

# **ANWESHAN**

## **ASTHA'S MANAGEMENT JOURNAL**



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### Editor- in-Chief

**Dr. Swarup Chandra Sahoo**

Former Professor

Utkal University, Bhubaneswar

Email ID: sahooswarup@yahoo.in

### Editor

**Dr. Sharmila Subramanian**

Principal

ASTHA School of Management, Bhubaneswar, Odisha

Email ID: principal@asthaeducation.in

### Associate Editors

**Masood Alam**

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Email ID: masood@S2itgroup.com

**Reema Mohanty**

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Shell, USA

Email ID: rm.reema.mohanty@gmail.com

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Chartered Financial Analyst

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### Reviewers

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P.G. Department of Business Management

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Email ID: sunilgandhi.ku@gmail.com

**Dr. Bhaba K. Mohanty**

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Email ID: mohanty@iiml.ac.in

**Dr. Dindayal Swain**

Professor & Dean,

Faculty of Management Studies

Sri Sri University, Cuttack

Email ID: dundayal.s@srisriuniversity.edu.in

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XLRI, Jamsedpur

Email ID: sanjay@xlri.ac.in

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Email ID: rspkmal@gmail.com

**Dr. Suvasis Saha**

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Calcutta University, West Bengal

Email ID: dr.suvasis123@rediffmail.com

**Dr. P.K. Mohanty**

Former Professor,

Utkal University, Bhubaneswar

Email ID: pkmohanty\_bbsr@yahoo.co.in

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Former Professor,

Utkal University, Bhubaneswar

Email ID: bidhu.mishra@gmail.com

**Dr. K.B.L. Srivastava**

Professor,

IIT, Kharagpur

Email ID: kbbs@hss.iitkgp.ernet

**Dr. V.Shekhar**

Professor,

Osmania University, Hyderabad

Email ID: shesasu@yahoo.co.in

**Dr. Subash Ch. Nath**

Associate Dean (R&D),

Sri Sri University, Cuttack

Email ID: subash.n@srisriuniversity.edu.in

**Dr. Shakti Ranjan Mohapatra**

Dean, Management

Biju Patnaik University of Technology, Odisha

Email ID: shakti.r.mohapatra@gmail.com

**Dr. Raghunath Sahu**

Principal, CIME, Bhubaneswar

Email ID: sahu.rn@gmail.com

**Dr. Nirmala Chandra Kar**

Former Professor, Department of MBA

Utkal University, Bhubaneswar

Email ID: kar.nc.55@gmail.com

**Prof.(Dr.) Rabinaryan Subudhi**

Professor, KSOM

KIIT University, Bhubaneswar

Email ID : rabisubudhi@gmail.com

# EDITORIAL

*Dear Readers,*

The world of business is faced with multi-dimensional challenges- the rise of Artificial Intelligence, the demand for inclusive growth, the strife for sustainability, the need for happiness at workplace, the never-ending thirst for knowledge, the exigence for innovation, and the desire for increasing wealth. These challenges invite inquisitive and inventive brains for a combat that could result in a less VUCA (Volatile, Uncertain, Complex, Ambiguous) world. Given that the world of business has to look beyond the prospects of profit maximization, the field must be set for responsible use of resources, new knowledge, and innovative technology. The agenda must be “planet first”, followed by “people” and then “profit”. The idea is to survive in order to prosper.

In this edition of Anweshan: ASTHA’s Management Journal, these multi-dimensional aspects find a new vent. Management education should develop skills for successful entrepreneurial career. This theme is well crafted through a research work done in the state of Odisha. The other research papers on digital word of mouth, machine learning and digitalization in the financial sector provide insight into how the businesses are getting transformed in the digital era. Customers have the luxury of a hassle-free transaction that enhances customer satisfaction. On the other hand, technological advancements invigorate people for upskilling and reskilling thus, reorienting the existing paradigms. These neo-dynamics entail HR to take-up leadership position in the organization. This strategic elevation of HR in business is well narrated in the Expert Interview section. Dr. Simanta Mohanty, Head HR, Milk Mantra comprehensively expresses the role of HR as a transformational leader. He emphasizes going beyond the obvious for engaging people in the organization. He presents family of the employee as a key stakeholder of an organization. More than welfare, he advocates employee’s family engagement for running a successful business.

Young talents when nurtured contribute immensely to our innovation ecosystem. With this objective, this edition includes a case study on a start-up developed by a young talent, and the research project of the winner of Prakalpa-2022 (Research Contest for B-School students) held every year at the institute. These inclusions catalyze our efforts to transfer know-how from one generation to the other. It also gives us an account of how the business world is full of opportunities for start-ups as well as existing empires. There is no dearth for growth if there is right intention and the business is process driven. Both the case study as well as the research project indicate how capabilities once developed can lead to sustainable growth.

There is a vibrant book review on *The winning way 2.0: Learnings from sport for Managers*. The book is authored by Anita Bhogle and Harsha Bhogle. The book focuses on leadership and team strategies in cricket that can be applied in management and business. It illustrates winning strategies of teams those win consistently.

