represent the debt maturity structure by the (book) value-weighted average of the maturities of current assets and net property, plant and equipment, a measure coherent with Stohs and Mauer (1996) debt maturity structure proxy, the (book) value-weighted average of short and long term debt<sup>14</sup>. Petersen and Rajan (1997) measure asset maturity structure by the ratio of current assets to total assets, which is consistent with their paper's topic, trade credit. In our study, since debt maturity structure is measured as long-term debt to total debt, we guess that the compliment of Petersen and Rajan (1997) asset maturity proxy (ASSETMAT) is the most convenient: asset maturity structure is approached by long-term tangible assets to total assets. This latter is used also to measure asset tangibility [Barclay et al. (2003)]. High proportion of long-term tangible assets is not associated only with longer-debt maturity, but with higher leverage too, because fixed assets provides better collateral.

**Tax shield:** Theoretically, tax-debt maturity relationship is controversial: under certain hypotheses tax regime has an effect and under others it does not matter; which means that this issue is to some extent an empirical issue. Unfortunately, Saudi Arabia has an exceptional tax regime and cannot be a favorable context to test this relationship. Saudi citizens and corporations pay a very small constant 'Zakat' rate, 2.5 percent, mandated by Islamic law rather than traditional income or corporate taxes. Overall tax revenue equals less than 6 percent of total domestic income.<sup>15</sup> Part of this small percentage is due to taxes on foreign companies working in Saudi Arabia, which are subjugated to 20 percent tax rate.

**Risk measure:** The main proxy used to measure firm's risk is bond ratings. Barclay et al. (1995) classify bonds into three levels of risk: high bond ratings as low risk, low bond ratings as intermediate risk, and unrated as high risk. Stohs et al. (1996) use two risk measures. The first uses the bond rate and the square of the bond rate to test the general notion that debt maturity increases as bond ratings deteriorate at a decreasing rate. The second uses two dummy variables, one equals one if the firm has a rating of CCC or is unrated; and the other equals one if the firm has AA or higher and zero otherwise. The authors expect negative relations between debt's maturity and the two dummy variables: low risk firms and high risk firms borrow short-term. Berger et al. (2005) use four levels of ratings, instead of three, ranked from the safest to the riskiest in addition to a combination of bond rating and bank scoring used as an indicator of information asymmetry. However, even if it is the most important risk proxy, bond rating is not the unique risk measure proposed by the empirical literature. Scherr et al. (2001) use an accounting version of bond rating, the Z-score consistent with small businesses characteristics. In the same context, that of small businesses, Guedes et al. (1996), and Ortiz-Molina et al. (2008) define another accounting risk rating proxy, the prior delinquency; Johnson (2003) uses the firm size and earning volatility. In the current study, we haven't the necessary data to use bond rating as risk proxy, and we will use the alternative accounting measure, the Z-score. Based on this score, we will use two alternative measures. One quantitative (ZSCORE) and measures the linear relationship between risk and maturity; and the second has the form of two dummy variables (LOWRISK and HIGHRISK), conform to the second measure of Stohs et al. (1996).

**Growth opportunities:** Myers (1977) presumes that short-term financing strategy is an effective tool to overcome the underinvestment problem, and predicts that firms with greater growth opportunities face greater underinvestment. This presumption is advocated and confirmed empirically by Bodie et al. (1978), Barnia et al. (1980), Barclay et al. (1995), Johnson (2003), and Barclay et al. (2003). In terms of growth opportunities measurement, Tim et al. (2008) evaluate the performance of four proposed opportunity growth proxies: the market-to-book assets ratio, the market-to-book equity ratio, earning price ratio, and (capital expenditures on net plant, property, and equipment). The authors show, on a relative scale, that the market-to-book assets ratio has the highest information content with respect to investment opportunities. In addition to these proxies, empirical literature contains other proxies consistent with small and nonpublic firms for which market-to-book is nonfunctional. Magri (2010) uses the growth rate of sales between  $t$  and  $t+1$  at industry level. Guedes et al. (1996) adopt, in addition to market-to-book ratio, the R&D to sales ratio. In this study, we will use the more efficient proxy (GROWTHOP) defined as follows: the ratio of market value of total assets (book value of total assets minus book value of total equity plus market value of total equity) to book value of total assets.

**Information asymmetry:** Information asymmetry is the most influencing market friction. It is the main cause of the different forms of agency problem, and the *raison d'être* of signaling decisions. More information asymmetry is stronger, more the firm is exposed to complicated agency conflicts and costs, and more it needs efficient signals and agency problem resolution tools. However, despite these serious implications, it is difficult to assign an accurate proxy. Authors use generally as a proxy, a measure of one cause or more of this market anomaly or management instruments used to overcome it. As an example of the latter, Berger et al. (2005) use the small business credit scoring (SBSCS) in conjunction with another lending technology: financial statement lending, asset-based lending, relationship lending, or another lending technology. The use of SBSCS as a complement to other technologies improves accuracy in evaluating creditworthiness and reduces the information asymmetry's degree. As to proxies by information asymmetry causes, smaller, younger and family firms are likely to be opaque. So we can use the firm size, the firm age, the capital structure ownership as information asymmetry proxies. Empirically, firm size seems to have the most support, Titman et al. (1988), Stohs et al. (1996), Demirguc-Kunt et al. (1999), and Magri (2009) find a negative relation between firm size and short-term debt. Firm age, however, hasn't a similar strong empirical support. Scherr et al. (2001) find that older firms issue less short-term debt, while Ortiz-Molina et al. (2008) find that older firms issue more short-term debt. Regarding ownership concentration, Deesomak et al. (2009) find that it has a negative and significant relationship with debt maturity. Datta et al. (2005) find a significant and robust inverse relation between managerial stock ownership and corporate debt maturity. High growth opportunities, high R&D expenses, and the ex post change in stock returns, can be also used as information asymmetry indicators. In the current study we use two proxies: firm-size and firm-age. Firm-size can be measured by total assets, sales of employees' number. We opt for the natural logarithm of total sales (FIRMSIZS); and the natural logarithm of total assets (FIRMSIZA). Concerning the firm-age, we choose age (ASINFAGE) and a different proxy: the stock market introduction period (ASINFLIP). Listed firms have reporting obligations and must publish periodically all relevant information afferent to the firm management, performance, and financial situation. For this reason, we believe that it is more performant than firm's age, and we guess that more this period is long, more the asymmetric information degree is low, and more the proportion of long-term debt financing is high too.

**Leverage:** Brennan et al. (1978), and Fan et al. (2012), find a negative relationship between optimal leverage ratio and time to maturity of debt, which means that leverage and maturity are substitutes under bankruptcy costs and corruption. Barclay et al. (2003) expect a positive relationship between optimal leverage and optimal debt maturity, because of regulatory oversight. Leverage is measured as the proportion of total debt to market value of the firm, (LEVERAGM).

**Macro-factors:** Saudi courts do not always enforce contracts efficiently. The judicial system is slow, non-transparent, and vulnerable to interference from the ruling elite. Government decision-making lacks transparency, and corruption remains a concern.<sup>16</sup> The corruption perceptions index confirms these judgments noted in the economic freedom report, which means that the Saudi's law is ineffective, suffers from fatal drawbacks, and doesn't protect sufficiently investors' rights (owners and creditors). Concerning economic development level, Saudi Arabia dominates the Organization of the Petroleum Exporting Countries. Oil revenues account for about 90 percent of export earnings and about 80 percent of government revenues.<sup>17</sup> 5-year compound annual growth is 3.5%, inflation rate is around 5%, and the World Bank classifies Saudi Arabia among the high income country group. However, this moderate sustainable economic growth and other positive indicators do not mean that it is a developed economy. Saudi economy is very concentrated, based on Oil production; unindustrialized; health care, primary education and labor market efficiency are weak, and, so, can't be considered a developed economy.<sup>18,19</sup> Finally, Saudi Stock market 'Tadawul' is

<sup>14</sup> However, Johnson (2003) uses the proportion of total debt maturing in three years or less.

<sup>15</sup> 2013 Index of economic freedom, The heritage foundation, p383-384.

<sup>16</sup> 2013 Index of economic freedom, The heritage foundation, p383-384.

<sup>17</sup> 2013 Index of economic freedom, The heritage foundation, p383-384.

<sup>18</sup> Indeed, The global competitiveness index 2013-2014 ranks 20<sup>th</sup> (out of 148 countries), but some economic development pillars remain weak and constrain seriously the economic development, health (53<sup>rd</sup>), primary education (48<sup>th</sup>) and labor market efficiency (70<sup>th</sup>). The global competitiveness report 2013-2014, World Economic Forum, 2013.

relatively recent and its efficiency level doesn't reach even the weak-form of efficiency.<sup>20</sup> All these macro-indicators, corruption, ineffective law, inflation, and economic development level, advocate for the use of short-term debt; and an empirical different results means probably that the dominance of long-term debts is attributed to easy ineffective indebtedness due to colossal petrodollars.

**Control variables:** In addition to the over mentioned variables, some others may have an influence on the debt maturity structure, and we will take them into account in this empirical study. These variables are profitability (FROFITAB), capital concentration, and firm's operating cycle (OPERCYCL). The last one can be considered, to some extent, a quantitative measure of the activity sector. High profitable firms have a high capacity of debt refunding and they are more placed to take advantage of short-term financing functions. Capital concentration may be a reaction to the structural corruption and law weaknesses, as it may be a source of agency conflicts and short-term financing stimulator. Concerning operating cycle, firms with short operating cycle, service and commercial companies, seems to have low net working capital, less fixed assets and, so, do not need much long-term debt.

TABLE NO. 3: VARIABLES, PROXIES, HYPOTHESES, AND PREDICTED SIGNS

Variables	Proxies	Hypotheses	Predicted signs
Asset's maturity	Long-term tangible assets to total assets	Matching hypothesis Asset's specificity (tangibility)	+
Leverage	proportion of total debt to market value of the firm	Substitution hypothesis	-
Firm size	Natural logarithm of total sales; Natural logarithm of total assets.	Small are less transparent	+
Information asymmetry	Listing period Firm size	New listed firms are less transparent	-
Growth opportunities	Market value of total assets to book value of total assets	Underinvestment hypothesis	+
Risk	Z-score Dummy	Flannery's model Diamond's model	+ Non linear
Profitability	Economic income to total assets	High profitable firms prefer short-term debt financing	-
Capital concentration	Proportion of capital owned by big stockholders (stockholders owning at least 5% of capital).	Agency cost (wealth transfer), corruption	-
Operating cycle	Net sales to net fixed assets	Short-operating cycle need less long-term debt	-
Macro-factors	Contextual factors that we try to measure their impact indirectly because we don't make a transnational study.		

## EMPIRICAL RESULTS

### General descriptive results

Table four shows that in 2012, one quarter of studied firms are unlevered; one third are long-term unlevered; and more one 50% are short-term unlevered. These proportions are over 2009-2012 average values, which means that some of them, at least, are not outright rationed. They were short-term and/or long-term financed. Table four shows equally that un-indebtedness does not engender financial disequilibrium. Only 18 companies have a negative working capital, and even in this small number only seven are unlevered. In accordance with these results, table four shows that the proportion of firms without short-term debt is largely higher than the proportion of firms not long-term debt financed. And since long-term debt is riskier and harder to obtain than short-term, we can conclude preliminarily that short-term debt financing is not used primarily as signaling technique or conflict resolution tool, nor it is a simple result of credit bank rationing. This limited recourse to short-term banking debt may be explained by the bottom of the table four: while long-term banking debt forms on average more than 55% of banking debt, noncurrent liabilities hardly exceed one third. Commercial credits and other current liabilities form an alternative, and significant, short-term financing tool.

TABLE NO. 4: GENERAL STATISTICS

2009-2012				2012			
Unlevered	Long T. unlevered	Short T. unlevered		Unlevered	Long T. unlevered	Short T. unlevered	
15 (14.56%)	19(18.44%)	42(40.77%)		25 (24.27%)	29(28.155%)	59(57.28%)	
Working capital (2012)							
Firms with positive WC			Firms having negative WC			18	
85			Unlevered		Short T. unlevered		Long T. unlevered
			7		10		7
Long-term banking debt / total banking debt				Noncurrent liabilities / total liabilities			
Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
0.553	0	0.666	0.989	0.37	0.129	0.308	0.577
PROFITAB (2012): Average profitability (6.65%)							
Q1			1.73%	Q3			12.36%
Under Q1 Unlevered firms			8	Over Q3 Unlevered firms			9
Under Q1 Without short-term debt			16	Over Q3 Without short-term debt			17
Under Q1 Without long-term debt			8	Over Q3 Without long-term debt			11

In a context of information asymmetry, both Flannery (1986) and Diamond (1991) predict that high quality firms use more short-term debt. If we consider, for the moment, economic profitability as quality indicator, results in table four don't support these predictions. The number of unlevered low profitable firms (eight) is roughly equal to the number of unlevered high profitable firms (nine); and the number of low profitable firms short-term debt free (16) is roughly equal to high profitable firms without short-term banking debt (17).

As mentioned in the table three, we proxy information asymmetry by the listing period instead of firm age. Unfortunately we do not find all the IPO dates, the Saudi stock market 'Tadawal' publishes for a number of firms creation and IPO dates, and only creation date for others. In light of historical stock quotations and financial reports, we arrive to separate recently listed companies, listed in the five last years from others; and we use in lieu of a continuous variable a dummy variable equal to zero if the firm is recently listed, and one otherwise. Table five shows that neither firm age nor listing period gives at first glance exceptional results. The only important difference between young and old unlevered firms is relative to short-term financing. The average age (more than 22 years) and

<sup>19</sup> Consistent with this judgment, the rank of Saudi Arabia in the Human Development Index is 57, which is moderate rank despite the fact that GNI is one of HDI determinants. See the human development report 2013, United Nations development program (UNDP), 2013. In addition, the International Monetary Fund classifies Saudi Arabia among emerging market and developing economies (EMDEs). See Table 4.6. Economy groups, the World Economic Outlook April 2003: hopes realities, risks, IMF, 2013, p139.

<sup>20</sup> The unit-root test that we make, but doesn't appear here, chows that Saudi stock market "Tadawal" doesn't satisfy even the conditions of the weak-form efficiency.

statistic results confirm our initial judgment, firm age can't be an efficient information asymmetry proxy. As for listing period, the unique important difference is in short-term debt financing. Proportions of unlevered and long-term unlevered recently listed firms and earlier listed firms are approximately equal.

TABLE NO. 5: STATISTICS RELATIVE TO FIRM'S AGE AND LISTING PERIOD

Age (2012) : Mean = 22.59			
<b>Q1 (age=12)</b>	Number of firms	<b>Q3 (age=32)</b>	Number of firms
Youngest unlevered firms	6	Oldest unlevered firms	5
Youngest without short-term debt	16	Oldest without short-term debt	12
Youngest without long-term debt	6	Oldest without long-term debt	6
<b>Listing period (up to 2012)</b>			
Less than 5 years	20	More than 5 years	83
Unlevered recently listed firms(RLF)	4 (20%)	Unlevered firms	21(20%)
R.L.F. without short-term debt	10 (50%)	Firms without short-term debt	49 (59%)
R.L.F.st without long-term debt	6 (30%)	Firms without long-term debt	23 (28%)

Capital concentration can be interpreted as a sign of structural corruption or defected legal system.

TABLE NO. 6: CAPITAL STRUCTURE STATISTICS

Capital concentration statistics			
Mean	Median	Max	Min
0.363	0.35	0.95	0
Politicians big stockholders			
Firms number	Unlevered	Long-term unlevered	Short-term unlevered
18	9	10	11

We measured concentration level by the sum of proportions detained by big stockholders, those having at least 5% of capital. On average more than one third of listed companies are controlled by a very little number of owners. Moreover, for 12 companies among the total number the stock market does not publish their main stockholders, and if we drop them instead of considering them perfectly dispersed, we get a mean value equal to 0.416 and minimum value equal to 5% instead of 0.363 and zero successively. Whether we take into account these 12 firms or we exclude them, capital concentration level is important. This high concentration level may be a reaction to a structural corrupted system, as it can be a result of the nature of Saudi firms, the majority are family or public. In addition to this high concentration level, some companies are partially owned by politicians, 18 firms. We guess that these special owners cause cronyism and facilitate short and long-term bank financing, but statistic results refute this intuition: 50% of these firms are unlevered, and more than 50% are long-term unlevered. Datta et al. (2005) find a significant and robust inverse relation between managerial stock ownership and corporate debt maturity. In our study, we cannot verify this relationship.

Short-maturity combined with high concentration can be interpreted as a strong sign of high corrupted or weak legal system: firms use various techniques to tackle corruption and legal defects. However, short-term financing does not have the same support and as we have seen, the number of short-term unlevered firms is larger than the number of long-term unlevered firms. Capital concentration and short-term debt are not complements, but they are not substitutions too. Preliminary regression results confirm these descriptive statistics and do not support the relationship between debt maturity and capital and stockholders structure, neither positive nor negative. For that reason we drop these two control variables from the final regression model.

#### Multivariate analysis results

**Checking of specification problems:** Correlation matrix, table eight, shows that there is a suspicion of collinearity between some variables. For instance, LEVERAGM is highly correlated with LOWRISK (-0.836) and HIGHRISK (0.863), two complement measures of firm quality; and it has a moderate correlation with FIRMSIZA (0.53). Further investigation of collinearity problem needs the use of a more explicit statistic measure, the VIF (Variance Inflation Factor).<sup>21</sup> Values larger than 10 for each variable, and/or a mean of all values considerably larger than 1, give evidence of collinearity. No value of the first rubric of table nine is larger than 10, the highest is 7.74. The mean value is 3.44. Is it considerably larger than 1 or not? It is not clear, but if we drop the variable corresponding to the highest value, LEVERAGM, we get a reduced mean, 2.84; and if we drop with it HIGHRISK and LOWRISK, alternative risk measure to ZSCORE, we get a significantly reduced mean, 1.94, and low individual values (max= 2.8). Moreover, the eventual correlation between independent variables causes the heteroskedasticity problem. The White heteroskedasticity test presented in table 10 shows that we cannot reject the null hypothesis, errors homoskedasticity, corroborating therefore the previous test.

According to White, the former test is more than a reduced heteroskedasticity test. It is a specification test. The null hypothesis means in fact that: errors are homoskedastic, errors are independent to explicative variables; and dependent-independent variables are linearly related.

Concerning the normality hypothesis, apart FIRMSIZA, all other variables are normally distributed, Table seven. It is, in the same time, relatively correlated with leverage proxy, LEVERAGM, and low risk proxy, LOWRISK. Besides, we have a second measure of firm size that does not suffer from these drawbacks, FIRMSIZS, the natural log of sales, and we opt for it. However, this individual normality does not mean necessarily that the residual distribution of the overall model regression is normal. In fact, the violation of the normality distribution arises because of: distributions of dependant and independent variables are also non-normal; violation of linearity assumption; and the existence of small number of very large errors. But before looking for the main cause, let us verify first of all if the residual distribution is really non-normal. The middle rubric of table 10 shows that we accept the normality hypothesis, but for an alpha little bit more than 5%.

We close, finally, this list of specification tests by the Ramsey's RESET test. The RESET is a general test of omitted variables; incorrect functional form; and correlation between independent variables and error term. The last rubric of table 10 reject hypothesis one, mis-specification hypothesis. No one of basic hypotheses is violated; we can go ahead and start results analysis.

#### RESULTS ANALYSIS

ASSETMAT is used to test the relevance of the matching principle. Its coefficient is statistically significant. Its sign is conformed to the predicted one. Long-term debts are fitted to long-term tangible assets. The golden rule of healthy financial management is applied by sample firms' managers. This variable tests in the same time the relationship between asset's tangibility and debt's maturity, and results show that more tangible long-term assets are attached to more long-term debts. Tangible assets forms in fact a sort of guaranties and creditors accept to consent more long-term debts to firms with high tangible assets.

<sup>21</sup> Available in STATA.



TABLE NO. 11: REGRESSION RESULT

TABLE NO. 11: REGRESSION RESULTS

Initial regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.063202	0.201549	0.313582	0.7545
ASSETMAT	0.365733	0.189045	1.934636	0.0560
FIRMSIZS	0.063860	0.018426	3.465726	0.0008
GROWTHOP	0.000787	0.017732	0.044405	0.9647
OPERCYCL	-0.062275	0.022299	-2.792784	0.0063
PROFITAB	0.131559	0.343160	0.383374	0.7023
ZSCORE	-0.007942	0.002819	-2.817726	0.0059
Replacing ZSCORE by LOWRISK, HIGHRISK				
LOWRISK	-0.078991	0.136285	-0.579599	0.5636
HIGHRISK	0.094094	0.132949	0.707743	0.4808
Introducing LEVERAGM and dropping LOWRISK and HIGHRISK				
LEVERAGM	0.471711	0.221463	2.129974	0.0358
Statistic values for the initial model				
R-square	0.406062	F-statistic	10.93882	
Adjusted R-squared	0.368940	Prob(F-statistic)	0.000000	
S.E. of regression	0.342595			

Principal information asymmetry indicators, firm age and listing period, as noted in descriptive statistics analysis paragraph, are not accurate, insignificant and dropped from the final regression. Indeed, even earlier empirical results are controversial. Scherr et al. (2001) find that older firms issue less short-term debt, while Ortiz-Molina et al. (2008) find that older firms issue more short term debt. FIRMSIZS may be considered an alternative indicator of information asymmetry and its regression results serve to test its hypothesis. Previous studies confirm the positive relationship between firm size and debt's maturity, i.e. Stohs et al. (1996), Scherr et al. (2001), Ortiz-Molina et al. (2008). FIRMSIZS has a significant and positive coefficient. Large firms use relatively more long term debts. Larger are generally, more transparent, less risky, mature. In this sense, they are less rationed, fairly valued and they don't need the use of short-term debt as quality signal. Results confirm so the information asymmetry hypothesis: more ambiguous companies use more short-term debts. Nevertheless, this interpretation should be considered with vigilance, because the considered firms are all listed and forced to communicate periodically their financial statement and other valuable financial information.

OPERCYCL is to some extent an activity indicator. Firms with low OPERCYCL values are generally industrial firms. They need high level of fixed assets, i.e. equipments, plants ... and their operating cycles are longer. In counterpart, commercial and service activities have short or very short operating cycle, and they need a limited level of fixed assets: they don't need a lot of equipments, and they have no need to plants. Their sales relatively to their fixed assets could be high. This is what we find in this regression. OPERCYCL has a significant and negative coefficient. Short-operating-cycle firms recourse less to long-term debt, and their debt maturity on average are shorter than long-operating-cycle firms. Industrial firms use more long-term debts. It may due to industrial favored long-term debt granted to certain firms. It supports, in addition, indirectly the matching hypothesis.

LEVERAGM, firm leverage proxy, has a significant and positive sign coefficient. The debt maturity-debt size relationship is validated. Referring to Brennan et al. (1978), Fan et al. (2012) leverage and time to maturity of debt are substitutes. The two are influenced by corruption level and bankruptcy costs, or used in order to reduce agency costs or to divulgate their true qualities. Inversely, Barclay et al. (2003) expect a positive relationship between optimal leverage and optimal debt maturity, but under special condition, the regulatory oversight. Our results don't support the substitutability thesis: More leveraged firms use more long term debts. General descriptive statistics support the fact that Saudi listed companies don't use short-term maturity in order to control certain agency problems. Moreover, as mentioned earlier, the Index of economic freedom reported that Saudi courts do not always enforce contracts efficiently; the judicial system is slow, non-transparent, and vulnerable to interference from the ruling elite; government decision-making lacks transparency, and corruption remains a concern. These economic features mean clearly that even if our results are consistent with Barclay's et al. expectations, their causes are not the same. The conjunction between leverage and long maturities can't be attributed to the regulatory oversight. From our viewpoint, this result forms the main special fact of petroleum countries. Massive oil production and exportation produce an excess liquidity and a flexible monetary policy: banks confer credits not because of projects' feasibility and firms' quality, but because of indirect government guaranty and low interest rates.

ZSCORE, firm-quality measurement, has a statistically significant coefficient and negative sign. It means that debt maturity and firm quality are linearly and inversely related: low quality firms use more long-term debts. Alternative measures of firm's quality, LOWRISK and HIGHRISK, have insignificant coefficients; and their signs are controversial: high-quality firms recourse to short-term debt financing, and low-quality firms choose long-term debt financing. These findings refute the non-linearity relationship defended by Diamond (1991), and corroborate regression results of the first quality's measure, ZSCORE. High-quality firms, having the highest score, use more short-term financing, and low-quality firms use more long-term debt financing. The linearity between maturity and quality is not strange to the financial literature. Flannery's model (1986) defends, under some conditions, this relationship form with exactly the same sign. As we know, the risk measure, z-score, is the composition of four ratios, one of them is PROFITAB, which has no significant coefficient and a positive sign, see table 11. The firm's quality- debt's maturity relationship is sketched by other variables composing the proxy. So, high quality firms' choice for short-term debt financing can't be explained by their high refunding capacities. Do they use it as a quality's signal? Statistic results, as we mentioned earlier, support Flannery's model, and partially Diamond's model. However, when we look deeply and impartially, these results may be misleading. ZSCORE is, in the same time, positively related to OPERCYCL. This means that High quality firms have the shortest operating cycles, essentially commercial and service firms. In this way, these firms use more short-term debts not to overcome information asymmetry and signal their true qualities to the market, but simply because short-term debts are perfectly convenient to their short-term needs. In other terms, these firms do not use revolving credits to finance long-term uses. Following this analysis, results validate matching hypothesis in lieu of signaling hypothesis. Note that our results are consistent with those of Berger et al. (2005) but explanation attempts are different. For them, the most likely explanation may be the use of bank loans rather than publicly issued debt. It may be the best explanation for their study, small non-listed firms, but it is very likely to be the main cause in our case, listed companies able to use bank and public debts.

GROWTHOP measures the relationship between debt's maturity and the level of growth opportunities. A negative relationship indicates that short-maturity debt may be used to resolve agency problem related to growth opportunities [Myers (1977)]. Ex-studies prove this negative relationship, i.e. Barclay et al. (1995). Current regression results don't validate this relationship, its coefficient is insignificant and it has a positive sign, opposite to the predicted sign.

Finally, referring to descriptive statistics and regression results, essentially assets' maturity, leverage and risk proxies coefficients, we can conclude that high petroleum revenues, and the resulted indulgent monetary policy and favorite industrial credits, counterbalance negative effects of corruption and underdevelopment. Contrary to La Porta et al. (1998), Demircuc-Kunt et al. (1999) and Fan et al. (2012) who find a negative relationship between debt's maturity and corruption or underdevelopment, our results do not support these findings and show that high-risk firms can be in the same time highly leveraged and get long-term debts.

## CONCLUSION

Financial literature relative to debt maturity structure advances different debt maturity determinants allocated into intrinsic and environmental. We started this study by a brief and concise review of the main theoretical contributions. Matching principle formed the cornerstone of debt maturity literature. It consists to relate assets' maturity to debt's maturity, and it is empirically supported. Saudi managers respect this managerial golden rule in order to avoid financial

disequilibrium. However, some internal and external factors, such as asset specificity, agency problem, information asymmetry, inflation, corruption, legal system, taxes, constrain normally the use of this rule, limit its efficiency, and push the firm to adopt other maturity choices. But excess liquidity in rich petroleum countries may counterbalance all these environmental frictions and encourage firms to keep this classic maturity choice even in the presence of the over-mentioned problems.

Several statistic sights confirm the exceptional maturity choice of petroleum country firms, or at least Saudi listed firms. Complementary between leverage and debt maturity, the absence of relationship between growth opportunities and debt maturity, the high proportion of short-term unlevered firms compared to long-term unlevered firms, show firstly that Saudi listed companies don't use short-term maturity in order to eradicate agency problems or as financial signal. They indicate, in addition, that there is no significant credit-rationing, since even high risk firms can get long-term debts. High petroleum revenues, producing high liquidity and an implicit public guaranty, encourage banks to be more flexible, as they encourage the government to grant special favorite industrial credits, included in our statistics.

Whether these financial choices are really rational and make part of financial strategy conceived in light of internal and external analysis, i.e. SWAT analysis, conscious of the different debt's maturity determinants, or just a result of naïve choices made by non qualified managers, we need much more data to check for this. This is in fact one of many limits of this study. Future study may focus on this issue and other topics treated in recent studies, such as debt maturity for private firms [(Magri (2009))], incentive packages of CEOs [Brockman et al. (2010)], traded credit default swap (CDS) [Saretto et al. (2013)] and other covenant protection [Billet et al. (2007)].

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## APPENDIX

TABLE NO. 7: COMMON STATISTICS

	LEVERAGM	GROWTHOP	PROFITAB	ASSETMAT	FIRMSZS	FIRMSZA	ASINFLIP	OPERCYCL	DEBTMATBLN	WORKCAP	ZSCORE	LOWRISK	HIGHRISK	ASINFAGE
Mean	0.226	2.567	0.066	0.610	6.579	7.783	0.805	1.418	0.553	2.796	9.578	0.64	0.262	22.59
Median	0.134	1.854	0.056	0.655	6.826	7.677	1.000	0.704	0.666	1.620	4.606	1.000	0.000	22.00
Maximum	0.993	20.208	0.352	0.979	12.15	12.73	1.000	12.96	1.000	22.40	97.13	1.000	1.000	58.00
Minimum	0.003	0.459	-0.59	0.091	0.000	3.971	0.000	0.000	0.000	0.065	-2.689	0.000	0.000	2.000
Std. Dev.	0.227	2.403	0.11	0.235	2.234	1.683	0.397	2.045	0.431	3.877	15.97	0.482	0.441	13.70
Skewness	1.167	4.509	-1.6	-0.39	-0.73	0.464	-1.546	3.022	-0.229	3.637	3.634	-0.586	1.081	0.637
Kurtosis	3.573	30.44	13.97	1.994	4.492	3.453	3.39	14.13	1.285	16.58	17.78	1.344	2.170	3.004
Jarque-Bera	24.80	3581	560.4	6.998	18.87	4.582	41.70	689	13.52	1018	1164	17.67	23.04	6.965
Probability	0.000	0.000	0.000	0.030	0.000	0.101	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.030
Sum	23.23	264.4	6.884	62.9	677.7	801.7	83.00	146.1	56.97	288	986.5	66	27.00	2327
Sum Sq. Dev.	5.258	589	1.255	5.64	509.2	289	16.11	426.8	18.97	1533	26019	23.70	19.92	19154
Observations	103	103	103	103	103	103	103	103	103	103	103	103	103	103

TABLE NO. 8: CORRELATION MATRIX

	LEVERAGM	GROWTHOP	PROFITAB	ASSETMAT	FIRMSZS	FIRMSZA	ASINFLIP	OPERCYCL	DEBTMATBLN	WORKCAP	ZSCORE	LOWRISK	HIGHRISK	ASINFAGE
LEVERAGM	1.000	-0.43	-0.33	-0.11	0.488	0.530	-0.11	-0.03	0.380	-0.33	-0.45	-0.83	0.863	-0.17
GROWTHOP	-0.43	1.000	0.105	-0.09	-0.26	-0.49	0.083	0.140	-0.31	0.098	0.581	0.398	-0.33	0.106
PROFITAB	-0.33	0.105	1.000	-0.07	0.314	0.079	0.005	0.225	0.023	-0.101	0.118	0.320	-0.33	0.031
ASSETMAT	-0.11	-0.09	-0.07	1.000	-0.18	0.120	0.254	-0.63	0.333	-0.29	-0.041	0.050	-0.06	-0.02
FIRMSZS	0.488	-0.26	0.314	-0.18	1.000	0.733	-0.07	0.216	0.352	-0.28	-0.38	-0.44	0.334	0.010
FIRMSZA	0.537	-0.49	0.079	0.120	0.733	1.000	0.059	-0.20	0.500	-0.15	-0.42	-0.53	0.377	-0.21
ASINFLIP	-0.11	0.083	0.005	0.254	-0.07	0.059	1.000	-0.26	0.079	0.034	0.141	0.144	-0.04	0.077
OPERCYCL	-0.03	0.140	0.225	-0.63	0.217	-0.20	-0.26	1.000	-0.33	0.056	-0.011	0.141	-0.08	0.097
DEBTMATBLN	0.38	-0.31	0.023	0.333	0.352	0.500	0.079	-0.33	1.000	-0.24	-0.42	-0.35	0.297	-0.10
WORKCAP	-0.33	0.098	0.101	-0.29	-0.28	-0.15	0.034	0.057	-0.24	1.000	0.570	0.253	-0.24	-0.13
ZSCORE	-0.46	0.581	0.118	-0.04	-0.38	-0.42	0.141	-0.01	-0.42	0.570	1.000	0.390	-0.32	0.108
LOWRISK	-0.83	0.398	0.320	0.050	-0.44	-0.535	0.144	0.141	-0.35	0.253	0.390	1.000	-0.79	0.243
HIGHRISK	0.863	-0.33	-0.33	-0.06	0.334	0.377	-0.04	-0.08	0.297	-0.240	-0.32	-0.79	1.000	-0.06
ASINFAGE	-0.17	0.106	0.031	-0.020	0.010	-0.216	0.077	0.097	-0.10	-0.130	0.108	0.243	-0.06	1.000

TABLE NO. 9: VIF TESTS

Initial			Adjusted (after dropping LEVERAGM)			Adjusted (after dropping LEVERARM and alternative measures to zscore (highrisk and lowrisk))		
Variable	VIF	1/VIF	Variable	VIF	1/VIF	Variable	VIF	1/VIF
leveragm	7.74	0.129	firmsiza	5.54	0.180	zscore	2.80	0.356827
firmsiza	5.73	0.174	firmsizs	5.15	0.194	workcap	2.17	0.460599
highrisk	5.28	0.189	lowrisk	4.47	0.223	assetmat	2.16	0.462140
firmsizs	5.27	0.189	zscore	3.11	0.321	opercycl	1.97	0.508862
lowrisk	4.62	0.216	highrisk	3.02	0.330	growthop	1.91	0.523623
zscore	3.14	0.318	workcap	2.60	0.384	firmsizs	1.87	0.535921
workcap	2.84	0.352	assetmat	2.55	0.392	caconctr	1.31	0.761853
assetmat	2.72	0.367	opercycl	2.34	0.426	profitab	1.30	0.771685
opercycl	2.34	0.426	growthop	2.17	0.460			
growthop	2.26	0.443	profitab	1.74	0.575			
profitab	1.87	0.535	caconctr	1.64	0.610			
caconctr	1.68	0.593	asinfage	1.33	0.752			
asinfage	1.39	0.719	asinflp	1.28	0.778			
asinflp	1.29	0.775						
Mean	3.44		Mean	2.84		Mean		1.94

TABLE NO. 10: SPECIFICATION TESTS

White Heteroskedasticity Test:			
F-statistic	1.491009	Probability	0.113881
Obs*R-squared	24.9402	Probability	0.126571
Test Equation:			
Dependent Variable: RESID^2		Method: Least Squares	
Date: 05/02/14 Time: 14:55		Sample: 1 103	
Included observations: 103			
Jarque-Bera normality test			
Series	Residuals	Minimum	-0.740066
Sample	1 103	Std. Dev	0.332366
Observations	103	Skewness	-0.397503
Mean	-1.24e-17	Kurtosis	2.249869
Median	0.080693	Jarque-Bera	5.127384
Maximum	0.632537	Probability	0.077020
Ramsey RESET test			
F-statistic	1.334762	Probability	0.237248
Log likelihood ratio	11.92423	Probability	0.154617
Mean	-1.24e-17	Kurtosis	2.249869
Test Equation:			
Dependent Variable: DEBTMATBLN		Method: Least Squares	
Sample:	1 103	Included observations:	103

## AN EMPIRICAL STUDY OF ABSENTEEISM IN PUMPS INDUSTRY WITH SPECIAL REFERENCE TO COIMBATORE

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### ABSTRACT

*Absenteeism is one of the common factors, which affects both the production, and the growth of the organization. No company can afford to allow high incidence of absenteeism to eat up its hard earned corporate profits. In general the absent rate indicates the relative cost to a given company because production workers simply cannot produce as much annually when absent rates are high as they can when absent rates are low. When the employees are away from the work, it is difficult for the employers to maintain production schedule. Reduction of absenteeism is beneficial not only to the industry but also to the nation as a whole. The treatment of dismissal by the employer would never ultimately help to reduce absenteeism.*

### KEYWORDS

absenteeism, pump industry, turnover rate, causes of absenteeism.

### INTRODUCTION

Absenteeism has been recognized as a vital issue affecting discipline and production in the organized industry today. It is a major socio – psychological problem in industries. Absenteeism in Indian industry is not a new phenomenon. The Royal Commission of Labour reported, “High absenteeism prevails among industrial labours mainly due to their rural orientation”. Absenteeism is a serious problem for a management because it seriously involves heavy expenditure and loss of production. The main objective of organization is to maximize profit by maximum utilization of men, materials and money. When there is a problem of absenteeism the three above said sources are not fairly utilized.

Absenteeism is one of the common factors, which affects both the production, and the growth of the organization. No company can afford to allow high incidence of absenteeism to eat up its hard earned corporate profits. In general the absent rate indicates the relative cost to a given company because production workers simply cannot produce as much annually when absent rates are high as they can when absent rates are low.

When the employees are away from the work, it is difficult for the employers to maintain production schedule. Reduction of absenteeism is beneficial not only to the industry but also to the nation as a whole. The treatment of dismissal by the employer would never ultimately help to reduce absenteeism.

Labour force is an integral and important component of the wealth of nations, as other factors like land, capital, and machine. Measured by what labour contributes to output, productive capacity of human beings is now vastly larger than all other forms of wealth taken together which has chiefly contributed to economic growth of countries.

An employee is under an obligation not to absent himself from work without good cause during the time at which he is required to be at work spot by the terms of his contract of service.

Absence creates many administrative problems, resulting in dislocation of work. The contribution of labour towards production is possible only when the individual comes to the work spot and delivers his labour to somebody.

Labour is inseparable from the labour himself. He sells his labour in person. A labourer works to earn, to do so it is imperative on his part to be present on the work spot everyday.

When the workers are absent from the work, it leads to loss in the man-hours, which has direct influence on the production and productivity. This underlines the importance of the need for workers to be present.

Absenteeism refers to the absence of an employee from work who is scheduled to be at work. It refers to the loss of man – hours on account of the absence of a percentage of workers scheduled to be at work.

Absenteeism plays an important role in the productivity of the organization.

“More the Absenteeism, Less Would Be the Productivity”

### ABSENTEEISM AFFECTS

The Employer – Production/Profitability

The Employee – Earnings

The Nation – Economic condition

Though many studies have been conducted on absenteeism a clear understanding is necessary to deal with the problem and to reduce absenteeism. An industry, which has got a bad record of absenteeism, cannot claim to have neither good industrial relations, nor high morale of work force.

### DEFINITIONS FOR ABSENTEEISM

Absenteeism is defined by Labour Investigation Committee 1946 “it is commonly understood as an employee or a group employees remaining absent from work, either continuously for a long or repeatedly for short periods.” Ordinarily it means leaving one’s own work place without permission.

Hackett defines absenteeism as “a temporary cessation of work for not less than one whole day, on the initiative of workers, when his presence is expected.

Technically it can be defined as a ratio of the number of production man – days or shift lost to the total number of production man – days or shifts scheduled to work.

According to the circular issued by the Labour Department, Government of India, absenteeism rate refers to “the total man – shifts lost because of absence as a percentage of the total man – shifts scheduled”.

An employee is to be considered scheduled to the work, when the employee has available work and the employee is aware of it, and when the employer has no reason to expect, well in advance, that the employee will not be available for work at the specified time.

“Absenteeism is any failure of an employee to report for or to remain at work as scheduled, regardless of reason”.

Labour Bureau of India defines absence as a failure of a worker to report for work when he is aware that the employer has work available to him. Absenteeism is the tendency of a worker to abstain from his scheduled work. For the purpose of statistics, a worker is treated as absent when

- He does not turn for work by obtaining prior permission.
- He is on leave with pay (Full or Part)
- The worker is on leave without pay even though the worker receives social security benefits for sickness, maternity benefits etc.,
- When the worker absconds from duty.

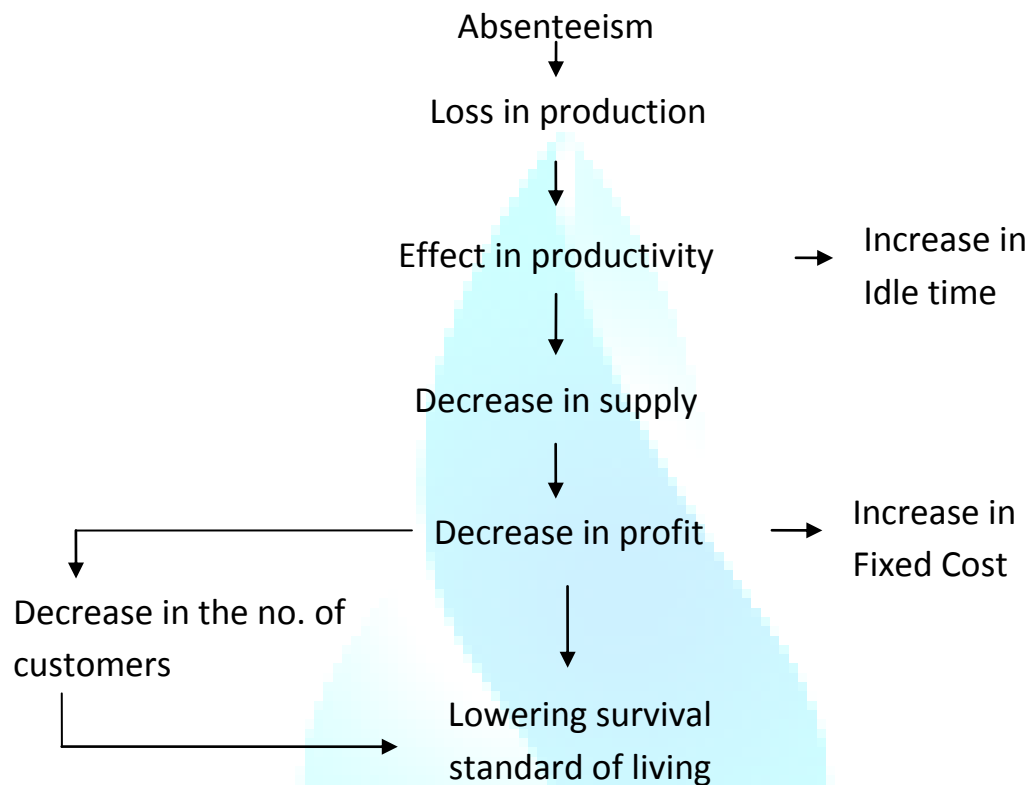
According to a circular issued by the Labour Department, Govt. of India, absenteeism rate refers to “the total man- -shifts lost because of absence as a percentage of the total man – shifts scheduled”.

For estimating the rate of absenteeism we require the number of persons scheduled to work and the number actually present. A worker who reports for any part of shift is to be considered as present.

An employee is to be scheduled to work, when the employee has available work and the employee is aware of it, and when the employer has no reason to expect, well in advance, that the employee will not be available for work at the specified time.

Regularly scheduled holidays, ordered lay – offs, strikes and bandhs are excluded while estimating absenteeism.

## ABSENTEEISM AND MANAGEMENT



## MEASURES FOR CONTROLLING ABSENTEEISM

“Absenteeism is a serious problem for a management because it involves heavy additional expenses. Reserves and understudies are kept in readiness to take the place of absentees, failing which the overhead cost of idle equipment has to be faced. Industrial employees do not usually ask for leave of absence in advance or even give notice during their absence as to how long they will be away. The management is generally uncertain about the probable duration of the employee’s absence and cannot take appropriate measures to fill the gap”.