Overall, this edition provides insights into the contemporary business world through a variety of good reads. I am sure, the intellectual feeds here will satiate the research appetite of each stakeholder in this knowledge ecosystem.

ASTHA School of Management  
Bhubaneswar

**Prof. (Dr.) Sharmila Subramanian**

# Contents

<b>Articles</b>	
Management Education & Skill Development: A Driving Tool Towards Successful Entrepreneurship <i>Mr. Milan Tah &amp; Mrs. Sarada Kar</i>	<b>1</b>
Digital Word-of-Mouth Dynamics: Unpacking the Influence of Product Engagement and Brand Perception <i>Mr. Debadeepti Jagaty &amp; Mr. Dr. Umakanta Dash</i>	<b>18</b>
Unveiling Customer Churn: Harnessing the Power of Supervised Machine Learning in Telecom Services <i>Mr. Chinmaya Mishra, Prof. (Dr.) Manoranjan Dash &amp; Dr Alaka Samantaray</i>	<b>35</b>
Adoption of Digital Payment- with reference to small retail outlets in Nalgonda Town <i>Dr. Sabina R Harold, Dr. Swetha Suram &amp; Dr. V. Anuradha</i>	<b>49</b>
Enhanced Bank Performance and Digitalization of Banking Services: A Causal Study of Indian Public Sector Banks <i>Dr. Sangram Keshari Panda (CMA)</i>	<b>63</b>
The Role of HR Executive as a Transformation Leader : An Expert Interview with Dr. Simanta Mohanty, Head of HR, Milk Mantra	<b>76</b>
Diverse Techniques in Evaluating Mutual Fund Performance: A Comparative Study of Risk and Return <i>Mr. Nihar Ranjan Nayak &amp; Dr. Pallavi Mishra</i>	<b>81</b>
Stock Valuation of Start up: A Case Study of Ram's Associate Cold Storage Ltd. (Case Study) <i>Mr. Navrang Agrawal , CA (Dr.) Prithvi Ranjan Parhi &amp; Dr. Sthitipragyan Biswal</i>	<b>99</b>
A Book Review on “This is Beyond Budgeting” <i>Prof. Bishnu Prasad Kar &amp; Prof. Satyanath Mohapatra</i>	<b>112</b>

# Management Education & Skill Development: A Driving Tool towards Successful Entrepreneurship

\*Mr. Milan Tah  
\*\*Mrs. Sarada Kar

## ABSTRACT

There is no doubt that sufficient skill can be acquired through the study of Business Management education as it gives learners opportunities to develop the knowledge, skills, and attitudes needed to become successful entrepreneurs. Management education helps and motivates students to become entrepreneurs in the future as it imparts and inculcates skills like marketing skills, financial resource mobilization skills, self-motivation skills, time management skills, administrative skills, innovation skills, professional skills, practical skills, etc. We analyzed in this study how Business education in the institutions of Odisha has created immense impact on students for becoming an entrepreneur by attaining business development awareness through skill acquisition programmes. This study also focuses on MBA programmes and seeks to assess its impact on students and their entrepreneurial behavior in the long run. The study additionally contributes to the debate on whether Business education has an impact on the entrepreneurial activities, and whether it helps them to become successful and more effective Entrepreneurs.

**Keywords:** Entrepreneurs, Key Skills, Business Management Skills, Strategic Skills, Personal entrepreneurial Skills, Technical Skills, Organizing Skills.

## Introduction

Management education paves the way to generate successful entrepreneurs and industry leaders by inculcating a variety of skills within them. It enhances entrepreneur's ability to create wealth through creativity and innovation. Entrepreneurs are the persons who are ready to take actions built upon knowledge

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\**Milan Tah*, Research Scholar Department of KSFH KIIT Deemed Univesity Bhubaneswar, Email: Milanmili09@gmail.com

\*\**Sarada Kar*, Reader in Economics, Cuttack College, Cuttack. Email: kar.sarada1969@gmail.com

and creativity; they are honest, and they have great connections that can help them in doing business well. Successful entrepreneurs must have the drive, persistence, and ability to complete tasks, and be willing to work hard. Additionally, they must be opportunity-focused and forward-looking.

Management Education provides every individual an opportunity to develop the skills, abilities and understanding that will enable them to handle their personal business affairs competently, and also help them to develop an understanding of the vocational opportunities available in the broad field of business. (Osuala 2003).

Management education entails opportunities for youths to be experienced, and acquire entrepreneurial knowledge, skills, and attitudes including opportunity recognition, idea creation and marshaling resources in the face of risk to chase opportunities, venture creation and operation, creativity, and critical thinking. (Mankinen and Turpeinen, 1999).

Here, the relevance of Business Education is critically examined to the development of skills within the Entrepreneurship in state of Odisha. In this study, an attempt has been made to know what are the key skills that make Entrepreneurs successful in the long run.

Whether they are patient and persistent, have the ability to work in teams, take risks, and have self-confidence, etc. are presented in the study.