## SOME ARE THE FOLLOWING MEASURES TO REDUCE THE RATE OF ABSENTEEISM

- The personnel management should encourage notification especially in the case of sickness when duration of absences is likely to be long.
- To reduce unavoidable absence due to sickness and industrial accidents, programs of industrial hygiene and safety should be strengthened.
- Provision of healthful and hygienic working condition.
- Improved communication and prompt redressal of grievance.
- Liberal grant or leave.
- Safety and accident prevention, cordial relationship between supervisor and worker.
- Development of workers education.
- There should be clear and definite rules and regulations on authorized and unauthorized leave.
- The rules and regulations relating to attendance must be explained to workers.
- The proper record of each worker’s attendance should be maintained on a special daily attendance record.

## ADVANTAGE

- Create goodwill.
- Enhance safety.
- Meet personal goals.
- Enhance life satisfaction.
- Handle non-work problems.

## DISADVANTAGE

- Payroll cost.
- Supervisory.
- Loss of pay.
- Relationship impact.

## NEED FOR THE STUDY

Absenteeism is a common factor prevailing in the Indian industries. The main objective of organization is to maximize profit by employing minimum number of men, material and money. When there is a problem of absenteeism the above said factors are not fairly utilized. So the need for reducing absenteeism is not only the need for the company but also the need of the nation.

The study conducted in Pumps industry Coimbatore to find the reasons for the absenteeism, the factors leading to absenteeism, to find whether the workers are motivated after the introduction of the various schemes to reduce absenteeism etc. The study is also conducted to analyze the relationship of various factors with absenteeism.

## OBJECTIVES OF THE STUDY

- To analyse the causes of absenteeism.
- To study the leave facilities of the company.
- To know the relationship of respondents with superiors and co-workers.
- To examine the welfare facilities provided by the organization.

## RESEARCH METHODOLOGY

### RESEARCH DESIGN

Descriptive Research Design has been followed to conduct the research study. The success of any formal research depends on its sound research design. As the aim of this study was identify the factors leading to absenteeism and the relationship between various factors and absenteeism.

### SAMPLING DESIGN

It covers the employees working in various Pumps companies in Coimbatore,

The sampling method used by the researcher is non-probability convenience sampling method. Based on convenience, the researcher selected respondents for sample.

### SAMPLING SIZE

The researcher selected only 150 samples from the people working in Pumps companies in Coimbatore.

### INTERVIEW SCHEDULE

The interview schedule has been used to collect the data. The information was gathered from the employees.

### PERIOD OF STUDY

The study was conducted in the period of 2009-2010

### RANKING METHOD

In this method the respondents were asked to rank their opinion about the characteristics of the company. The order of merit given by the respondents the data was converted into ranks by using the following formula.

$$\text{Ranking Score} = \sum W_i X_j$$

Where  $W_i$  - Rank value  
 $X_j$  - Ranking position value

## REVIEW OF LITERATURE

Review of literature is essential for every researcher to carry on the investigation successfully. The literature of previous studies will inform the researcher of the limitations of the study and thereby the researcher can take adequate measure to overcome them. There are considerable number of studies on different aspects of employee's absenteeism. Some of such studies are given below:

Steers and Rhodes (1984) "Absenteeism can be an expensive problem in both public and private sector organizations. In 1984, Steers and Rhodes estimated that absenteeism was costing the U.S. economy approximately 38 billion dollars annually".

According to Bureau of Labor Statistics, (1982) in 1980, over 89 million working hours were being lost each week due to employee absences (Bureau of Labor Statistics, 1982). Because absenteeism is so costly, researchers have attempted to identify the factors that cause, or are related to absenteeism so that appropriate solutions can be developed.

Unfortunately, findings from empirical research have been neither consistent in terms of identifying the causes of absenteeism nor in terms of identifying solutions which consistently reduce absenteeism. For instance, job satisfaction and personal characteristics (such as age and family size), have been found to be related to absenteeism in some studies, but not related in others.

Muchinsky, Paul M, the purpose of this paper is to review the literature on employee absenteeism as a form of withdrawal behavior apart from turnover. Studies examining the psychometric properties of absence measures are reviewed, along with the relationship between absenteeism and personal, attitudinal, and organizational variables.

According to Steers and Rhodes (1978)<sup>4</sup>, the inconsistency of these findings may be explained by other variables (personal, attitudinal, and organizational variables) which moderate these relationships.

Scott and Mabes (1984)<sup>5</sup> identified gender as one such moderator. Gender has become a significant employment factor due to the changing nature of the U.S. labor force. In 1940, only 27.4% of adult women were employed, while in 1986, this percentage had risen to 54.7% (U.S. Dept. of Commerce, 1987).

Mitra, Jenkins and Gupta (1992)<sup>7</sup> remind us that "absenteeism and turnover are two of the most popular outcomes studied in organizational research." Accordingly, there have been a number of literature reviews and conceptual compendia dedicated to systematically cataloguing and summarizing much of this work. Based on this extensive volume of work, there are some conclusions which seem warranted.

Luz J, Green MS Medically certified absence (absence from work attributed to disease and accident) is an important and convenient index of workers' health and attitudes. It also constitutes the largest part of total absence from work. Depending on the country and on industry and population characteristics, sick-leave accounts for 60-70%, and injuries for another 7-20%.

The balance is defined as "healthy-worker absence", taken with or without prior permission or post-facto justification. It is the characteristic of first and last phases of an employee's history at the firm; either before he has time to become a permanent employee and adapt to the local "absence culture", or when he contemplates leaving. On the other hand, certified absence is confirmed by a higher authority, and so it is accepted by management, the insuring institution, and the peer group (which often have to carry the extra workload). This absence belongs to the phase of regular relationships, which both sides seek to maintain. Whether and how often the employee has recourse to certification depends on a number of factors. Those mentioned most often in the literature are: (a) absence-proneness-apparently a defined personality trait (psychological or psychosomatic) leading to repeated absences; (b) poor working conditions; (c) lack of group cohesiveness--members of a well-structured group are upheld by its solidarity and sense of belonging ("esprit de corps"); this is observed in smaller and more closely-knit groups such as shift and group teams, as in the Volvo experiment; (d) quality of the leadership and organizational behavior; (e) job satisfaction--deprivation of recognition, use of abilities, responsibility, and interest have strong psychosomatic repercussion; (f) interaction with external forces, especially marketplace conditions--lack of external demand may restrain absence.

Farrell and Stam (1988) for example, having considered many of the summaries noted here as well as the results of their data-analyses, concluded that "individualistic theories [of absenteeism], especially those emphasizing age, sex, and job satisfaction do not seem promising."

Mobley (1982)<sup>10</sup> suggests that the relationships with such variables transfer, and absenteeism and turnover are modest as well.

Naturally, much of the research in these areas has been implicitly - if not explicitly - designed to reduce the amount of employee turnover and absenteeism in the workplace. While much of this work has been superbly executed, some observers have been frustrated with the lack of consistency and robustness in many of these relationships. Johns and Nicholson (1982, p. 128)<sup>11</sup>, for example, suggest that much research in this area reveals(s) a rather depressing state of affairs...In short, a heavy investment of research effort on absenteeism has failed to generate significant dividends, whether one's criterion is the prediction, explanation, or control of absence (Johns & Nicholson, 1982, p. 128).



Others have referred to the investigations of absenteeism as "bewildering" (Dilts, Deitsch, & Paul, 1985, p. 4) and noted that much of the research in the study of absenteeism "is not designed to be very informative" (Fichman, 1984: p.2). Others have summarized it as a veritable constellation of diverse variables" (Mowday & Rhodes, 1984, p. 233)<sup>13</sup>, Fitzgibbons (1992, pp. 79-80) has wondered why, after some thirty years of extensive research in these areas, "our knowledge base about this ostensibly important organizational behavior is so superficial.

Leigh (1983)<sup>14</sup>, however, found that fundamental differences still existed in absenteeism rates based on gender even when factors such as job level, education and experience were held constant. Higher rates of absenteeism by women may indicate that there may be fundamental differences in the reasons why men and women are absent. This research examines the differences believed to be related to absenteeism behavior in a research setting where men and women hold jobs at the same pay levels.

Dalton and Enz (1987, p. 82)<sup>15</sup> suggest that in many cases such work does not inform practice....factors which have been reported to lead to employee absenteeism are of little, if any, practical value to the manager. Suppose, for sake of argument, that women have a tendency to be absent from work more than men. Or suppose that it can be demonstrated that employees with more children have a tendency to be disproportionately absent. What practical value is that information? Presumably, no responsible organization would choose to hire only men to rectify the former situation: to do so would constitute an egregious violation of the Civil Rights Act. As for the latter, what reasonable organization would discriminate in its hiring based on the size of an applicant's family? Suppose, once again hypothetically, that it could be established that older employees are more likely to be absent than younger employees. A clear violation of the Age Discrimination Act would result if an organization, in order to reduce its overall absenteeism, refused to hire employees over 40 years of age. We would argue then that such information, even if it were valid, is of virtually no value to the practicing manager. Rather, management benefits only if the information about the incidence of absenteeism leads to procedures which reduce it without being in violation of the law or being completely impractical.

As will be noted in a subsequent section, however, there is some evidence that certain set of variables do strongly affect the levels of absenteeism and turnover. Farrell and Stam (1988, p. 222), for example, conclude through their data-analysis that "control policy is strong and stable." They note the practical implications of that result as well. Presumably, many organizational control policies are subject to managerial discretion. Goodman and Atkin (1984), too, remind us that relatively little research has focused on the policy and institutional variables which may govern withdrawal behaviors.

## ANALYSIS & INTERPRETATION

**TABLE NO. 4.1: AGE OF THE RESPONDENTS**

Age Groups	No of Respondents	Percentage
Below 20 Years	15	10
21 - 30 Years	70	47
31 - 40 Years	50	33
41-50 Years	12	8
Above 50 Years	3	2
<b>TOTAL</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

The above table shows that, 47% of the respondents are in the age group of 21-30 years, 33% of the respondents are in the age group of 31-40 years, 10% of the respondents are in the age group of below 20 years, 8% of the respondents are in the age group of 41-50 years and 2% of the respondents are in the age group of above 50 years.

Majority (47%) of the respondents are in the age group of 21-30 years.

**TABLE NO. 4.2: GENDER OF THE RESPONDENTS**

Gender	No of Respondents	Percentage
Male	115	77
Female	35	23
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

From the above table 77% of the respondents are male and 23% of the respondents are female. Majority (77%) of the respondents are male.

**TABLE NO. 4.3: MARITAL STATUS OF THE RESPONDENTS**

Marital status	No. of Respondents	Percentage
Married	96	64
Unmarried	54	36
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

The above table shows that 64% of the sample respondents are married and 36% of the sample respondents are unmarried. Majority (64%) of the sample respondents are married.

**TABLE NO. 4.4: NUMBER OF MEMBERS IN THE FAMILY OF THE RESPONDENTS**

Family Members	No of Respondents	Percentage
2 Members	46	31
3-5 Members	78	52
Above 5 Members	26	17
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

The above table it shows that 52% of the respondents have a family of 3 to 5 members, 31% of the respondents have 2 members and 17% of the respondents have a family of more than 5 members.

It is concluded that (52%) of the respondents have a family size of 3 to 5 members.

**TABLE NO. 4.5: EDUCATIONAL QUALIFICATION OF THE RESPONDENTS**

Educational Qualifications	No of Respondents	Percentage
Illiterate	4	3
School Level	29	19
Diploma Level	63	42
Under Graduation Level	46	31
Post – Graduation Level	8	5
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

The above table reveals that, 42% of respondents are diploma level, 31% of the respondents are under graduation level, 19% of the respondents are school level, 5% of the respondents are completed post graduation level and 3% of the respondents illiterate. Majority (42%) of the respondents are diploma level.

TABLE NO. 4.6: MONTHLY INCOME OF THE RESPONDENTS

Monthly Income	No of Respondents	Percentage
Less than Rs.3,000	2	1
Rs.3,001 -5,000	29	19
Rs.5,001 -7,000	57	38
Rs.7,001 -10,000	50	33
Above Rs.10,000	12	8
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Questionnaire

The above table shows that 38% of the respondents are getting monthly income between Rs.5,001 and 7,000, 33% of the respondents are getting Rs.7,001 and 10,000, 19% of the respondents are getting monthly income between Rs.3,001 and 5000 ,8% of the respondents earn above Rs.10,000 and 1% of the respondents earn below Rs.3,000 per month.

Majority (38%) of the respondents are getting monthly income between Rs.5, 001 and 7,000.

TABLE NO. 4.7: RANKING THE FACTORS INFLUENCING IN THE EMPLOYEES ABSENTEEISM

Opinion	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Total	Rank
Health Problems	22 (110)	<b>82 (328)</b>	24 (72)	10 (20)	12 (12)	542	II
Relationship with superiors	16 (80)	9 (36)	11 (33)	12 (24)	<b>102 (102)</b>	275	V
Family problems	<b>88 (440)</b>	28 (112)	13 (39)	12 (24)	9 (9)	624	I
Excess work load	13 (65)	21 (84)	18 (54)	<b>93 (186)</b>	5 (5)	394	IV
Religious Functions	32 (160)	32 (128)	<b>76 (228)</b>	8 (16)	2 (2)	534	III

Source: Questionnaire

From the above table, it is inferred that

- The Respondents have ranked **FAMILY PROBLEMS** as **First** among the factors influencing in the employees absenteeism.
- The Respondents have ranked **HEALTH PROBLEMS** as **Second** among the factors influencing in the employees absenteeism.
- The Respondents have ranked **RELIGIOUS FUNCTIONS** as **Third** among the factors influencing in the employees absenteeism.
- The Respondents have ranked **EXCESS WORK LOAD** as **Fourth** among the factors influencing in the employees absenteeism.
- The Respondents have ranked **RELATIONSHIP WITH SUPERIORS** as **Fifth** among the factors influencing in the employees absenteeism.

TABLE NO. 4.8: OPINION OF THE RESPONDENTS ABOUT THE FACILITIES PROVIDED BY THE ORGANIZATION

TABLE NO. 10: SUMMARY OF THE RESPONDENT'S RANKING ABOUT THE FACILITIES PROVIDED BY THE ORGANIZATION							
	Welfare Facilities	HS	S	M	DS	HDS	Total
1.	Medical Facilities	39 (26%)	74 (49%)	27 (18%)	8 (5%)	2 (2%)	150
2.	Leave Facilities	21 (14%)	29 (19%)	78 (52%)	13 (9%)	9 (6%)	150
3.	Wage System	71 (47%)	45 (30%)	28 (9%)	5 (3%)	1 (1%)	150
4.	Canteen Facilities	28 (19%)	41 (27%)	62 (41%)	16 (11%)	3 (2%)	150
5.	Transport Facilities	21 (14%)	36 (24%)	75 (50%)	11 (7%)	7 (5%)	150
6.	Personal Loan Facilities	43 (29%)	69 (46%)	31 (20%)	6 (4%)	1 (1%)	150

Source: Questionnaire

#### Interpretation

- 49% of the respondents are satisfied with medical facilities.
- 52% of the respondents are moderate with leave facilities.
- 47% of the respondents are highly satisfied with wage system of the organization.
- 27% of the respondents are moderate with canteen system.
- 50% of the respondents are moderate with the transport facilities.
- 46% of the respondents are satisfied with personal loan facilities of the organization.

## FACTORS INFLUENCING THE STUDY

### INTRODUCTION

In this chapter the researcher has made an attempt to analysis the socio- economic factors of the sample respondents reason for absenteeism.

TABLE NO. 5.1: AGE AND REASON FOR ABSENTEEISM

In order to show the relationship between age and reason for absenteeism.

Age	REASON				
	Excess workload	Poor working condition	Poor relationship with superiors	Poor wages	Total
Below 20 Years	7	3	4	1	15
21 - 30 Years	61	6	1	2	70
31 - 40 Years	32	14	4	0	50
41-50 Years	5	2	3	2	12
Above 50 Years	2	1	0	0	3
<b>Total</b>	<b>107</b>	<b>26</b>	<b>12</b>	<b>5</b>	<b>150</b>

#### STEP: I

Null Hypothesis ( $H_0$ ) = There is no association between age and reason for absenteeism.

Alternative Hypothesis ( $H_a$ ) = There is association between age and reason for absenteeism.

#### STEP: II

Degree of freedom =  $(r-1)(c-1) = (5-1)(4-1) = (4)(3) = 12$

STEP III Level of Significance = 5% (0.05) = 21.026

Calculated value = 36.09

Table value = 21.026

Table value 21.026 is lesser than the calculated value 36.09. So the null hypothesis is accepted. Therefore there is no association between age and reason for absenteeism.

**TABLE NO – 5.2: GENDER AND REASON FOR ABSENTEEISM**

Gender	Reason				
	Excess workload	Poor working condition	Poor relationship with superiors	Poor wages	Total
Male	95	13	5	2	115
Female	12	13	7	3	35
<b>Total</b>	<b>107</b>	<b>26</b>	<b>12</b>	<b>5</b>	<b>150</b>

In order to show the relationship between gender and reason for absenteeism.

**STEP: I**

Null Hypothesis ( $H_0$ ) = There is no association between gender and reason for absenteeism.

Alternative Hypothesis ( $H_a$ ) = There is association between gender and reason for absenteeism.

**STEP: II**

Degree of freedom =  $(r-1)(c-1) = (2-1)(4-1) = (1)(3) = 3$

**STEP III**

Level of Significance = 5% (0.05) = 7.815

Calculated value = 31.09, Table value = 7.815

Table value 7.815 is s lesser than the calculated value 31.09. So the null hypothesis is accepted. Therefore there is no association between gender and reason for absenteeism.

**TABLE NO – 5.3: MARITAL STATUS AND REASON FOR ABSENTEEISM**

In order to show the relationship between marital status and reason for absenteeism.

Marital Status	Reason				
	Excess workload	Poor working condition	Poor relationship with superiors	Poor wages	Total
Married	74	14	5	3	96
Unmarried	33	12	7	2	54
<b>Total</b>	<b>107</b>	<b>26</b>	<b>12</b>	<b>5</b>	<b>150</b>

**STEP: I**

Null Hypothesis ( $H_0$ ) = There is no association between marital status and reason for absenteeism.

Alternative Hypothesis ( $H_a$ ) = There is association between marital status and reason for absenteeism.

**STEP: II**

Degree of freedom =  $(r-1)(c-1) = (2-1)(4-1) = (1)(3) = 3$

**STEP III**

Level of Significance = 5% (0.05) = 7.815

Calculated value = 5.03, Table value = 7.815

Table value 7.815 is s lesser than the calculated value 5.03. So the null hypothesis is accepted. Therefore there is no association between marital status and reason for absenteeism.

**TABLE NO – 5.4: MONTHLY INCOME AND TYPES OF LEAVE**

In order to show the relationship between monthly income and types of leave.

Monthly Income	Types of leave				
	Sick leave	Casual leave	Privileged leave	All	Total
Less than Rs.3,000	2	0	0	0	2
Rs.3,001 -5,000	1	12	1	15	29
Rs.5,001 -7,000	29	7	18	3	57
Rs.7,001 -10,000	14	16	16	4	50
Above Rs.10,000	4	1	2	5	12
<b>Total</b>	<b>50</b>	<b>36</b>	<b>37</b>	<b>27</b>	<b>150</b>

**STEP: I** Null Hypothesis ( $H_0$ ) = There is no association between monthly income and types of leave.

Alternative Hypothesis ( $H_a$ ) = There is association between monthly income and types of leave.

**STEP: II** Degree of freedom =  $(r-1)(c-1) = (5-1)(4-1) = (4)(3) = 12$

**STEP III** Level of Significance = 5% (0.05) = 21.026

Calculated value = 64.70, Table value = 7.815

Table value 21.026 is s lesser than the calculated value 64.70. So the null hypothesis is accepted. Therefore there is no association between monthly income and types of leave.

**TABLE NO – 5.5: EDUCATIONAL QUALIFICATION AND WELFARE FACILITIES**

In order to show the relationship between educational qualifications and welfare facilities.

Educational Qualification	Welfare facilities				
	Very good	Good	Average	Poor	Total
Illiterate	2	1	1	0	4
School Level	14	9	4	2	29
Diploma Level	41	11	9	2	63
Under Graduation Level	25	5	13	3	46
Post – Graduation Level	1	1	5	1	8
<b>Total</b>	<b>83</b>	<b>27</b>	<b>32</b>	<b>8</b>	<b>150</b>

**STEP: I** Null Hypothesis ( $H_0$ ) = There is no association between educational qualifications and welfare facilities.

Alternative Hypothesis ( $H_a$ ) = There is association between educational qualifications and welfare facilities.

**STEP: II** Degree of freedom =  $(r-1)(c-1) = (5-1)(4-1) = (4)(3) = 12$

**STEP III** Level of Significance = 5% (0.05) = 21.026

Calculated value = 19.76, Table value = 7.815

Table value 21.026 is greater than the calculated value 19.76. So the null hypothesis is rejected. Therefore there is association between educational qualifications and welfare facilities.

## FINDINGS, SUGGESTIONS AND CONCLUSIONS

### SIMPLE PERCENTAGE ANALYSIS

- Majority (47%) of the respondents are in the age group of 21-30 years.
- Majority (77%) of the respondents are male.
- Majority (64%) of the sample respondents are married.
- It is concluded that (52%) of the respondents have a family size of 3 to 5 members.
- Majority (42%) of the respondents are diploma.
- Majority (38%) of the respondents are getting monthly income between Rs.5,001-7,000.
- Majority (37%) of the respondents have travelled 5kms-10kms from their residence to workplace
- Majority (55%) of the respondent's mode of transportation towards the workplace by motor cycle
- Majority (86%) of the respondents always reach the company at the right time.
- Majority (93%) of the respondents feels that their job is matching with their qualification.
- Majority (48%) of the respondents prefer the day shifts to work
- Majority (53%) of the respondent's very often working overtime at their job
- Majority (71%) absenteeism is due to the excess workload in the company.
- Majority (49%) of the respondent's family problem is the main personal reason that restricts to attend the work
- Majority (61%) of the respondents very often help in work related problems to the co-workers.
- Majority (58%) of the respondents are very often recognized for a better job performance.
- Majority (59%) of the respondents are often for getting the leave whenever they required.
- Majority (33%) of the respondents avail mostly the sick leave.
- Majority (49%) of the respondents prefer the long leave for their family matters.
- Majority (59%) of the respondents have the ESI benefits secure from the organization.
- Majority (55%) of the respondent feel very good about the welfare facilities in the company.
- Majority (59%) of the respondents are accepted that the reward is given by the management for good attendance holders.
- Majority (74%) of the respondents have reward given by the management for good attendance holders.

### RANKING METHOD

- The Respondents have ranked **FAMILY PROBLEMS** as **First** among the factors influencing in the employees absenteeism.

### CHI-SQUARE ANALYSIS

- There is an association between age and reason for absenteeism.
- There is an association between gender and reason for absenteeism.
- There is an association between marital status and reason for absenteeism.
- There is an association between monthly income and types of leave.
- There is no association between educational qualifications and welfare facilities.

### SUGGESTIONS

- One main suggestion to reduce absenteeism is allowing a normal rate of shift exchange between the different shift workers. This will allow the worker to do overtime and the other worker's absence will not affect the organization.
- Providing accommodation to the workers is another way to reduce absenteeism. If charging very cheap rental, this can bring profit to the company in the long run. Moreover the other advantages include:
  - Absenteeism due to distance can be reduced.
  - The workers will be motivated.
  - Superiors can identify the reason for absenteeism very easily.
  - Will improve the relationship between the workers.
- Incentives to the workers can be given by the middle of every month.
- Since the supervisor is the immediate leader to the workers keen interest should be taken in appointing superiors. Superiors should deal with the workers in a psychological manner to influence the workers.
- Counselling can be given to the workers, who have some personal problems. Management should help the workers when they are in need.

### CONCLUSION

At present it is not sure that all the managements take interest in controlling absenteeism. The absenteeism being a problem related to individual behaviour can be better tackled at the immediate superior's level than by the staff department.

The main reason for absenteeism is the workers morale towards the organization. The company should take necessary steps immediately to increase the morale and satisfaction of the workers because workers form the integral part of the organization.

The study helped to identify the reasons for absenteeism and the satisfaction level of the workers towards the various factors leading to absenteeism.

The management could take steps to reduce absenteeism by implementing the suggestions and can take some more measures by considering the causes of absenteeism.

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## SCRUM IN AGILE TESTING

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## ABSTRACT

Software testing is a very important process to verify the software quality. Agile techniques may produce software faster as well as enhance software quality so that they fulfill quality requirements of the product. This paper describes scrum methodology in agile testing methodologies and scrum process in software testing

## KEYWORDS

Software Testing, Agile, Scrum.

## INTRODUCTION

In the world of software development, the term agile typically refers to any approach to project management that strives to unite teams around the principles of collaboration, flexibility, simplicity, transparency, and responsiveness to feedback throughout the entire process of developing a new program or product. And agile testing generally means the practice of testing software for bugs or performance issues within the context of an agile workflow.

## WHAT IS AGILE?

The Agile movement proposes alternatives to traditional project management. Agile methods are typically used in software development to help industries respond to unpredictability.

## WHY AGILE?

Most of the industries or organizations are working to produce best software product in less time. To reach this goal, many companies are adopting agile method. This approach can help accelerate time to market, enhance software quality, increase productivity, and improve alignment between technology and business objectives.

## SCRUM IN AGILE PROCESS

Scrum is a lightweight process framework for agile development, and the most widely-used one.

- A “process framework” is a particular set of practices that must be followed in order for a process to be consistent with the framework. (For example, the Scrum process framework requires the use of development cycles called Sprints, the XP framework requires pair programming, and so forth.)
- “Lightweight” means that the overhead of the process is kept as small as possible, to maximize the amount of productive time available for getting useful work done.

## ROLES OF SCRUM

Three different roles of scrum are explained below

- Product Owner:** In Scrum, the Product Owner is responsible for communicating the vision of the product to the development team. He or she must also represent the customer's interests through requirements and prioritization. Because the Product Owner has the most authority of the three roles, it's also the role with the most responsibility. The Product Owner is the single individual who must face the music when a project goes away.
- Scrum Master:** The Scrum Master acts as a organizer for the Product Owner and the team. The Scrum Master does not manage the team. Instead, he or she works to remove any weaknesses that are blocking the team from achieving its sprint goals. In short, this role helps the team remain creative and productive, while making sure its successes are visible to the product owner.
- Team Member:** In the Scrum methodology, the team is responsible for completing work. Ideally, teams consist of seven cross-functional members, plus or minus two individuals. For software projects, a typical team includes a mix of software engineers, architects, programmers, analysts, QA experts, testers, and UI designers. Each sprint, the team is responsible for determining how it will achieve the work to be completed.

## TERMINOLOGIES IN SCRUM

- A **Product Backlog** of prioritized work to be done.
- Whole product backlog items are divided into fixed set of items called **Sprints**.
- Burn down charts** is a graph which shows the estimated effort v/s actual effort of the scrum chart. Scrum emphasizes the notion of seeing work reduce over the life of the sprint as a fundamental metric for progress.
- User Story** is nothing but the requirements or feature which has to be implemented.
- Epics** are user stories which are not defined and kept for future sprints.
- Sprint Backlog:** Based on the priority, user stories are taken from the Product Backlog one at a time. The Scrum team turns on it, determines the feasibility and decides on the stories to work on a particular sprint. The collective list of all the user stories which the scrum team works on a particular sprint is called s Sprint backlog.

## SCRUM-PROCESS OVERVIEW

- A **Sprint Planning Meeting** where the Sprint Backlogs are split with the team members.
- Execution of Sprint Tasks** the actual work done by the scrum team to complete their task and take the user story into the “Done” state.



- C. **Daily scrum meeting** is organized to discuss three key points: They are
- what are activities has been done since last meetings,
  - what are the activities to be done until next meeting and
  - Impediments if any.
- D. **A Sprint Review Meeting** where the team members demonstrate implemented work to the product owner. Product owner cross verify the work done by the team members as per its acceptance criteria.
- E. **A Sprint Retrospective Meeting** happens after the review meeting. Scrum team meets and discusses the following points in this meeting.
- What went well during the Sprint
  - What did not went well in the Sprint
  - Lessons learnt
  - Action Items.

### PRE-REQUISITE SOFT SKILLS FOR A SCRUM TEAM

- A. **Cross functional Team work** is at the heart of Scrum. There is no “my work”, “I have finished my work” and “your work”. On a Scrum team we find only “**Our work**”, “**we have completed our Sprint**”. Individuals will have helping tendency for sharing technical knowledge. Scrum Members are always available to team members rather than locked away behind closed doors. Scrum Master will always motivate the teams and create a Supporting learning environment
- B. **Communication:** Good communication must exist among team members of development team, testing team, business analysts and stake holders. There must be highly **collaborative interaction between client and the delivery teams**. More client involvement implies more suggestions or changes from the client. It implies more bandwidth for communication.
- C. **Commitment:** Agile Teams needs **periodic re-energizing** to renew their commitments to their purpose and to each other. Scrum Masters can help by ensuring that the team embraces the concept of **whole-team responsibility and whole-team commitment** to deliver working software at the end of each sprint. With the whole-team commitment, the team member who has completed his tasks will help the one who has not completed so that hopefully each finishes on time.
- D. **Problem Solving:** Scrum does not simply focus on developing just any type of end product. Instead, the Scrum method allows the team to focus on **creating a product that fulfills the customer’s highest value priorities** which are defined by product owners.
- E. **Transparency:** Transparency **among team members and management** gives a real momentum to the scrum team. Scrum Master encourages people to ask for help, surface roadblocks, and give public recognition for those brave enough to do so. At the same time, Scrum Master also understands the time wasted and impact on the team when individuals sit on or ignore problems.

### SCRUM IN TESTING

**Scrum Testing** refers to testing practice that follows agile manifesto mainly to implement testing in projects using Agile Methodology. Scrum in Testing can be leveraged as follows:

- Support iterative testing
- Backlog, sprint goal driven, team orchestrated
- Measured (burn down) progress to goal
- Daily meetings
- Derive clarity with stakeholders for testing focus, sequence and outcomes
- Simple PM model – team led, not command led

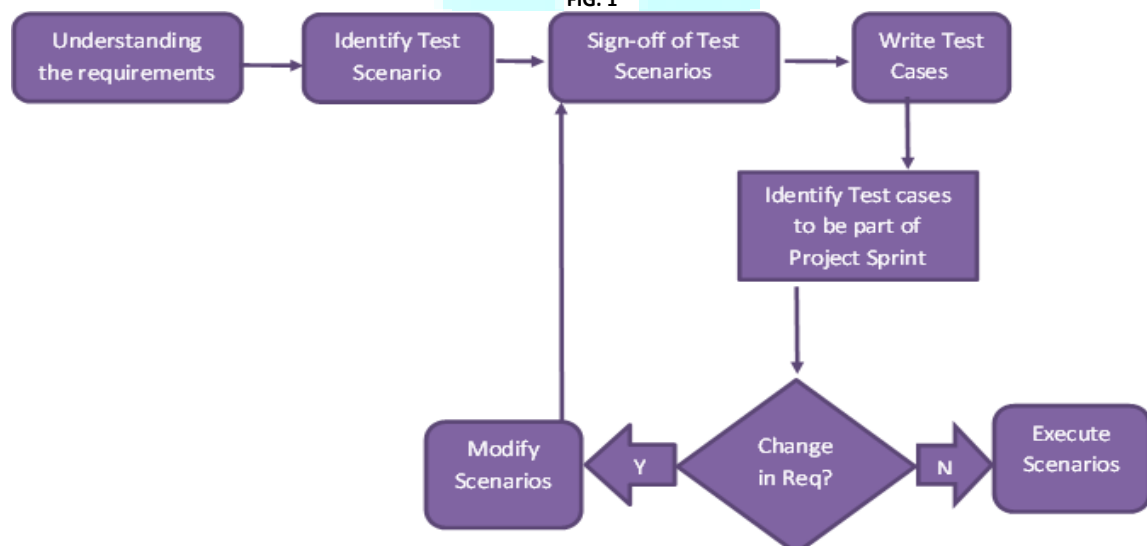
Scrum in testing can be implemented as follows:

- As part of backlog task defined in overall sprint backlog where members from cross-function form team.
- In Independent testing activities like lab setup, test suite automation.

### TESTING WORKFLOW IN SCRUM

The role of tester will include testing software in “QA environment”, while developers are still doing unit tests in their environment which is not as close to production one.

FIG. 1



Below points discuss in brief flow shown in above diagram:

- Identify the scenarios based on requirement document.
- Obtain sign-off of test scenario document from business owners.
- Write test cases for signed-off scenarios.

- For each sprint identify set of test cases.
- Execution should be done on the concept of delaying of sprint which implies when sprint 2 functionalities are under development; sprint 1 functionalities would be tested.
- To avoid any gap or delay for any major issues in current sprint because of concept of delayed testing in sprint, smoke test cases should be executed on current sprint to give go ahead to functionalities developed in current sprint.
- A change in requirement or defect would be added to product backlog.
- A constant regression bed is identified for all the completed sprints.

### QUALITY ASSURANCE ACTIVITIES IN SCRUM

Most common quality assurance activities that are being practiced in companies working in Scrum are

- Unit Testing
- Continuous integration
- Regular sprint meeting
- Regular daily meeting
- Strict to coding and design standard
- Acceptance testing
- Test automation
- Exploratory Testing

### TESTING ACTIVITIES DURING SPRINT CYCLE

Daily Scrum Meeting Activities are given below as Sprint cycle.

- Testing Tasks in Sprint-1**
  - Identify Test Scenarios
  - Get Business Sign-off
  - Write Complete Test Cases.
  - Identify Test Cases & prepare Test Data for Sprint 1 functionality
- Testing Tasks in Sprint-2**
  - Identify Test Scenarios for changed requirements
  - Get Business Sign-off and write test cases
  - Execute Test Cases identified in sprint 1
  - Report Bugs and verify fixed ones.
  - Identify Test Cases & prepare Test Data for Sprint 2 functionality
- Testing Tasks in Sprint-3**
  - Identify Test Scenarios for changed requirements
  - Get Business Sign-off and write test cases
  - Run Regression Suite on major sprint 1 functionalities.
  - Execute Test Cases identified in sprint 2
  - Report Bugs and verify fixed ones.
  - Identify Test Cases & prepare Test Data for Sprint 3 functionality
- Last Development Sprint**
  - Identify test cases
  - Prepare Test Data
  - Run Regression Suite on major sprint 2 functionalities.
  - Execute Test cases identified for sprint 3
  - Report Bugs and verify fixed ones.
  - Execute last development sprint test cases.

### CONCLUSION

Important things in the scrum methodologies are iterative lifecycle and frequent communication with the customer. In testing part following points emphasize and summarize important aspects of scrum testing methodology:

- Test within each iteration, rather than at the end of a development lifecycle
- Decide what to test when a product is still unfinished
- Collaborate with team members rather than working in isolation
- Participate in daily status meetings that are a maximum of 15 minutes long
- Seek product information individually through testing

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# THE INFLUENCE OF RECAPITALISATION IN THE NIGERIAN INSURANCE MARKET ON MARINE INSURANCE

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## ABSTRACT

*This study assessed the influence of recapitalization of the federal government of Nigeria insurance industry on marine insurance in the period between 1984 and 2006. The study created on the This study assessed the influence of recapitalization of the federal government of Nigeria insurance industry on marine insurance in the period between 1984 and 2006. The study created on the Nigerian insurance market and no attempt was made to extend it to other parts of the world and employed mainly secondary data sourced from the central Bank of Nigeria (CBN) publication National Bureau for statistics, the insurance department of the ministry of finance and Economic development and the research and development (R&D) Department of Nigerian Re-insurance corporation, Lagos, Nigeria,. The data general therefore were analysis using inferential statistics in order to test the hypothesis formulated to test the objective. The finding of the study shows that recapitalisation of insurance firm in Nigerian insurance market significantly improved marine insurance business in Nigerian on the basis of this finding, recommendations were made which if ahead to would bring sanities the market more prospectively .*

## KEYWORDS

Recapitalisation, Assessment, insurance market, inferential statistics, influence.

## INTRODUCTION

Recapitalisation is a sort of a corporate reorganisation involving substantial change in a company's capital structure. Recapitalisation may be motivated by a number of reasons. Usually, the large part of equity is replaced with debt or vice versa. In more complicated transactions, mezzanine financing and other hybrid securities are involved, Wikipedia (2013).

The purpose of taking insurance is to get indemnified when the risk insured occurs (M.I.A. 1906, Sec 1). Recapitalisation is a sort of a corporate reorganization involving substantial change in a company's capital structure (Wikipedia Encycropedia). Recapitalisation may be motivated by a number of reasons. Usually the large part of transactions, mezzanine financing and other hyrid securities are involved (Wikipedia)

## TYPES OF RECAPITALISATION

### 1. LEVERAGED RECAPITALISATION

One example of recapitalisation is leverage recapitalisation wherein the company issues bonds to raise money; and then buys back its own shares. Usually current shareholders retain control. The reason for this sort of recapitalisation include:

- Desire of current shareholders to partially exit the investment
- Providing support of falling share price
- Disciplining the company that has excessive cash
- Protection from a hostile takeover
- Rebalancing position within a holding company

### 2. LEVERAGE BUYOUT

Another example is a leverage buyout, essentially a leverage recapitalisation initiated by an outside party. Usually, incumbent equity holders secede to control. The reasons for this transaction may include:

- Getting control over the company via a friendly or hostile takeover
- Disciplining the company with excessive cash
- Creating shareholder value via debt repayment

### 3. NATIONALIZATION

Another example of recapitalization is a nationalization, wherein the nation in which the company is headquartered buys sufficient shares of the company to attain a controlling interest. Usually, incumbent equityholders lose control. The reasons for nationalization may include:

- Saving a very valuable company from bankruptcy
- Confiscation of assets
- Executing the eminent domain right

### 4. A BAILOUT

A further example of recapitalisation is a bailout which is a colloquial pejorative term for giving a loan to a company or country which faces serious financial difficulty or bankruptcy. It may also be used to allow a failing entity to fail gracefully without spreading contagion. This term is maritime in origin being the act of removing water from a sinking vessel using a smaller bucket.

A bailout could be done for a mere profit, as when a predatory investor resurrects a foundering company by buying its shares at five-sale prices for social improvement, as when, hypothetically speaking, a wealthy philanthropist reinvests an unprofitable fast food company into a non-profit food distribution network, or the bailout of a company might be seen as a necessity in order to prevent greater socioeconomic failure for example, the financial general economic fluency, which maintains the ... to geopolitical power. As such it is the policy of the US Government to protect the biggest American companies responsible for importation (airlines, petrol companies, etc) though subsidies and low interest loans. These companies, among others are deemed too "big to fail" because their goods and services are considered by the Government to be constant universal necessities in maintaining the nations welfare and often, indirectly, its security (Wikiped).

In like manner, the Nigerian Government considered the social necessity of insurance in the country and decided in 2005 to recapitalize the companies' capital base in the industry.

## PROBLEM STATEMENT

In Nigeria, the existence of well-developed institutions for private underwriting ultimately means that corporations have inferior underwriting information needed to assess risks, and as a result, face an adverse selection problem which hinders their expansion and possible acceptance of sub-standard risks. Irukwu (2003). Insurers have to contend with numerous sources of uncertainty, and complex informational asymmetries which create agency problems for both the insurer and the insured. These he said can be separated into three main categories of problems:

First, the probability of a ship or its cargo being lost or damaged (and therefore, the appropriate premium) depends on numerous risk factors including the route, the season, the age and seaworthiness of the ship, and quality of its crew and armament as well as, in wartime, the danger of capture by enemy naval

vessels and privateers, and possibility of seizure in a foreign port. Some of these factors could be taken into account by the underwriter when determining the premium. Often, however, merchants have better information than underwriters about various aspects of the risk.

Second there are many opportunities for normal hazards on the part of the insured. These range from excessive risk-taking such as sending unseaworthy ships to sea, or attempting to carry goods into blockaded port, to outright frauds, such as deliberately sinking an insured ship, misrepresenting the value of goods, insuring same goods multiple times, or seeking to insure a ship already known to have been lost. Fraud is common in the market and could be difficult to detect. In one instance, a ship-owner took out several policies with different brokers in London, Hull, Glasgow, and Dandee to insure goods worth about \$1,000 for \$3,745. The ship was then deliberately sunk after some of the cargo had been secretly removed. The fraud was accidentally discovered, and the alppot narrowly escaped a death sentence, Botos (2002).

Thirdly, the financial instability of the underwriters is a major concern to those buying insurance. Private underwriters might become bankrupt, die, emigrate or abscond before a claim could be made, and then financial stability are frequently uncertain, especially in any catastrophe, e.g. oil spilled resulting from oil tanker sinking at sea. And even if the underwriters are solvent, the uncertainties associated with maritime voyages and the difficulty have the opportunities to contend claims or delay payments. As a result merchants are willing to pay higher premium to these underwriters they perceive as non-ligious and financially secure Ogundekan, (2004)

In the context of the informational asymmetries and agency problems, information is critical. Underwriters need access to prompt and accurate intelligence on the movements and condition of particular ships, the "character" of merchants being insured and the structure of the vessel, and on political development at home and abroad as well as the experience to weigh these information correctly in order to determine what premium to charge. In the words of one of one contemporary underwriter.

An insurer ought to be constantly casting about for the earliest, the best, and the most circumstantial intelligence: he ought to have a quick perception of the circumstance of the risk, and be able to reason well and instantly thereupon, in order to guard against concealments and misrepresentations. It is far more material to him to guard the quality than the quantity of the risks he undertakes. Information, however, travelled slowly in the eighteenth century and later part of the nineteenth century; the latest news from foreign ports was frequently months old. Ships sometimes disappeared without a trace, and if a ship was lost or damaged, it was frequently costly, and sometimes impossible to verify or disapprove events which had occurred in distant ports or at sea.

Following from the above, this research is aimed at assessing the influence of recapitalization policy of Nigeria Government on the development of marine insurance in Nigeria.

## RESEARCH DESIGNAND METHODOLOGY

This study is an Assessment of the influence of recapitalization in Nigeria insurance markets on Marine Insurance. The period 1984 – 2006 is covered and no attempt is made to extend the area of study to other countries of the world.

### SOURCES OF DATA

The study employs mainly secondary sources of data as collected from the following sources:

1. Central Bank of Nigeria (CBN) publications – statistical Bulletin and Economic Research seminar papers.
2. National Bureau for statistics – Annual abstract of statistics.
3. Insurance Department of Finance and Economic Development.
4. Research and Development Department, Nigerian Re-insurance Corporation, Lagos, Nigeria

### PROCEDURE FOR DATA ANALYSIS

The data generated for this study is analysed employing inferential statistics.

### THE T – RATION FOR HYPOTHESIS

Ho: The introduction of recapitalization policy in the Nigerian insurance industry has not significantly affected the level of marine insurance in Nigeria.

### INFERENTIAL STATISTICS

In order to test the above hypothesis, we employed inferential statistics such as the test of the difference between the means of two independents groups of marine insurance business before 1984 – 1988 or pre – recapitalization period and after 1989 – 2006 or post – recapitalization policy in the insurance industry was used to achieve the objective of this study. This approach is detailed in Gujarati (1985) and Kontsoyiannis (1986). The method involved the determination of the extent to which main insurance has increased in relation to the introduction of recapitalization policy in the insurance industry.

The null hypothesis of this test (Ho) states that no significant difference exist between the means of two groups "A" and "B". the testing tool for the test is the 'T-ratio which is computed as follows:

the test is the 'T-ratio which is computed as follows:

$$t\text{-ratio} = \frac{\bar{X}_A - \bar{X}_B}{\sqrt{S_A^2 + S_B^2}}$$

$$DF = n_A + n_B - 2 \text{ (bender et al., 1989)}$$

Where,

( $n_A + n_B - 2$ ) = the degree of freedom of the test

$\bar{X}_A$  = means of group A

$\bar{X}_B$  = means of group B

$S_A^2$  = Variance of group A

$S_B^2$  = Variance of group B

$n_A$  = number of observations (participants)

$n_B$  = number of observations (non-participants)

The t-ratio can also be rewritten as:

t-ratio = Mean  $n_A$  – Mean  $n_B$

Standard error of the difference between mean A and mean B

### DECISION RULE

If the t-ratio calculated as detailed above is greater than the t-ratio from the statistical table at alpha level of probability (5%, 1%) and at  $n_A + n_B - 2$  degrees of freedom, we reject the null hypothesis and thus conclude that a significant difference exists between the means of independent groups. "A" and "B".

## RESULTS AND DISCUSSION

In this section we present for analysis all the necessary data set for the study. Also, in this section a test on the hypothesis as formulated in this report will be conducted. Hence, mainly secondary data are employed as source from the Central Bank of Nigeria (CBN), The National Bureau for Statistics (NBS) publications

and Research and Development Department of Nigerian Re-insurance Corporation and Insurance Department of the Ministry of Finance and Economic Development.

In order to test the hypothesis designed for this research we used a test of the difference between two means (t-test). However, for an orderly presentation, the analysis shall fall into sections of data presentation analysis and test of hypothesis, ending with the section on discussion of results.

#### DATA PRESENTATION

**TABLE 1: DATA SET OF GROSS DOMESTIC PRODUCT (GDP) AND PREMIUM INCOME OF FIVE CLASSES OF INSURANCE IN NIGERIA (1984-2006)**

S/N	YEAR	FIRE	MOTOR	GEACCIDENT	MARINE
1	1984	107204656.00	134793142.00	136498650.00	72499784.00
2	1985	117835887.00	135169979.00	12016582.00	74273649.00
3	1986	9825851.00	140045797.00	139357452.00	74078774.00
4	1987	202782785.00	157717219.00	253638817.00	251933911.00
5	1988	219520000.00	203000000.00	222048000.00	104400000.00
6	1989	280000000.00	273644000.00	385500000.00	464000000.00
7	1990	300000000.00	354000000.00	475500000.00	210000000.00
8	1991	180060000.00	583650140.00	650705080.00	2850640000.00
9	1992	860900.00	1350868.00	25875830.00	5775850145.00
10	1993	752700.00	1484940.00	1013190.00	2434870.00
11	1994	125770.00	2110360.00	977080.00	1142270.00
12	1995	1557780.00	2994590.00	1292000.00	2944460.00
13	1996	2850071.00	4061407.00	17672122.00	2992406.00
14	1997	22914160182.00	5269160721.00	6137423121.00	2445379358.00
15	1998	2784213352.00	5572915068.00	4377652453.00	3541757118.00
16	1999	2760614222.00	5268561896.00	3776047282.00	4636622617.00
17	2000	3445549871.00	7046210483.00	7953682914.00	4071701211.00
18	2001	3697248037.00	8797454838.00	5648363502.00	855931963.00
19	2002	4751655905.00	10816015116.00	7310288803.00	13353666773.00
20	2003	6016097000.00	138091441000.00	10232577000.00	15696362000.00
21	2004	7335994000.00	15071809000.00	13819477000.00	20989737000.00
22	2005	9518785000.00	16484517000.00	16307327000.00	21013148000.00
23	2006	12931350750.00	18957194550.00	20384158750.00	22063805400.00

Here, we present the data employed in this research. as stated earlier, only secondary data are used as source through which data were obtained. The Central bank and National Bureau for Statistics Publications, Research Department of Nigeria Re-insurance Corporation and Insurance Department of Finance and Economic Development.

#### TEST OF HYPOTHESIS

The hypothesis tested to find out the influence of recapitalization in Nigerian insurance market on marine insurance state. Ho: There is no significant difference in the volume of marine insurance transacted between

The pre – capitalization and post – recapitalization periods.

**TABLE 2: TEST OF THE DIFFERENCE BETWEEN THE MEANS OF THE VALUES OF MARINE**  
Insurance in the pre – and post – capitalization period (1984 – 2006)

Periods	No	Std. Deviation	Mean	Std. Error Difference
PRECAPMARINE	13	1,720,783,345,380	905,937,713	
POST CAPMARINE	10	7,953, 06, 076,037	4,637,131,144	2,257,284,233,945

Source: SPSS 15.0 Result / output.

In Table 3, we present the results of the test of difference between means of the independent period performed on the data on value of the value of marine insurance as contained in table 1

This hypothesis is cast in the form:

Ho: NA # NB # O: There is no significant difference in the value of marine insurance between pre – and post – recapitalization periods.

where NA = Mean value before capitalization

NB = Mean value after capitalization.

The test statistic, t – ratio is calculated thus:

$$t - \text{cal} = \frac{XA - XB}{\text{Standard Error of the Difference between means A and B}}$$

$$= \frac{905,937,713000 - 11,637,144.000}{2,257,284,233.945}$$

$$= 4.75$$

But, t ratio (tabulated) degree of freedom of

( $n_A + n_B - 2$ : 13 + 10 - 2 = 21)

1% = 2.831

5% = 2.080.

Since t- calculated (4.75) > t – tabulated (2.831, 2.080) at both 1% and 5% level of significance, respectively, we reject  $H_0$  and accepted  $H_0$  to conclude that a significant difference exists in value of marine insurance in the periods between the pre-and post- recapitalization.

#### DISCUSSION OF RESULTS

In test we adopted the t-test of the difference between two means, which sought to establish whether the introduction of recapitalization in Nigerian insurance market offered a significant contribution to the value of marine insurance in Nigeria.

From the results, recapitalization in the insurance market has actually had a desirable effect on the marine insurance business in Nigeria. This leads one to infer that with more insurance firms increasing their capital base, the marine insurance business will be better for it, which in turn will improve the level of economic development in Nigeria, marine insurance being the most prestigious of all branches of insurance.



## CONCLUSION AND RECOMMENDATIONS

The study investigated the influence of recapitalization in the Nigerian insurance market on the performance of marine insurance from 1984 to 2006. The study generated a hypothesis in order to achieve the objective. The finding of the study therefore shows that the recapitalization of insurance firms significantly improved marine insurance business in Nigeria.

On the basis of this finding we conclude that the introduction of the insurance industry recapitalisation policy of the Federal Government has improved the volume and performance of the marine insurance business in Nigeria.

We also recommend that the Ministry of Finance as a regulatory body should do more in addition to recapitalisation, keep monitoring the financial health of the insurance market to avoid financial contagion in the general Nigerian economy. Financial contagion refers to a scenario in which small shocks, which initially effect only a few financial institutions or a particular region of an economy, spread to the rest of financial sectors and other countries whose economies were previously healthy, in a manner similar to the transmission of a medical disease. (Wikipedia (2013)).

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## AN APPRAISAL OF ROUTING AND SCHEDULING IN LINER SHIPPING (CASE STUDY: LAGOS PORT COMPLEX)

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### ABSTRACT

*This research reviews the nature, characteristics, trends, and problems associated with shipping line services as regards movement of cargos from one port of origin to other port of destination. Over the years, these critical services have never been encouraging due to some inherent problems associated with ship owners, shipping company, consignees, consignors and the freight forwarders as it relates to cost of freight, which is not in the interest of the importers. The research also analyses the critical challenges and opportunities of the shipping lines in terms of freight costs and movement. There is need therefore for the study to look also on the problems/ challenges and opportunities of shipping line services in Nigeria which came as a result of the slow rate of growth of the Maritime industry in Nigeria and the need to critically analyze the situation. The maritime industry being one of the world's most international industries is the bedrock of development. Primary data which include Interviews questionnaires were administered to the respondents. The questionnaires were distributed among the staffs of Apapa port complex, Tincan island port and staff of some Shipping companies. 200 out of the 250 distributed were returned. In analyzing the data, comparisons were made by the use of percentages and ratios. Analysis of variance was used to determine if there is any significant relationship between the activities Liner shipping and port operations and performance. It was then discovered that there is a significant relationship between vessel turn round time and port productivity and efficiency, between Liner shipping, container terminal and government revenue and that adequate cargo handling machines leads to faster turn-round time of vessels. It is however concluded that maximization of revenue within the port/ shipping sector, all depends on the inflow and outflow of vessels and cargoes.*

### KEYWORDS

linear shipping, Lagos Port.

### INTRODUCTION

#### BACKGROUND INFORMATION

Shipping routing is an idealistic consideration and practical subjection of vessels for navigation and mobility of same along certain designated routes in conformity to international regulations guiding ocean seaway trade. In some regions of the world, such as the far Eastern Asian waters and the Pacific, ships will usually deviate to avoid sections of these sea zones. Shipping is also tending to follow exact recommended routes of international agreements, as they pass through straights and channels and around headlands on which many vessels focus. Scheduling is concerned with the process of sequencing port calls and fixing the time of each port call for all ships involved.

Routing and scheduling is a large research area within communication and transportation. Within transportation there are four distinct modes which are truck, train, aircraft and ship. Shipping differs from trucking in that for example the draft of a ship is a function of how much weight is loaded on the ship whereby the ship-port compatibility is affected by the cargo loaded. Ships can also be diverted at sea and their voyages span days or weeks both of which are not true for trucks. Both planes and ships require large capital investment, they both pay port fees, and both operate internationally. However, airplanes come only in few varieties and do not operate around the clock whereas ships come in a large variety and do operate around the clock, making the two modes unlike as well. Because ships operate under different conditions than the other modes the ship routing and scheduling problems are also different (Christiansen et al., 2004). Within sea transportation there is a distinction between three separate modes of operation: industrial, tramp and liner (Lawrence, 1972). In industrial shipping the cargo owner also owns the ship. Tramp ships are like taxis as they follow the available cargo and liner ships are operated on published schedule that affect the demand for their services and where each cargo only constitutes a small part of the ship capacity (Ronen, 1983). Continuing growth in the world population, increasing globalization, and the extensive depletion of local resources have resulted in increased world trade. Since there is already a heavy pressure on the road and air networks (Christiansen et al., 2004) and only little possibility of extending them, transportation by ship has experienced a rapid growth over these years.

Today, more than 80% of international trade in goods is carried by sea (UNCTAD, 2010b). The majority of these goods is presently transported by ships deployed in the industrial and tramp segments. However, 70% of the seaborne trade, in terms of value, is transported by container ships (WTO, 2008). The container ship fleet, which is exclusively deployed in liner shipping, constituted 13.3% of the world fleet's total deadweight tonnage in 2010. Since 1980, the share of containerized tonnage has increased eightfold, which is a reflection of the increased containerization of the trade in consumer and manufactured goods (UNCTAD, 2010a,c). Despite the growth in the liner shipping segment of the industry, there has been very little research to support it (Sigurd et al., 2007). However this Research work will add to existing literatures in x-raying the problems and prospect of liner shipping in Nigeria.

### STATEMENT OF PROBLEM

The majority of international trade is transported by ships as the maritime shipping industry is the major provider of transportation of large volumes over great distances. The overwhelming relevance of Liner Shipping and the Shipping industry to the functionalities of the maritime industry at large to the overall growth and development of the world economy cannot be fully established without dwelling into some of its peculiar problems. Over the years, the operations and services rendered to users within the confines of the operating environment have not been satisfactory due largely to lack of shipping policy and some government policy inconsistencies. Shipping operations and services have over the years been dominated by foreign shipping companies and vessels of which Maersk-line is inclusive. Therefore, a critical analysis of the challenges and opportunities facing these shipping lines and services in Nigeria is very important. Also many factors like the management of bunker, activities of pirates, application of information and communication technology, safety practices and ship turnaround time affect the growth and survival of a shipping line. Some shipping lines know this fact. While some have taken the lead in innovating trends that would help them overcome these challenges, others sit with no attempt to innovate; still waiting for the changes to blow them away. Thus, because the concept

of liner shipping is growing rapidly, there is need to develop an exclusive appraisal of liner shipping. Therefore, Liner shipping operations have, on several occasions found several operational and managerial policies with regards to routing and scheduling operation within the confines of the system is very confusing. This is because the demand experienced in liner shipping is characterized by an origin and destination pair. However, the type of operation varies. An example of a route can be when a company involved in liner shipping creates routes; the company will often associate a ship type with each route in order to ensure adequate cargo capacity and compatibility between the ships and the ports that they visit. While the routing problem is concerned with sequencing port calls, the scheduling problem is concerned with sequencing port calls and fixing the time of each port call for all ships involved. The two problem types are thus mutually exclusive. Should the sequence of the ports be given, then fixing the time of the port calls is known as a timetabling problem (French, 1982) which is a sub problem of a scheduling problem as the result is a schedule. Routing and Scheduling problems are largely tactical and/or operational in nature. It also includes Fleet Management and composition problems, containerization problems, operational problems, Demand functions problem, transshipment and planning problems.

## OBJECTIVES

The main aim of this study is to x-ray the operational functionality of Routing and Scheduling in liner shipping in Nigeria maritime Industry. Base on the above stated factor, the research objective will take into consideration the following element which will guide the study.

1. To critical examine the relationship between Liner Shipping Operations and Port Productivity.
2. To examine the operational relationship between vessel turnaround time and Port efficiency and Productivity.
3. To examine the operational challenges of Routing and Scheduling in liner shipping and government revenue.

## RESEARCH QUESTIONS

1. How the operations of Liner Shipping can affects port operational performance?
2. How can vessel turnaround time be a measure of port efficiency and productivity?
3. How routing and scheduling in liner shipping can affect port revenue?

## RESEARCH HYPOTHESIS

The following hypothesis shall support this study.

- H<sub>01</sub>: There is no significant relationship between Liner shipping and port operational performance.  
 H<sub>A1</sub>: There is a significant relationship between Liner shipping and port operational performance.  
 H<sub>02</sub>: There is no significant relationship between vessel turnaround time and port productivity and efficiency.  
 H<sub>A2</sub>: There is a significant relationship between vessel turn round time and port productivity and efficiency.  
 H<sub>03</sub>: There is no significant relationship between Routing and Scheduling in liner shipping and government revenue.  
 H<sub>A3</sub>: There is a significant relationship between Routing and Scheduling in liner shipping and government revenue.

## JUSTIFICATION OF STUDY

Every research study must aim at either solving a specific Human problem or contribute to existing literature on the impact of Liner shipping thereby forming a reference material for students and researchers. Prospects and findings from this research work would assist investors, stakeholders and experts in the maritime sectors to focus their seemingly volatile debates on the impacts of Liner shipping and how it has affect the shipping operation within the confines of a maritime country like Nigeria.

Lastly, the findings of this study are envisaged to help in developing strategies that would enhance capacity utilization of liner shipping, reduction of the volume of passenger/container traffic, delay caused by the berth as well as increase vessel turnaround time and berth occupancy ratio.

## METHODOLOGY

**Research Method:** This research employs a pre-study and case study method, to ensure sufficient collection of relevant material, taking into account the lack of research in this subject. We used the material obtained from the interviews and the primary source, to structure our purpose, research questions, and to define the case of our study and an occasional primary data through the use of questionnaire. The questionnaires were distributed to the staff of the Nigerian Ports Authority and some identified regular customers, operators of the port services. The essence of choosing the staff is because of their long years of experience service delivery in the ports, administrative know-how of the ports, the normal arrival rates of the vessels in the port and other Ports logistics.

**Instrumentation:** The measuring instrument (questionnaire) was first administered to two different ports within Lagos (Apapa and Tinican Port) for responses. The summary of their responses were collected and analyzed using ANOVA method to test the hypothesis as well as the result gotten from the questionnaires and a coefficient of 0.05 degree of significance was obtained, indicating a strong relationship in the likelihood of future responses. This shows that the measuring instrument is reliable. The validity adopted is the content validity. The information is assessed, edited to eliminate the errors, the data is then coded and grouped according to the study to ease analysis. It is then analyzed using ANOVA method, the Analysis was done with the aid of Statistical Package for Social Sciences (SPSS) and result presented tables respectively.

The ANOVA formula presented thus;

$$TSS = \sum_{i=1}^n nj (x_j - \bar{x})^2$$

$$F = \frac{TRMS}{EMS}, d = 5\%$$

Where;

TSS = Sum of Squares total  
 TRSS = Sum of Squares treatment  
 ESS = Sum of square due to error  
 TRMS = Treatment mean Square  
 EMS = Error mean Square

**Data analysis and discussions:** This aspect contains the analysis of the data obtain through questionnaire. A total of two hundred and thirty six (236) questionnaires (base on the Yaroyamen formula) were administered in the specified case study Lagos port complex in Lagos state to the port workers but only two hundred copies (200) were recovered. The reason is that some were not submitted at all and some were not completely filled. The data analysis started with presentation of the data, result presentation and discussion of each data with the use of different tables for each items with discussion of each data with the use of different tables for each items with discussion on respondents perception through percentage analysis. In the same vein, respondents on each variable in the questionnaire were discussed. Also, the hypothesis of this research would be verified with the aid of analysis of variance (ANOVA) techniques using the F distribution method so as to determine the hypothesis that should be rejected and the one to be accepted. More so, the findings of this research shall be discussed based on the result on acceptance of the hypothesis and conclusion shall be drawn based on the commensuration of the research with the existing models/theories in the research, which determine the validity and reliability of the research to the existing body of knowledge on the research.

## DATA PRESENTATION, RESULT AND DISCUSSION

TABLE 1: THE SEX DISTRIBUTION OF THE RESPONDENT

SEX	NUMBER OF RESPONDENT	PERCENTAGE
MALE	148	74%
FEMALE	52	26%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented above, 74% of the respondents were male, while 26% were female. This implies that a percentage of port workers are male.

TABLE 2: THE AGE DISTRIBUTION OF THE RESPONDENT

AGE	NUMBER OF RESPONDENT	PERCENTAGE
18-25	30	15%
26-35	55	27.5%
36-45	70	35%
45 ABOVE	45	22.5%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented above, 15% of the respondents were between ages 18-25, 27.5% were between ages 26-35, 35% were between ages 36-45 while 22.5% were between the ages 45 and above. This implies that all port workers are adult because they are all above 18 years of age.

TABLE 3: MARITAL STATUS OF THE RESPONDENT

MARITAL STATUS	NUMBER OF RESPONDENT	PERCENTAGE
SINGLE	60	30%
MARRIED	140	70%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the above, 30% of the respondents were single, while 70% were married. This implies that higher percentages of port workers are married.

TABLE 4: EDUCATIONAL BACKGROUND OF THE RESPONDENT

EDUCATIONAL BACKGROUND	NUMBER OF RESPONDENT	PERCENTAGE
SSCE	35	17.5%
OND/NCE	45	22.5%
HND,B.Sc	65	32.5%
M.SC/ MBA	35	17.5%
PhD	5	2.5%
OTHERS	15	7.5%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 4 above, 17.5% of the respondents were SSCE holders, 22.5% were OND/NCE holders, 32.5% HND/B.Sc holders, 17.6% were M.Sc/MBA Holders, 2.5% were PhD holders while 5% were those who possess other certificate not specified between the ages 45 and above. This implies that majority of port workers are educated.

TABLE 5: THE OCCUPATIONS OF THE RESPONDENT

OCCUPATIONS	NUMBER OF RESPONDENT	PERCENTAGE
NPA	50	25%
FREIGHT FORWARDERS	25	12.5%
CONCESSIONAIRES	44	22%
CUSTOM OFFICERS	20	10%
SHIPPING COMPANY STAFF	10	5%
CONTAINER TERMINAL STAFF	20	10%
STEVEDORES	25	12.5%
OTHERS	6	3%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 5 above, 25% of the respondents were NPA staff, 12.5% were FREIGHT FORWARDERS, 22% CONCESSIONAIRES, 10% were CUSTOM OFFICERS, 10% were CONTAINER TERMINAL STAFF, 5% were SHIPPING COMPANY STAFF, 12.5% were STEVEDORES while 3% were not specify in the questionnaires.

Question 1: Inadequate funding hinder Liner shipping Operation in Nigeria

TABLE 6: HOW DOES INADEQUATE FUNDING HINDER LINER SHIPPING OPERATIONS?

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLY DISAGREE	30	15%
DISAGREE	20	10%
NEUTRAL	10	5%
AGREE	60	30%
STRONGLY AGREE	80	40%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 6 above, 15% of the respondents strongly disagree that inadequate funding hinder liner shipping operations, 10% disagree, 5% neutral, 30% agreed, 40% strongly agreed, This implies that majority of the respondent are of the opinion that inadequate funding affects the liner shipping operations.

Question 2: liner Shipping has increase cargo Throughput in container Terminals

**TABLE 7: HOW LINER SHIPPING HAS BEEN ABLE TO INCREASED THE CARGO THROUGHPUT AT CONTAINER TERMINAL**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	20	10%
DISAGREE	15	7.5%
NEUTRAL	5	2.5%
AGREE	60	30%
STRONGLY AGREE	100	50%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 7 above, 17.5 % (that 10%,7.5% of the respondents) disagree with the above question, 2.5% neutral, while 80% (that 30%, 50% of the sample population) agreed, This implies that majority of the respondent are of the opinion that liner shipping operations has been able to increase cargo throughput.

Question 3: Inadequate manpower affects Liner shipping Operations

**TABLE 8: HOW INADEQUATE SKILL MANPOWER AFFECTED THE OPERATION OF LINER SHIPPING**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	40	20%
DISAGREE	34	17%
NEUTRAL	8	4%
AGREE	88	44%
STRONGLY AGREE	30	15%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 8 above, 59 % (that 44%,15% of the respondents) agreed with the above question, 4% neutral, while 37% (that 20%, 17% of the sample population) disagree, This implies that majority of the respondent are of the opinion that lack of skilled manpower affect the operations of Liner shipping.

Question 4: Government policy inconsistency affects liner shipping Services

**TABLE 9: HOW POLICY INCONSISTENCY OF GOVERNMENT AFFECTS LINER SHIPPING IN NIGERIA**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	20	10%
DISAGREE	15	7.5%
NEUTRAL	10	5%
AGREE	60	30%
STRONGLY AGREE	95	47%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 9 above, 17.5 % (that 10%,7.5% of the respondents) disagree with the above question, 5% neutral, while 77.5% (that 30%, 47.5% of the sample population) agreed, This implies that majority of the respondent are of the opinion that policy inconsistency of government leads to cargo diversion to neighboring port.

Question 5: Port Reforms Strategies Improve Liner Shipping Operations

**TABLE 10: HOW PORT REFORM STRATEGY IMPROVE THE OPERATIONS OF LINER SHIPPING**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	10	5%
DISAGREE	20	10%
NEUTRAL	-	-
AGREE	70	35%
STRONGLY AGREE	100	50%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 10 above, 15 % (that 5%,10% of the respondents) disagree with the above question, zero neutral, while 85% (that 35%, 50% of the sample population) agreed, This implies that majority of the respondent are of the opinion that port reform strategy improve and also reshape to a large extent the operations of liner shipping.

Question 6: Environment policies on the water ways improve Liner shipping Standard

**TABLE 11: HOW ENVIRONMENTAL POLICY ON THE WATER WAYS HAVE IMPROVE STANDARDS IN LINER SHIPPING**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	30	15%
DISAGREE	10	5%
NEUTRAL	25	12.5%
AGREE	72	36%
STRONGLY AGREE	63	31.5%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 11 above, 20% of the respondents disagree with the above question, 12.5% neutral, while 67.5% of the sample population agreed, This implies that environmental policy improve shipping activities on the water ways.

Question 7: Poor maintenance culture on port Infrastructure affects Liner Shipping



**TABLE 12: THE IMPACT OF MAINTENANCE CULTURE OF THE INFRASTRUCTURE AND SUPER STRUCTURE OF THE PORT AND SHIPPING FACILITIES**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	22	11%
DISAGREE	21	10.5%
NEUTRAL	8	4%
AGREE	55	27.5%
STRONGLY AGREE	94	47%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 12 above, 21.5% of the respondents disagree with the above question, 4% neutral, while 74.5% of the sample population agreed; This implies that lack of maintenance culture affect the operational performance of liner shipping. Thus, it should be discouraged.

Question 8: Adequate provision of infrastructure and capacity building will affect Liner shipping

**TABLE 13: ADEQUATE SUPPORTING INFRASTRUCTURE AND CAPACITY BUILDING**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	-	-
DISAGREE	20	10%
NEUTRAL	-	-
AGREE	50	25%
STRONGLY AGREE	130	65%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 13 above, 10% of the respondents disagree with the above question, while 90% of the sample populations agree. This implies that adequate support infrastructure and capacity building will enhance liner shipping operation.

Question 9: Maritime Security and safety affects Liner shipping Operation

**TABLE 14: LACK OF APPROPRIATE MARITIME SECURITY AND SAFETY STANDARD**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	25	12.5%
DISAGREE	15	7.5%
NEUTRAL	10	5%
AGREE	70	35%
STRONGLY AGREE	80	40%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 14 above, 20% of the respondents disagree with the above question, 5% neutral, while 75% of the sample population agreed; this implies that lack of appropriate security and safety standard affect operations of liner shipping.

Question 10: Cargo diversion led to loss of revenue

**TABLE 15: PERCEPTION TOWARDS CARGO DIVERSION AND REVENUE LOSS TO NEIGHBORING PORT**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	20	10%
DISAGREE	10	5%
NEUTRAL	-	-
AGREE	80	40%
STRONGLY AGREE	90	45%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 15 above, 15% of the respondents disagree with the above question, while 85% of the sample populations agree. This implies that cargo diversion is synonymous to revenue loss to other neighboring port.

Question 11: Lack of Training and Re-training of Personnel affects Liner shipping Operations

**TABLE 16: PERCEPTION TOWARDS LACK OF TRAINING AND RETRAINING OF PERSONNEL**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	5	2.5%
DISAGREE	3	1.5%
NEUTRAL	2	1%
AGREE	86	43%
STRONGLY AGREE	104	52%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 16 above, 99% of the respondents agree with the above question, 1% were neutral, while 4% of the sample populations disagree. This implies that lack of training and retraining of personnel will reduce efficiency and lead to redundancy of service.

Question 12: Inadequate Funding and under investment affects the maritime Industry

**TABLE 17: PERCEPTION TOWARDS INADEQUATE FUNDING AND UNDER INVESTMENT IN THE MARITIME SECTOR**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	30	15%
DISAGREE	16	5%
NEUTRAL	25	12.5%
AGREE	63	31.5%
STRONGLY AGREE	72	36%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 17 above, 20% of the respondents disagree with the above question, 12.5% were neutral, while 67.5% of the sample populations agree. This implies that inadequate funding and under investment in the maritime sector affects operational efficiency of liner shipping.

Question 13: Liner shipping in Nigeria has attained optimal performance

**TABLE 18: PERCEPTION TOWARDS OPTIMAL PERFORMANCE OF LINER SHIPPING TO THE MARITIME INDUSTRY GROWTH**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	105	52.5%
DISAGREE	70	35%
NEUTRAL	20	10%
AGREE	5	2.5%
STRONGLY AGREE	-	-
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 18 above, 87.5% of the respondents disagree with the above question, 10% were neutral, while 2.5% of the sample populations agree. This implies that liner shipping have not been able to reach its target. Hence, the need for proper funding into the sector cannot be overruled.

Question 14: There is significant relationship between vessel turnaround time and port productivity and efficiency

**TABLE 19: PERCEPTION TOWARDS VESSEL TURNAROUND TIME AND PORT PRODUCTIVITY AND EFFICIENCY**

ALTERNATIVE OPTION	NUMBER OF RESPONDENT	PERCENTAGE
STRONGLYDISAGREE	10	5%
DISAGREE	7	3.5%
NEUTRAL	8	4%
AGREE	50	25%
STRONGLY AGREE	125	62%
TOTAL	200	100%

SOURCE: BUHARI S.O (2014) FIELD SURVEY

DISCUSSION: As presented in the table 19 above, 8.5% of the respondents disagree with the above question, 4% were neutral, while 87.5% of the sample populations agree. This implies that there are imbalances in liner shipping as it affect container throughput"

**TABLE 20: TEST OF HYPOTHESIS (Using Analysis of variance, ANOVA)**

QUESTION	SD	D	N	A	SA	TSD	TSA
Q1	30	20	10	60	80	50	140
Q2	20	15	5	60	100	35	160
Q3	40	34	8	88	30	74	118
Q4	20	15	10	60	95	35	155
Q5	10	20	-	70	100	30	170
Q6	30	10	25	72	63	40	135
Q7	22	21	8	55	94	43	149
Q8	-	20	-	50	130	20	180
Q9	25	15	10	70	80	40	150
Q10	20	10	-	80	90	30	170
Q11	5	3	2	86	104	8	190
Q12	30	16	25	63	72	46	135
Q13	105	70	20	5	-	46	135
Q14	10	7	8	50	125	17	175
MEAN	26.2	19.7	9.6	62.1	83.1	45.9	132.6

SOURCE: BUHARI S.O (2014)

**TABLE 21: MODEL SUMMARY**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.989 <sup>a</sup>	.978	.976	6.21304

a. Predictors: (Constant), TSA

**TABLE 22: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	20773.706	1	20773.706	538.153	.0002 <sup>b</sup>
Residual	463.223	12	38.602		
Total	21236.929	13			

a. Dependent Variable: TSD

b. Predictors: (Constant), TSA

**TABLE 23: COEFFICIENTS<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	174.876	5.801		30.145	.0002
	TSA	-.888	.038	-.989	-23.198	.001

a. Dependent Variable: TSD

From the ANOVA Table, it can be seen that the significance value in the ANOVA table is 0.0002 which is less than the significance level of 0.05. This shows that there is a significant relationship between the variables. Therefore, we accept the alternative hypothesis one, two and three and reject the null hypothesis that;

- There is significant relationship between Liner shipping and Port operational performance.
- There is significant relationship between vessel turnaround time and Port productivity and efficiency.
- There is a significant relationship between Routing and Scheduling and Port revenue.

## CONCLUSION

In this research a classification scheme for scheduling and routing problems in liner shipping has been developed. The scheme is based on existing schemes for vehicle routing problems and literature concerning liner shipping. Articles on the subject are classified according to the developed scheme and subsequently grouped according to three of the characteristics in the scheme. The grouping resulted in four groups of articles all involving routing hence, none of the articles were classified as both a scheduling problem or a fleet management and scheduling problem. The classification scheme is expected to help elucidate the characteristics of the predominantly practical problems currently in the literature and thereby create some uniformity in the literature in the long run. The scheme can then form the basis from which a general model or group of models can be developed.

## RECOMMENDATIONS

After a thorough and exhaustive research on “**Appraisal of Routing and Scheduling in Liner Shipping (Case Study: Lagos port complex)**”. It is very obvious that some of the recommendations have with and adopted will definitely enhance productivity and management efficiency in the ports. There is need for government to rise up to the challenges of these current trends within the confines of the port environment by creating a congenial business environment that will lift the operational standards of the port system.

1. Shipping Company should as a matter of fact and urgency be proactive in the choice of viable route so as to met up the expected target delivery to the customer.
2. To ensure and promote continues dredging of waterways to support continue free flow of vessel operation.
3. Government policies “if any” should be design to favour routing and scheduling operation of liner industry so as to improve vessel calls at our ports.
4. The operations of fleet management, fleet allocations and deployment decision should be thoroughly organized and manage so as to improve industry management and efficiency.
5. There is need to revisit the existing Liner Operation structures within the confines of the maritime sector.
6. There is need for effective Liner routing and scheduling structure so as to ensure even distribution of activities in the ports and enhance port assets utilization.
7. There is need for shipping companies and terminal concessionaires’ to invest in the expansion of port infrastructure and super structure such as port spaces, transit sheds, stacking areas and parking areas for better accommodation of containers and cargos within the confines of the port environment.
8. There is need for better construction and building of new and feeder ports aimed at reducing the pressure of vessel inflow and outflow on the congested ports within the confines of the port environment.
9. It is also recommended that procurement of sound and facilities modern equipment and other infrastructure so as to facilitate cargo handling of both imports and exports and goods delivery to the respective consignee.
10. There is need for a reconstruction and rehabilitation of all seaports facilities and ports infrastructure and super structures through due diligence and at a cost that is meaningful and profitable.
11. This research also tends to recommend that for proper operational modalities of our port systems, there is need for the provision of ICD (inland container depot) in the geopolitical zone of Nigeria.

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## ROLE OF TEACHERS IN DEVELOPING EMOTIONAL INTELLIGENCE

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### ABSTRACT

*Emotional intelligence is the key to recognizing one's own feelings and the feelings of others. It is the skill that allows us to manage conflict, work in teams co-operatively and achieve peaceful resolution. An emotion is a positive or negative feeling (or affective) state consisting of a pattern of cognitive, psychological, and behavioral reactions to events that have relevance to important goals or motives. Only an emotionally intelligent competent teacher can bring up emotionally competent student. It has also provided sufficient support to guidance and counseling services for the development of emotional intelligence.*

### KEYWORDS

Emotional intelligence, role of teachers.

### INTRODUCTION

Emotions are personal experiences that arise from complex interplay among psychological, cognitive and situational variables. Emotions if properly used are essential tool for successful and fulfilling life. But if emotions are out of control, it can result in disaster. In day to day life they affect our relations with other people, our self identity and our ability to complete a task. Emotional process is not an isolated phenomenon but component of general experience, constantly influencing and influenced by other processes going on at the same time. To be effective, the cognitive process must be in control of the emotions, so that they work for rather than against. Here comes the importance of emotional intelligence.

Competencies of self awareness, self understanding and self regulation lead to the development of social competencies of team work, leadership, communication and conflict resolution. These competencies are collectively found under the umbrella of emotional intelligence. It is these skills that encourage the crossing of frontiers by ideas and emotion. The famous psychologist E.L.Thorndike, through his concept of social intelligence, laid down a solid foundation of the essence of emotional intelligence in 1920. The term emotional intelligence appears to have originated with Charles' Darwin in 1872, who theorized about a broader emotional social intelligence necessary for human survival and adaptation. In modern times, the term emotional intelligence was popularized by Goleman.

Goleman claims that emotional intelligence can be taught, and that it is twice as important as intellectual intelligence. Emotional intelligence refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves and for motivating emotions well in ourselves and in our relationships. It is the ability to perceive accurately, appraise and express emotions generate feelings that facilitate thoughts and an ability to regulate emotions to promote growth. It is also defined as an array of non-cognitive capabilities competencies and skills that influence one's ability to succeed in coping with environmental demands and pressure. According to Goleman (1998), emotional intelligence has five elements: self awareness, self regulation, motivation, empathy and social skills.

### EMOTIONAL INTELLIGENCE

Daniel Goleman (1998:317) defines emotional intelligence as 'abilities such as being able to motivate oneself and persist in the face of frustration to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope'. Emotional intelligence is the key to recognizing one's own feelings and the feelings of others. It is the skill that allows us to manage conflict, work in teams co-operatively and achieve peaceful resolution. As Goleman (1998) argues: Emotional intelligence refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in us and in our relationships. It describes abilities distinct from, but complementary to academic intelligence, the purely cognitive capacities measured by intelligence quotient.

In 1990, Salovey and Mayer coined the term "emotional Intelligence" and based their work on the non-cognitive aspects of intelligence.

In 1995, Goleman wrote his book, Emotional intelligence, based upon Salovey and Mayer's (1990) work. One of the key areas to understanding emotional intelligence is the awareness of what causes our emotions. "The emotion centers are lower in the brain, in the more ancient sub cortex; emotional intelligence involves these emotional centers at work, in concert with the intellectual centers" (Goleman, 1998). By understanding what triggers our emotions, we can avoid being emotionally hijacked and thus behave more rationally.

According to Bar-On (2002), emotional intelligence is "an array of noncognitive capabilities, competencies and skills that influence one's ability to succeed in the coping with environmental demands and pressures". Broadly defined, emotional intelligence "addresses the emotional, personal, social and survival dimensions of intelligence". According to psychologist, Daniel Goleman (1995), emotional intelligence underlies the ability to get along well with others. It provides us with the understanding of what other people are feeling and experiencing, and permits us to respond appropriately to others needs. Emotional intelligence is the basis of empathy for others, self awareness and social skills.

Abilities in emotional intelligence might help explain why people with only modest intelligence quotient scores can be quite successful, despite their lack of traditional intelligence. High emotional intelligence might enable an individual to take into others feelings, permit a high degree of responsiveness to others.

### EMOTIONAL DETERMINANTS

According to Elizabeth .B. Hurlock, emotions can add pleasure to a person's life and motivate action that improves his social and personal adjustments. Not only do emotionally toned experiences affect the person's self concept at the time they occur, but memories of experiences continue to leave their mark although the notion of emotional intelligence makes sense, it has yet to be quantified in a rigorous manner.

Furthermore, the view that the emotional intelligence is so important that skills related to it should be taught in schools has raised concerns among some educators. They suggest that the nurturance of emotional intelligence is best left to students families, especially because there is no well specified set of criteria for what constitutes emotional intelligence. (Schulman & Mekler, 1994., sleek, 1997.) Still the notion of emotional intelligence reminds us that there are many ways to demonstrate intelligent behavior – just as there are multiple views of the nature of intelligence (Fox & Spector, 2000). To be emotionally intelligent student must become proficient in the four A's of emotional intelligence that is, Awareness, Acceptance, Attitude and Action. Awareness means knowing what you are feeling when you are feeling it. Acceptance means believing that emotions are a biological process taking place in the body and the brain and that is not always rationality a biological process taking place in the body and the brain and that is not always rationality means being able to feel an emotion without judging it. Attitudes are beliefs that are attached to emotion means being able to feel an emotion without judging it. Attitudes are beliefs that are attached to emotion. Action is the behavior, based on emotion and attitude.



## VALUES OF EMOTIONAL INTELLIGENCE

Emotional intelligence helps to predict success because it reflects how a person applies knowledge to the immediate situation. The growing interest in emotional intelligence in all business recognizes the importance of savvy interpersonal skills and the ability to get along with others (Pfeiffer, 2001.) Emotional intelligence is now considered fundamental for getting along in the workplace and is a primary leadership and managerial competency (Cooper and Sawad, 1997.)

Abilities in emotional intelligence might help explain why people with only modest intelligence quotient score can be quite successful, despite their lack of traditional intelligence. High emotional intelligence might enable an individual to take into others feelings, permitting a high degree of responsiveness to others. Some psychologists argue that entirely separate systems govern cognitive responses and emotional responses. One current controversy is whether the emotional response takes predominance over the cognitive responses or vice versa. Some theorists suggest that we first respond to a situation with an emotional reaction and then later try to understand it (Zajonc, 1985)

Emotionally intelligent people are more likely to be succeeded everything they undertake in life. Most of the problems in our life whether childhood problems, adolescent problems, home and family problems work situation problems political regional and international problems are the result of misinterpretation of the involved sentiments, feelings and emotions of the concerned individuals, society and the nations (S.K. Mangal).

## THE FUNCTIONS OF EMOTIONS

An emotion is a positive or negative feeling (or affective) state consisting of a pattern of cognitive, psychological, and behavioral reactions to events that have relevance to important goals or motives. Negative emotional responses are a central feature of the stress response. Emotions influence our wellbeing in several ways: by raising us to action, by helping us to communicate with others, and by eliciting empathy and help. Negative emotions narrow attention and behaviours, whereas positive thoughts tend to broaden our thinking and behavior.

Emotions and feelings that have both psychological and cognitive elements and that influence behavior. Psychologists have identified a number of important functions that emotions play in our daily lives (Scherer, 1984) some of the important functions are:

- Preparing us for actions: Emotions acts as a link between events in external environment and behavioral responses that an individual makes.
- Shaping our future behavior: Emotions serve to promote learning of information that will assist as in making appropriate responses in the future.
- Helping us to regulate social interaction: The emotion we experienced are frequently obvious to observers, as they are communicated through our verbal and non verbal behaviors. These behaviors can act as a signal to observers, allowing them to better understanding what we are experiencing and to predict our future behaviors. In turn, this promotes more effective and appropriate social interactions.

## THE NATURE OF EMOTIONS

- The primary components of emotion are the eliciting stimuli, cognitive appraisals; psychological arousal and expressive and instrumental behaviours, individual differences in personality and motivation affect the experience and expression of emotion, as do cultural factors.
- Although innate factors can affect the eliciting properties of certain stimuli, learning can also play an important role in determining the arousal properties of stimuli.
- The cognitive component of emotional experience involves the evaluation and personal appraisals that evoke basic emotions, but also some degree of variation in more complex appraisals. Recent studies suggest that negative emotions reflect greater relative activation of the right hemisphere, whereas positive emotions are related to relatively greater activation in the left hemisphere.

## ROLE OF TEACHER

The future of India is now being shaped in the classroom. On the quality and number of persons coming out of our schools and colleges will depend our success in the great enterprise of national reconstruction. If parents and teachers properly guide them and if healthy and correct ideas, ideals, values, principles, patriotism etc are given to these young people from early days they normally choose and follow acceptable behaviors that are productory and salutary. It is the responsibility of adults and teachers to create in developing emotional intelligence. Teacher should provide an opportunity to students for self expression in as many ways as possible. Students should be given friendly and democratic approach in the class. Students should be given training in the art of diverse approach to the solution of problem solving.

Only an emotionally intelligent competent teacher can bring up emotionally competent student. It has also provided sufficient support to guidance and counseling services for the development of emotional intelligence. Emotional intelligence is a sure guarantee for unqualified advantage in life, there denying the fact that one's ability to live, progress and adjust to others. An emotionally competent teacher is the heart and soul of any educational program and venture. Learning becomes a pleasure, student dropout decreases and children work from setbacks through hope to success only in the presence and able guidance of the emotionally competent teachers.

## CONCLUSION

Although the notion of emotional intelligence makes sense, it has yet to be quantified in a rigorous manner. Furthermore, the view that the emotional intelligence is so important that skills related to it should be taught in schools has raised corners among some educators. They suggest that the nurturance of emotional intelligence is best left to student's families, especially because there is no well-spaced set of criteria for what constitutes emotional intelligence (Schulman & Mekler, 1994., sleek, 1997)

The emotional intelligence is so important that skills related to it should be taught in schools has raised the mental capacity of students. Emotions are the psychological and cognitive elements and that influence the behavior. Therefore the inco-operation of learning emotional intelligence through the curriculum, recognizing that the 'hidden curriculum will undoubtedly play an important reinforcing role. So development of emotional intelligence among students has much role in now a day's school curriculum. Thus emotional intelligence helps in developing the mental health and this finds satisfaction in things, that occupy our time, both work and play; adjusting to circumstances and meeting demands of life calmly and courageously, as God wants us to do.

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# MICRO-CREDIT MANAGEMENT BY PUNJAB NATIONAL BANK WITH REFERENCE TO FINANCING SHGs IN VARANASI

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## ABSTRACT

A lot of research has been carried out and are being carried out to make micro finance sector contribute to the overall growth of the nation. The present research paper tries to study various Micro-Credit schemes of PNB (especially financing SHGs) and the process of financing SHGs. This paper also highlights the credit risk management framework of PNB with an aim to find out the various strategies followed for management of micro credit under financing SHGs. The paper has been divided into eight sections: the first section outlays the Introduction. The second section deals with the literature review. The third section deals with the objectives of the research paper. The fourth section explains the detailed Research Methodology adopted to carry out the study. The study is descriptive in nature, and the researcher has used Percentage and graph tools for the analysis of primary data. The fifth section deals with the analysis of primary data collected from the Varanasi district of Uttar Pradesh, which study the various Micro-Credit schemes of PNB (especially financing SHGs) and the process of financing SHGs and highlights the credit risk management framework of PNB with an aim to find out the various strategies followed for management of micro credit under financing SHGs. The sixth section presents the findings and concluding remarks of the research attempted for the study. The seventh section deals with the suggestions and would enlighten us to understand the reality of the initiatives. The final section deals with the limitation of the study.

## KEYWORDS

Micro Credit Management, Punjab National Bank, Self Help Groups, NPA.

## I. INTRODUCTION

Micro Credit Management is a very crucial part of the any bank dealing in the rural sector. In India there are various banks which operate in rural sector and they provide credit to the rural folks in the form of micro credit through various schemes like Kissan Credit Card, Farm mechanization loan, Dairy loan etc.

All the above credits given by various bank are small in size or more precisely we can term it as micro credit and one of the major source of micro credit to rural people is through SHGs.

In the present research paper the Micro Credit Management of PNB with reference to financing SHGs have been shown and the bank gives the micro credit to SHGs under its own initiated programme called Agribusiness Cell (ABC)

### AGRIBUSINESS CELL (ABC) OF PNB

In order to maintain competitive edge and by focusing on the emerging avenues for Agribusiness the Bank has established Agri-Business Cell (ABC) in Priority Sector & Lead Bank Division, at Head Office.

### VARIOUS AGRIBUSINESS SCHEMES UNDER AGRI-BUSINESS CELL (ABC)

- Scheme for Financing Agri-Business Projects with venture capital assistance from Small Farmers' Agri-Business Consortium (SFAC).
- Scheme For Financing Micro-Financing Institutions (Mfis) For On-Lending To Individual Members Or their SHGS/JLGS.
- Venture Capital Fund Scheme for Dairy / Poultry Sector.
- Scheme for providing credit for projects for development and strengthening of infrastructure facilities for production and distribution of seeds.
- Capital Investment Subsidy Scheme for commercial production units of organic inputs under National Project on Organic Farming.
- Scheme for strengthening of agriculture marketing infrastructure, grading and standardization.
- Scheme For Financing Farmers Growing Sugar Cane Crop In Tie Up Arrangement With Sugar Mill Acting As Business Facilitator

## II. LITERATURE REVIEW

The burden of indebtedness in rural India is one of the most pervasive features of rural life and despite major structural changes in credit institutions and forms of rural credit in the post independence period, situation is not good. The credit market, although highly fragmented helps in production loans but it is the local moneylenders who attend the most urgent needs like consumption, medical and emergency situation. Also, institutional credit is not as cheap as it appears on paper, moreover, there are operational rigidities associated with administration of institutional credit (Mukesh Pandey & Deepali Tewari 2013).

The twin problem of non-viability and poor recovery performance of the existing rural credit coupled with failure of financial institutions to deal with income poor borrowers in an imaginative and sustainable way brought up, the idea of micro credit in to the rural credit scenario (Rangrajan, 1996). This alternative combines the strength of the formal banking system with the reach and flexibility of the informal Self Help Groups (SHGs) to make credit accessible to rural poor. Micro credit programmes extend small loans to poor people for self employment projects that generate income, allowing them to care for themselves and their families. In most cases, micro credit projects offer a combination of services and resources to their clients in addition to credit for self-employment. These often include savings facilities, training, networking and peer support.

According to NABARD, micro-finance is the, "Provision of thrift, credit and other financial services and products of very small amounts to the poor in rural, semi-urban or urban areas enabling, them to raise their income levels and improve living standards".

## III. OBJECTIVES OF STUDY

1. To study various Micro-Credit schemes of PNB (especially financing SHGs) in Chirgaon branch of Varanasi district.
2. To study the process of financing SHGs.
3. To study credit risk management framework of PNB
4. To find out various strategies followed for management of micro credit under financing SHGs

## IV. METHODOLOGY

- **Research design:** Descriptive research design
- **Sampling design:** No Sampling done for the Branch Manager & Convenience Sampling was done in case of business facilitators
- **Coverage:** The study is conducted in Varanasi district of U.P.
- **Sample Size:** The branch manager of the Punjab National Bank, Chirgaon Branch & the various business facilitators were selected for collecting primary data

- **Data analysis Tools**

A pre-structured and pre-tested interview schedule was used for data collection, keeping the objectives of the study in the mind. The various statistical tools are used depending upon the data and requirement for the analysis like Percentage, pie chart graph, bar chart, histogram graph.

## V. RESULT AND DISCUSSION

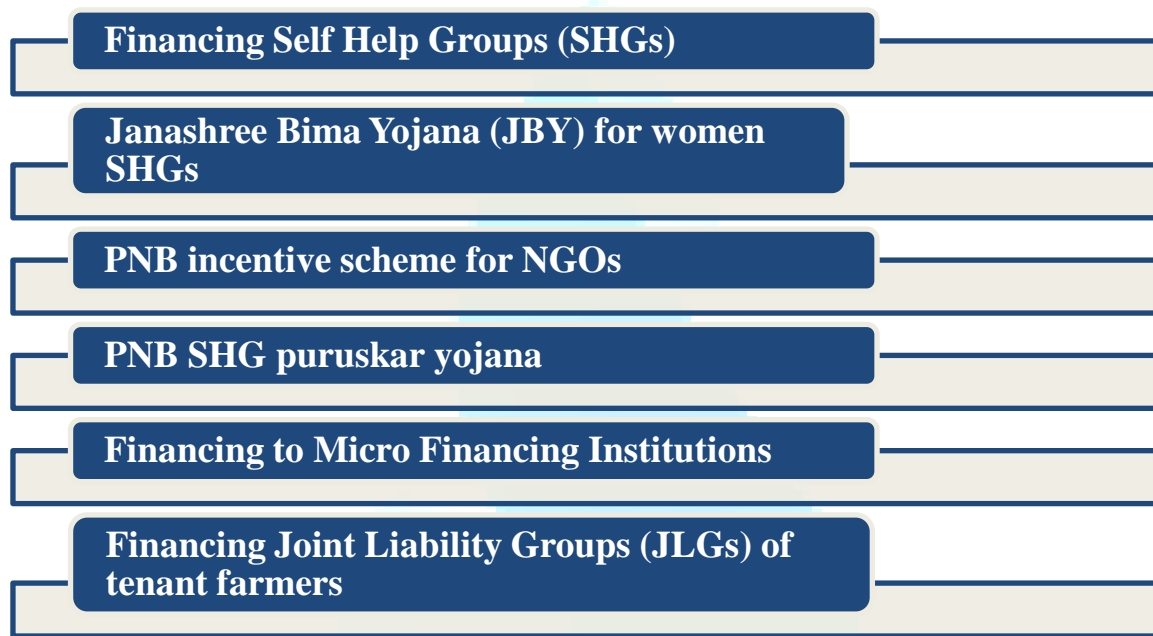
### MICRO-CREDIT SCHEMES OF PNB

Following Micro Credit schemes are the part of special credit schemes of PNB.

- **FINANCING SELF HELP GROUPS (SHGs)**

To evolve supplementary credit strategies for meeting the credit needs of the poor & to encourage banking activity, both on the thrift as well as credit sides, in a segment of the population that the formal financial institutions usually find difficult to cover. The bank branch finances the SHG not the individual member of the SHG. The SHG will lend to its member for any purpose. The bank may also finance through voluntary agencies/NGOs who have promoted the SHG.

FIG. 1: MICRO CREDIT SCHEMES OF PNB



### PROCEDURE FOR FINANCING SHG

There are two ways of extending bank finance. Directly to the SHG or through bulk lending to NGOs for on lending to group. Where the lending is directly from the bank to the group, the same should have linkage with the savings mobilised by the group. For availment of finance, group will prepare a credit plan for members and submit to the bank.

### SELECTION CRITERIA FOR LINKAGE

SHGs are to be ultimately linked to the formal banking structure of a bank branch. The broad criteria are:

- The group should generally be in active existence for a period of at least six month.
- The group should have successfully undertaken savings and credit operations from its own resources.
- The group should maintain the proper accounts/records.
- The group formation should reflect genuine need to help each other and work together

### SELECTION CRITERIA OF NGO FOR COLLABORATION

FIG. 2: SELECTION CRITERIA OF NGO FOR COLLABORATION

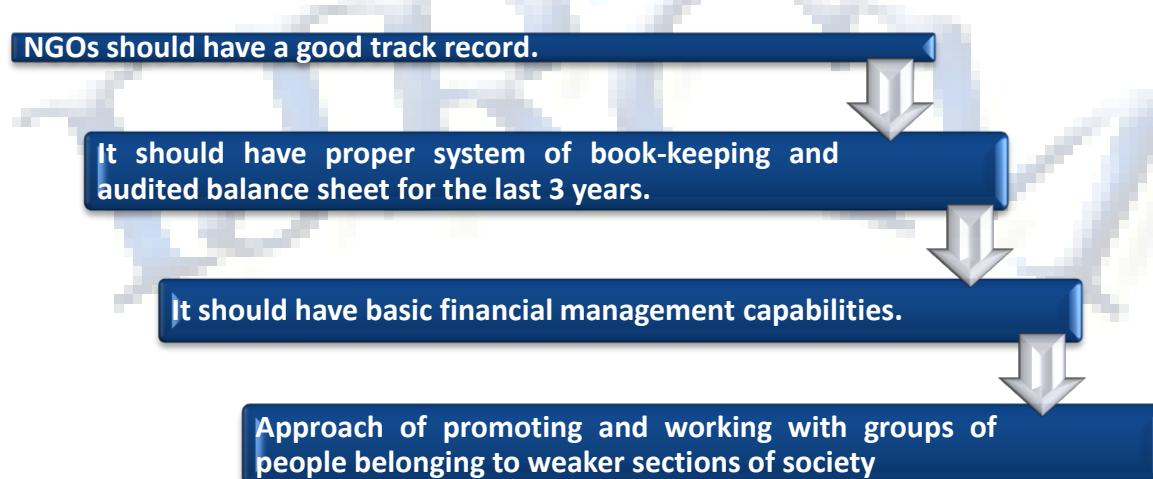
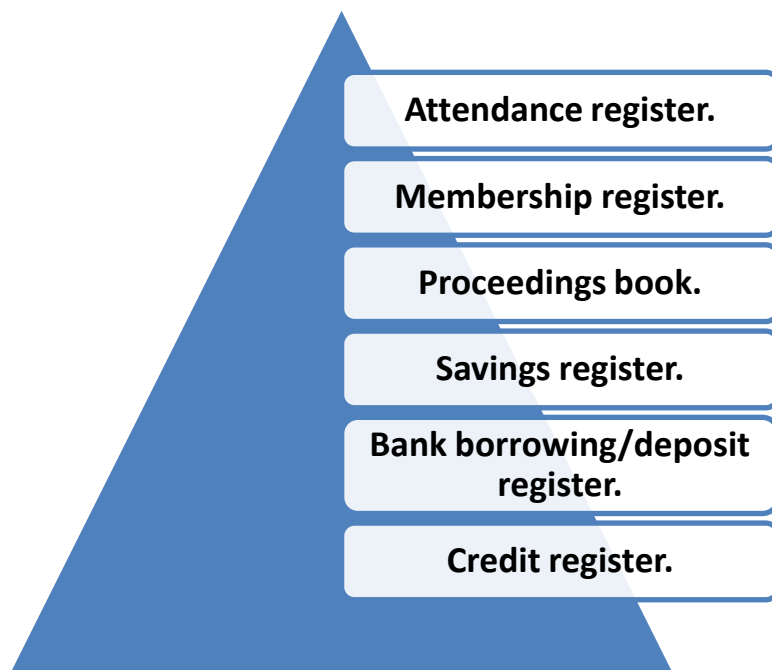


FIG. 3: BOOKS OF ACCOUNTS MAINTAINED BY SHGs



#### RBI GUIDELINES

- Open savings bank account in the name of SHGs.
- Relaxation of present norms for margin/security for lending to SHGs.
- SHG maintain their regular account & they do their regular business & grow.

#### CREDIT RISK MANAGEMENT FRAMEWORK OF PNB

Credit risk management frame work of PNB consists of:

- Risk management division (headed by CGM/GM)
- Circle risk management departments (looked after by DGM/AGM/CM of the circle office)
- Risk management committee (for formulating policies, procedures & managing all the risks)
- Credit risk management committee (top level committee headed by CMD & comprises of EDs,CGMs/GMs of risk management credit, treasury etc. as per the directives of RBI)
- Credit Audit Review Division (CARD).
- In case of micro credit & risk associated with it is looked after by the branch manager of the concerned branch.

#### MANAGEMENT OF MICRO-CREDIT UNDER FINANCING SHGs

##### 1. Normal procedure against defaulters:

- Giving notice to the SHGs 2-3 times on behalf of the bank
- Legal notice
- SHGs declared as NPA
- Revenue Collection (RC) is being cut against the SHG (Aamin of concerned block or village do the collection of the revenue and borrower is charged 10% more on the loan taken after the RC has being cut against him)
- Lok Adalat

##### 2. Particular branch along with normal procedure implement following strategies for the effective micro credit management:

- BLBC(Block Level Bankers Committee) Meeting.
- Normal Notices.
- Contacting facilitator.
- Personal Visit.

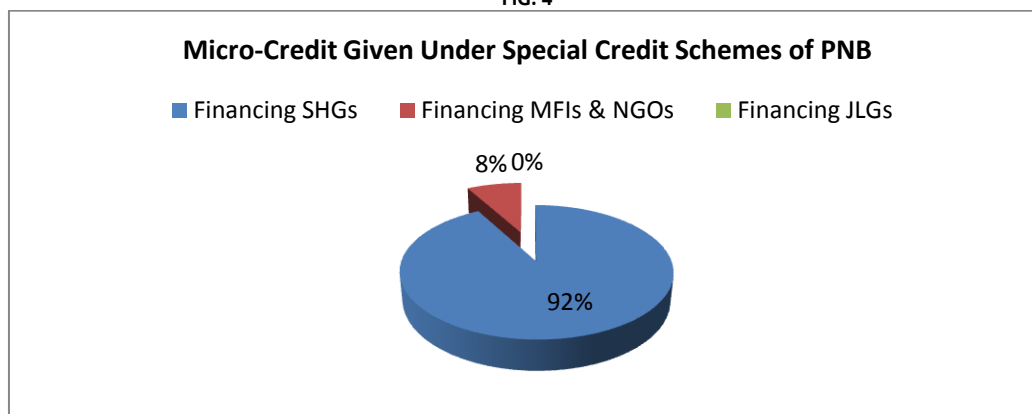
#### DATA ANALYSIS

TABLE 1

Categories	Percent
<b>Micro-Credit Given Under Special Credit Schemes of PNB</b>	
Financing SHGs	92%
Financing MFIs & NGOs	8%
Financing JLGs	0

Source: Primary Data

FIG. 4



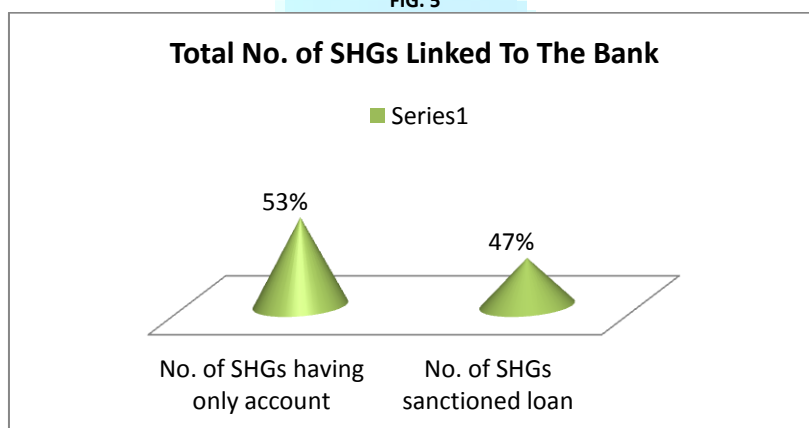
Most of the Micro-Credit given by the bank is under the scheme of financing SHGs while only few Micro-Credits has been given to MFIs/NGOs. No loan has been sanctioned by the branch under financing Joint Liability Groups.

TABLE 2

Categories	Percent
<b>Total No. of SHGs Linked To The Bank</b>	
No. of SHGs having only account	53%
No. of SHGs sanctioned loan	47%

Source: Primary Data

FIG. 5



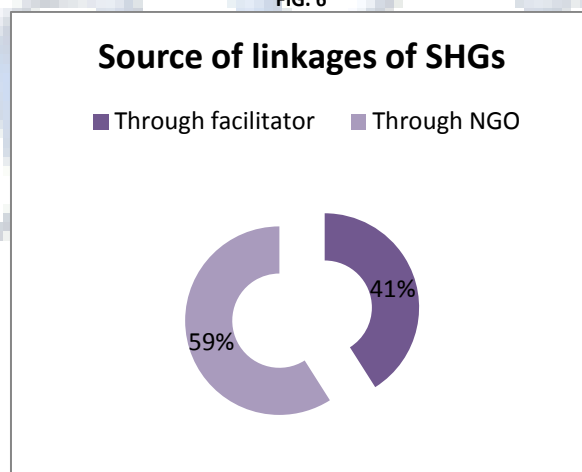
Out of 61 SHGs linked to bank 28 have been given loan i.e. total no. of SHGs linked to the bank is 61 and only 28 SHGs have being sanctioned loan while remaining 33 have opened only account in the bank.

TABLE 3

Categories	Percent
<b>Source of linkage of SHGs</b>	
Through facilitator	41%
Through NGO	59%

Source: Primary Data

FIG. 6



Most of the SHGs are linked through NGO followed by facilitators i.e. 36 SHGs have been linked to bank by NGO and the remaining are linked through facilitators.

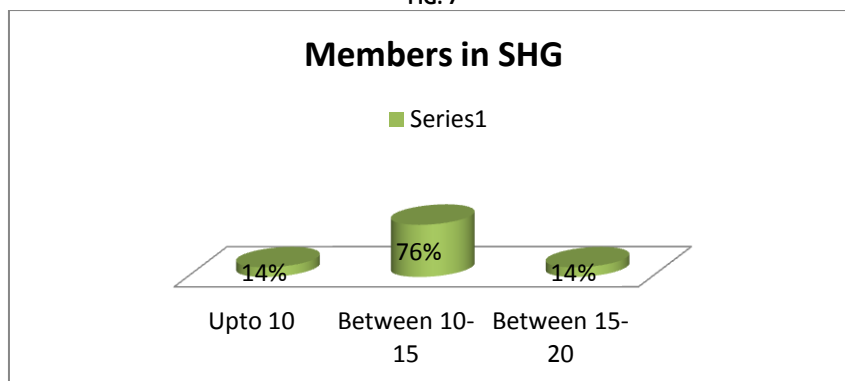


TABLE 4

Categories	Percent
<b>Members in SHG</b>	
Upto 10	14%
Between 10-15	76%
Between 15-20	14%

Source: Primary Data

FIG. 7



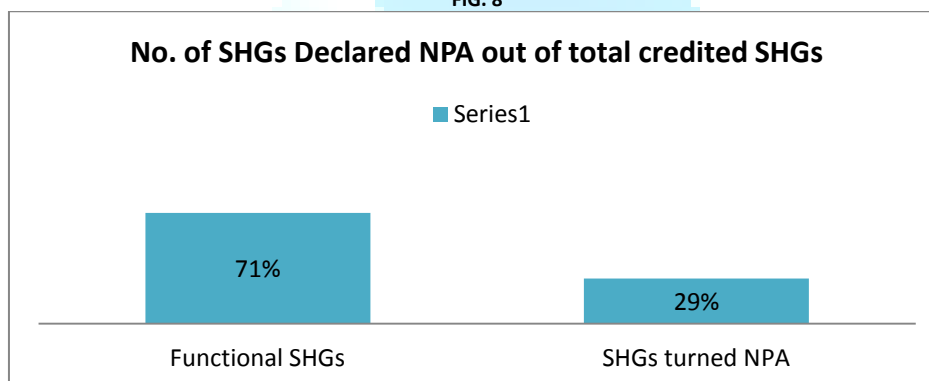
Most of the SHGs i.e. 76% have members between 10-15

TABLE 5

Categories	Percent
<b>No. of SHGs Declared NPA out of total credited SHGs</b>	
Functional SHGs	71%
SHGs turned NPA	29%

Source: Primary Data

FIG. 8



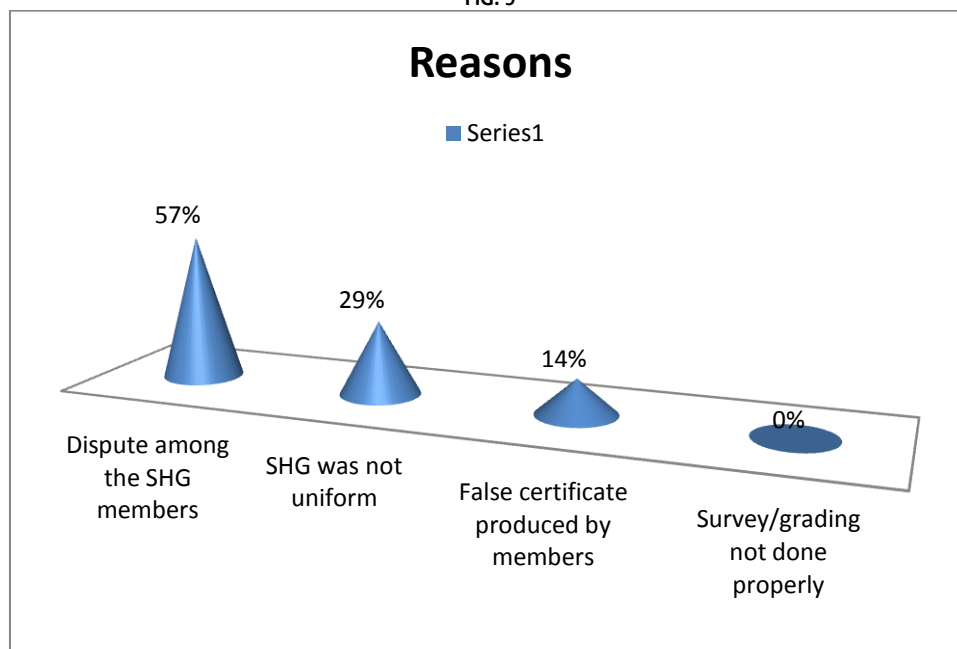
Out of total 28 SHGs to whom loan had been sanctioned 8 SHGs have turned into NPA while 20 are functional so most of SHGs are functional

TABLE 6

Categories	Percent
<b>Reasons</b>	
Dispute among the SHG members	57%
SHG was not uniform	29%
False certificate produced by members	14%
Survey/grading not done properly	0%

Source: Primary Data

FIG. 9



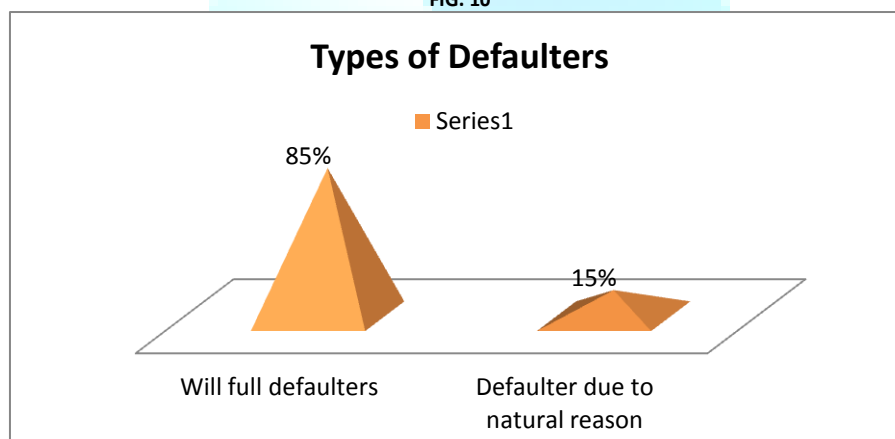
Main reason why SHGs turned into NPA was the dispute among members followed by the non uniformity of SHG & in some cases false certificates have produced by members in order to avail the subsidy and after that they did not pay the installments

TABLE 7

Categories	Percent
<b>Types of Defaulters</b>	
Will full defaulters	85%
Defaulter due to natural reason	15%

Source: Primary Data

FIG. 10



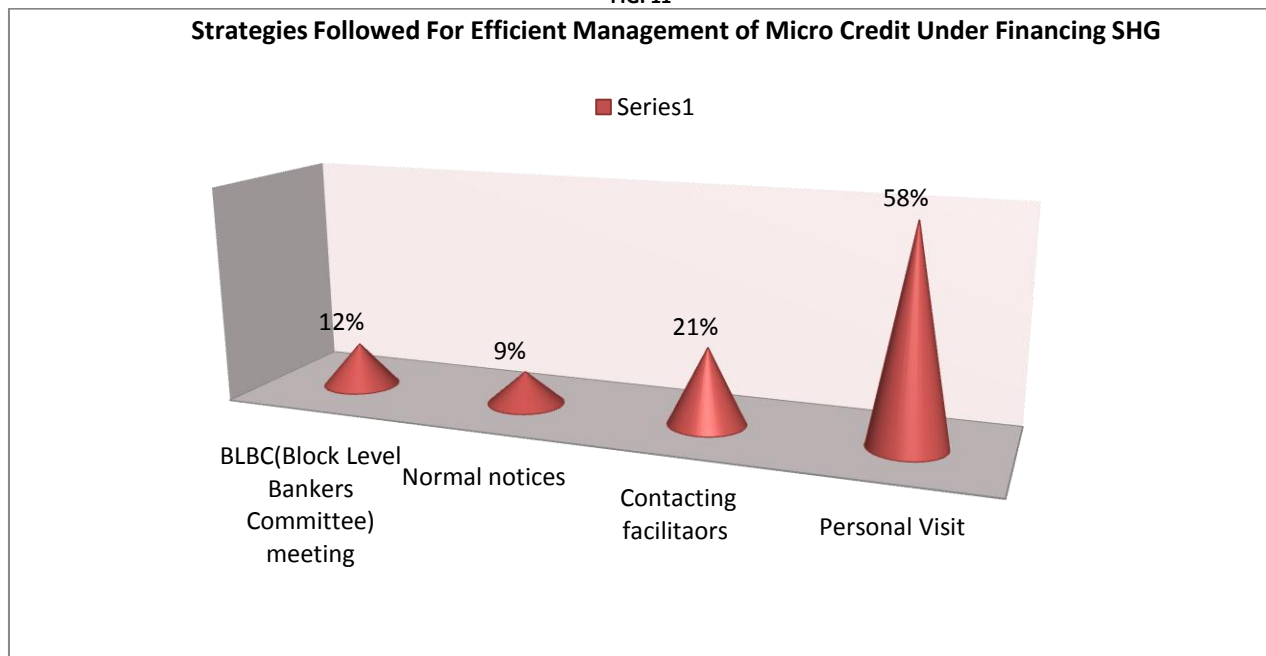
Most of the defaulters are will full i.e. they produce the fake certificates in order to get subsidized loan while the few have turned into defaulter due to some natural reason like crop damage, animal died etc.

FIG. 8

Categories	Percent
<b>Strategies Followed For Efficient Management of Micro Credit</b>	
BLBC(Block Level Bankers Committee) meeting	12%
Normal notices	9%
Contacting facilitators	21%
Personal Visit	58%

Source: Primary Data

FIG. 11



Most effective strategy for efficient management of micro credit under financing SHG followed by bank is personal visit followed by the contacting facilitators, the BLBC meeting & normal notices

## VI. FINDINGS AND CONCLUSIONS

Following conclusions have been drawn after the data analysis and interpretations and it shows that most of the SHGs linked to the bank are functional and the management of micro credit given under financing SHG is quite satisfactory and also the strategies followed by the branch manager for micro management is also quite efficient.

1. Most of the Micro-Credit given by the bank is under the scheme of financing SHGs.
2. Out of 61 SHGs linked to bank 28 of them had been sanctioned loan under the scheme while remaining SHGs had open their account only.
3. Most of the SHGs are linked through NGO (Run by Rajnikant) followed by business facilitator (Madhuri)
4. Most of the SHGs have 10-15 members in it.
5. Till date most of the SHGs are functional.
6. Main reason why SHGs turned into NPA was the dispute among the members & also the SHG was not uniform in some of the cases.
7. Most of the defaulters are will full i.e. they produce the fake certificates in order to get subsidized loan while the few have turned into defaulter due to some natural reason like crop damage, animal died etc.
8. Most effective strategy followed by bank for efficient management of micro-credit is the personal visits & Block Level Bankers Committee meetings.

## VII. RECOMMENDATIONS/SUGGESTIONS

It emerges from the foregoing discussion that

1. Bank should link the SHGs on the recommendations of reliable NGOs or Business facilitators
2. Bank should do exhaustive survey of each & every member in the SHG in order to check whether SHG is homogenous or not.
3. Bank must check the certificates/files forwarded by block carefully before sanctioning the loan to the SHGs.
4. Bank must monitor the activities of the SHGs to whom loan had been sanctioned on regular basis and motivate the members to repay their installments on time.
5. Branch manager should visit the SHGs personally once in a month or two know what problems they are facing and suggest them the appropriate solution in order to maintain the goodwill of the bank in the minds of SHGs.
6. Branch manager through the business facilitators monitor the activities of the linked SHGs by checking the Attendance register, Membership register, Proceedings book, Savings register, Bank borrowing/deposit register, Credit register.

## VIII. LIMITATIONS

- The study is only confined to Varanasi districts of Uttar Pradesh and hence cannot be generalized for others.
- Unwillingness of respondents
- Time and budget constraint

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3. [www.pnbindia.com](http://www.pnbindia.com)

## OPINION ANALYSIS ON TRANSPORT ISSUES AMONG WOMEN CONSTRUCTION WORKERS IN KODAIKANAL

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### ABSTRACT

*The present study found that it is construction workers who are constructing the new economy. They contribute in infrastructural development of India by building the roads and highways, the railway tracks and airports and ports, the IT cities, the call centers and mega malls that are creating new forms of wealth today. It is they who are laying the cables for a rapidly expanding country-wide telecommunications network that connect the vast sub-continent and make India one country, to shorting the distance and supporting the business activity in order to upgrade the economic development. Yet these workers, who are creating the base of the new economy, lives in a time warp, trapped in low skilled, low paid, insecure working conditions. About one-third of these workers are women and children. Hence, it is suggested and concluded that the practice of common working hour, follow of reliable wage system, care by employer on health related problems of women workers and implementation of social security measures by the government and medical facility must be ensured.*

### KEYWORDS

Transport issues, women construction workers.

### 1. INTRODUCTION

In India women workers constitute a major portion in the work force of the construction industry. Sad to say they remain not only unorganized but also unskilled as compared to male construction workers, who by virtue of their gender preference have progressed ahead in their career from an unskilled worker to a skilled one, specifically as a mason, carpenter, welder and electrician. While on the other hand women construction workers start as unskilled helpers and remain unskilled throughout their life and as a result are victims of gender discrimination. Traditions, culture and customs along with the attitude of society towards women have placed women workers at a great disadvantage. In addition to this, they are also unorganized and dependent on their husbands without any empowerment socially and economically. Unfortunately, in this system, women workers do not have an opportunity to receive any type of skills training which has left them stagnant without any chance of promotion or upgrade of any sort in their job<sup>1</sup>.

### 2. STATEMENT OF THE PROBLEM

Construction workers are the backbone of the economy as they create the infrastructure necessary for industrial growth. They contribute in infrastructural development of India by building the roads and highways, the railway tracks and airports and ports, the IT cities, the call centres and mega malls that are creating new forms of wealth today. Construction Women are almost unskilled labourers and they face serious problems related to work, viz., wage discrimination, gender and sexual harassment, unhealthy job relationship, lower wages. Despite these, construction industry overwhelmingly attracts female workers. Their skills are never upgraded as they are allowed to perform only certain types of work and usually they assist the male work force. Hence the study is undertaken to analyze the conditions of women construction workers in Kodaikanal.

### 3. REVIEW OF LITERATURE

#### 3.1. REVIEW OF UNORGANISED SECTOR WOMEN WORKER

**Srinivasan, (2000)** studied the conceptual issues of the unorganized sector along with profile of women's employment and its trend. He concluded that employment for the unorganized women workers moved to the sectors where these women had no say at all and away from the legal protection. Non-farm employment hailed as the panacea for surplus-labour in agricultural sector which could not pick up in rural India and the women were most affected<sup>2</sup>.

**According to Nata Puvvury (2000)**, the impact of new agricultural technology on farm women was deleterious and displaced them from their jobs. The commercialization of agriculture and fisheries displaced female labour. It has been widely noted in India that female tasks become male tasks with a higher wage when new equipments are introduced<sup>3</sup>.

**Singh (2001)** in his research based on field study has focused on the problems of women domestic workers and has dealt with the working environment, conditions of work, factors forcing them to undertake this work, family life, effects of work on the health of these workers. The study also looked into some of the approaches for improving their quality of life and work, job security options and resource development. Singh found out that 41.33 per cent of these workers were in the age group of 31 to 40 years and 48 per cent were less than 30 years. 40.67 per cent of these workers were from backward castes while 21.22 per cent were from lower castes. 25.33 per cent workers possessed *kachacha* houses and 20 per cent had *pakka* houses. 65.33 per cent houses had no electricity while 14.67 per cent had no toilet. 64 per cent of the domestic workers were under debt. Singh pointed out that unlike the workers of the organized sector, the women domestic workers did not enjoy better conditions of work and working conditions, neither did they get satisfactory wages<sup>4</sup>.

**Eapen Mirduel (2001)** in her study: "Women in Informal Sector in Kerala: Need for Re-examination" has exposed the hollowness of statistics which shows that there is increase in women's employment in Kerala's 'informal sector'. She opines that employment is irregular, casual, contractual and of exploitative nature. She highlights the nature of employment of women in the informal sector and points out that majority of the women workers in this sector are casual labourers in agriculture, construction, brick making and other subsidiary activities.

She is of the view that although no firm data is available but it is a well known fact that all such activities in which women are engaged, are contracted out. This has a negative impact on women workers. Leaving aside subsidiary activities, the appointments in main occupations are too made on temporary basis. The degree of regularity is nil in employment of women in informal sector. Even in the prime age group (24-30 years) the number of women working in the informal sector has increased. This section of workers needs to be given some type of assets and guidance so that they may be given new platform and skills, other imperatives including raising levels of output and improving the working environment<sup>5</sup>.

According to **Harris (2001)** the adverse impacts on employment in the unorganized sector particularly in the construction sector has to a very extent influenced by the SAP that displace the mainstream of production through processes such as downsizing, outsourcing, contract labor system and feminization of labor-processes rendered possible by what John Harris rightly calls flexibilisation. The declining role of state, less capital and planned expenditure, removal of trade restrictions to align domestic prices with international prices reduced the scope of labour intensity in production and exports. Due to this handicap, the unorganized sector needs protection in products, input, credit and marketing<sup>6</sup>.

**Surati, A (2001)** conducted a study on work related problems of women workers in textile industry. The objectives of the study were to study the welfare facilities, health problems of the women working in textile industry, the work culture of organization and participation of women in the process of decision making in trade union activities and the perception of working women towards harassment at work place along with the situation of women and inter personal relation with other employee. 70 working women in textile industry in Ahmedabad city were selected as a sample of the study. The sample was selected by simple random sampling technique. The sample was selected by simple random sampling technique. Interview schedule and observation method was used for

data collection of the study. The major findings of the study were that literacy rate among working women was very low. Women have come out from the four walls and they have accepted the work in industry, mill and factory and have become earning member of family. A reason for working was monetary need and inadequate family income and unemployed of husband. Majority of the women didn't face any problem in fulfilling job responsibility while other women were facing health problems such as respiratory, vision, hearing, blood pressure, cough and joint pain problem<sup>7</sup>.

**Maleeha Raghaviah (2002)** has that the micro enterprises are one of the similar units operating in 58 corporations/municipalities and 991 gram panchayats in Kerala. These enterprises aimed at eliminating poverty, provide a new meaning to the life of thousands of women involved in it and are set up through the NHG's<sup>8</sup>.

**Mony. K. Mathew (2002)** identified that the Kudumbasree is one of the promoter of micro enterprises through women empowerment and creation of new self-employment opportunities. He also suggested that informal banking system for the poor could be promoted through the formation of SHG's<sup>9</sup>.

### 3.2. REVIEW OF CONSTRUCTION SECTOR WOMEN WORKER

**Chitra Ghosh (1985)**, in her study, brings out the wage differences men and women in construction work. It is found that through women carry as much load as men, the contractors pay women at a lower rate only. Worse still the labour contractors get the thumb impression of these illiterate women in the register, often paying them less than the stipulated rate<sup>10</sup>.

**Verma, A. (1995)** conducted a study on socio-economic study of women construction workers in Baroda. The main objectives of the study were to study the living conditions and health hazards faced by female construction workers due to employment, and to compare their living condition with earlier condition at their native place. Sixty women construction workers from Baroda city were the sample of the study. Interview schedule and observation schedule were used as a tool for the data collection. Major findings of the study were that majority of the women were illiterate and had migrated to Baroda in search of work. All the respondents were either engaged in unskilled on semi-skilled work. Economic condition of the respondents' family in terms of income, assets and liabilities had become better after the respondents took up this employment. However, nearly all women suffered from one of the other illness. Their health condition had deteriorated after coming to cities, because of hard life and polluted atmosphere<sup>11</sup>.

**Tripathy, S. (1996)** conducted a study on "Women Labour in Construction Sector: A case study on Orissa". The main objective of the study was to analyze the history, organization nature and working of construction sector in our country. And the other objective was to examine the socio-economic conditions of women construction labourers, with special reference to Orissa. 40 women labour from Uttar Pradesh state Bridge Corporation were selected. Questionnaire, interviews, observations and field notes were used as a tool for data collection of the study. The findings revealed that it was lack of toilets on the sites that put women to a great deal of inconvenience and every site worker had to look for water and walk some distance to reach for it. In general, no medical facility was provided by the employers and the labourers were compelled to spend money for medical care. Accidents involving simple injuries occur every day while fatal accidents are not uncommon. Women workers who carry the cement mix and wet bricks on their heads suffer serious problem like headache and fever. Pregnant women who carry heavy loads run a high risk of abortion<sup>12</sup>.

### 4. OBJECTIVES OF THE STUDY

- This paper aims to analyze the association between the Marital status and Transport Facility.
- To analyze the transport issues about workers.

### 5. METHODOLOGY

The study is depends on primary data and based on survey method. Survey is conducted among the sample respondents using Interview schedule. Women Construction workers residing in Kodaikanal, Dindigul Distrtict, Tamil Nadu were the sample respondents and were interviewed.

### 6. SAMPLING DESIGN

Since the respondents belong to unorganised sector and there is no record on their appointment, salary, classification, education. They could not be classified or stratified on suitable basis. Hence researcher used non random sampling technique for the selection of sample respondents. 100 respondents were selected as samples.

### 7. ANALYSIS OF THE STUDY

The objective is analysed with the help of chi square test and average rank analysis.

#### A. CHI SQUARE

The Chi square analysis describes that the association between the Marital status and Transport Facility.

TABLE 1

S-Significant; NS- Not Significant; df- Degree of Freedom; Significant at 5 %level

Problems faced by women	Dimensions	Strongly Agree	Agree	Neither agree nor disagree	Dis agree	Strongly disagree	$\chi^2$ - test value	df	Sig. Value P < 0.05	S (or) NS
Available of transport facility to work place	Married	10	11	4	17	41	10.179	16	0.857	NS
	Unmarried	0	0	0	1	0				
	separated	0	0	0	3	3				
	Divorced	0	1	0	1	2				
	widow	1	0	0	1	4				
Availability of vehicle facility during overtime	Married	8	0	13	20	42	7.410	12	0.829	NS
	Unmarried	0	0	0	1	0				
	separated	0	0	0	2	4				
	Divorced	0	1	0	1	2				
	widow	1	0	0	1	4				
Organization bear the transport cost	Married	9	12	0	18	44	8.969	12	0.706	NS
	Unmarried	0	0	0	1	0				
	separated	0	0	0	2	4				
	Divorced	0	1	0	0	3				
	widow	1	0	0	1	4				

$H_0$ : Marital status has no significant influence on transport facility

$H_1$ : Marital status has significant influence on transport facility

It is inferred from the above table that chi square analysis was computed between marital status and transport facility to assess the influence between them. It is observed from the above table the marital status and Available of transport facility to work place (0.857), marital status and Availability of vehicle facility during overtime (0.829), marital status and Organization bear the transport cost (0.706) as their P values greater than the level of significance 0.05. Hence, Null hypothesis is accepted for these dimensions.



**B. AVERAGE RANK ANALYSIS**

average rank analysis describes that the ranking patterns of the construction women workers' *Transport facility* of Availability of transport facility to workplace, Availability of vehicle facility during overtime and Organization bear the transport cost.

**TABLE 2**

Level of agree	Availability of transport facility to workplace			Availability of vehicle facility during overtime			Organization bear the transport cost		
	X	W	XW	X	W	XW	X	W	XW
Strongly Agree	11	5	55	9	5	45	10	5	50
Agree	12	4	48	14	4	56	13	4	52
Neither agree nor Disagree	4	3	12	0	3	0	0	3	0
Disagree	23	2	46	25	2	50	22	2	44
Strongly Disagree	50	1	50	52	1	52	55	1	55
<b>total</b>	<b>100</b>		<b>211</b>	<b>100</b>		<b>203</b>	<b>100</b>		<b>201</b>
$\frac{\sum xw}{n}$			<b>2.11</b>			<b>2.03</b>			<b>2.01</b>
<b>Rank</b>			<b>I</b>			<b>II</b>			<b>III</b>

It is inferred from the above table that the weighted average was computed to assess the rank of Transport facility issues. It is noted from the above table the *Available of transport facility to work place* placed I rank level of agreeability with average points 2.11, II place agreeability level of *Availability of vehicle facility during overtime* is 2.03, III rank is *Organization bear the transport cost* is 2.01.

**8. SUGGESTION AND CONCLUSION**

In a globalizing economy, it is construction workers who are constructing the new economy. They contribute in infrastructural development of India by building the roads and highways, the railway tracks and airports and ports, the IT cities, the call centers and mega malls that are creating new forms of wealth today. It is they who are laying the cables for a rapidly expanding country-wide telecommunications network that connect the vast sub-continent and make India one country, to shorting the distance and supporting the business activity in order to upgrade the economic development. Yet these workers, who are creating the base of the new economy, lives in a time warp, trapped in low skilled, low paid, insecure working conditions. About one-third of these workers are women and children. Hence, it is suggested and concluded that the practice of common working hour, follow of reliable wage system, care by employer on health related problems of women workers and implementation of social security measures by the government and medical facility must be ensured.

**9. LIMITATIONS OF THE STUDY**

1. During investigation some of the respondents who are hesitated the reveal facts, regarding their problems faced by them in their work environment.
2. In construction field, there are very limited women workers available, because men workers migrate from various places of Tamil Nadu, so it is very difficulty to gathered information.
3. The present study considers only the women workers who are in the fields of construction. The study doesn't cover the male workers in the same industry.

**10. SCOPE FOR FUTURE RESEARCH**

1. Occupational stress and psychological hazards of women workers in construction sector.
2. Women workers' healthcare, maternity protection of construction sector.
3. An analysis of women's empowerment in unorganized sector workers.
4. Analysis of migrate women workers problems and living conditions in construction sector.
5. Women contract workers and their working conditions in unorganized sector.
6. Women workers social security in unorganized sector.
7. Health and Nutritional status of women workers in Construction sector.
8. Health issues of aged women workers in unorganized sector.
9. Analysis of working and living condition of women workers in construction sector.
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