## **Literature Review**

Dean, (2004); Villanueva et al, (2005) identify that the effects of entrepreneurial education have made entrepreneurship gain world wide recognition in countries like the USA, France, Germany, Britain, to mention a few.

Shane (2003), Brana (2008), Ekpo and Edet (2011) told that Entrepreneurship emerged as an important concept in global economic transformation. Studies have shown that the entrepreneurship process is a vital source of developing human capital. It also plays a vital role in providing learning opportunities for individuals to improve their skills, attitudes, and abilities.

Unachukwu et al.,(2009); Emmanuel, (2012), Ekpo and Edet, (2013) suggested that importantly entrepreneurship education and self-employment intention have a significant relationship similar to Business education and self-employment intention.

Hannon, (2009) has found that an estimated 78% of students surveyed in Ireland who have passed through entrepreneurship education, expressed interest in starting their own business in the future. However, about 30% of non-business postgraduates surveyed reported being interested in starting their own business at some point later in their career and 39% are interested in starting their own business through their college infrastructure.

Thandi and Sharma (2003) through a conceptual framework tried to demonstrate the relationship between entrepreneurial drivers, entrepreneurial education and entrepreneurial intentions among students. According to them, entrepreneurship education acts as an intervening variable to someone's intention to start up an entrepreneurial venture.

Carsrud and Johnson, (1988,) looked at two broad categories of factors (i.e.) individuals and environment through which they identified education and training as one of these factors. An individual with entrepreneurial characteristics, abilities, and perceptions must find himself to become an entrepreneur.

Fayolle, (2004) and Bhandari,(2006,) observed that more educational institutions now offer a wide range of entrepreneurship programmes and training activities. These programmes appear to be influencing students in terms of generating entrepreneurial interest and going into the business of their choice.

Envick and Langford, (2000) highlighted characteristics of entrepreneurs which include competitiveness, drive, organization, flexibility, impulsiveness, self-interestedness, leadership, skepticism, endurance, and a high tolerance for ambiguity.



Ezeji and Okorie, (1988) identified three major categories of skills in any training programme, these are technical skills, human skills, and conceptual skills for becoming entrepreneurs.

Baldwin, (2002) told that through business education students can acquire entrepreneurial skills which include marketing skills, financial resources skills, self-motivation skills, time management skills, administrative skills, innovative skills, professional skills, practical skills, etc.

Keats and Bracker, (1988) proposed in the conceptual model that Entrepreneurs tend to use sophisticated strategic planning due to high task motivation and the belief in their ability to influence the environment and thus lowering the uncertainties.

### **Purpose of the Study**

The main purpose of this study is to identify the different skills provided by Management Education for the development of entrepreneurship. Specifically, the study sought to find out whether:

- (1) Management Education provides entrepreneurial skills;
- (2) Management Education develops entrepreneurs' skills, creativity, abilities and understanding; and
- (3) Management Education has any impact on the development of Entrepreneurship in Odisha.

### **Research Questions**

1. Does Management Education have a significant effect on Entrepreneurship in Odisha?
2. What are the different Skills provided by Management Education for the Development of Entrepreneurship?
3. What are the key success skills provided by Management Education that make an entrepreneur successful?

## **Research Hypotheses**

1. Management Education has no significant effect on entrepreneurship skill development in Odisha.
2. Key Skills like Business Management Skills, Organizing Skills, Technical Skills, Personal entrepreneurial Skills, and Strategic Skills help to make successful entrepreneurs.

## **Methodology**

### **(i) Research Design**

In this study, the descriptive research design was used. In addition, primary data were used. The primary data were generated through the use of a questionnaire to identify different skills under Management Education in the development of Entrepreneurship in Odisha. The Business Education students of Utkal University and BPUT, Odisha State, and existing entrepreneurs who have the Business Management Education were randomly selected.

### **(ii). Data Collection Procedure**

Questionnaires were administered on one hundred eighty (180) Management Education students of Utkal University and BPUT, Odisha State, and (140) entrepreneurs in order to examine the impact of different skills of Business Education in Entrepreneurial development in Odisha. There are two levels of respondents on which the questionnaires were administered using simple random sampling technique. The questions were in close-ended form in order to ensure quick response as well as comparative analysis of the data on the subject area.

## **Conceptual Framework of Entrepreneurial Skills**

Each entrepreneur and each business needs different entrepreneurial skills that are crucial for the success of their businesses. If any entrepreneur has knowledge but doesn't have skills, then he or she can't expect and achieve success. They must have the intelligence to manage all possible situations and solve the hardest problems that

will be a constraint in their business life. Their intelligence and persistence will additionally bring uniqueness to the company. They must have patience and must be ready to continue even if there are losses in the first battle. The ability to work in a team is another skill that also makes an entrepreneur successful. As an entrepreneur, one must be a team player for business success. Other than these skills, to be a successful entrepreneur, one needs business management skills which include decision-making skills, marketing skills, interpersonal skills, and coordinating skills for success. One also requires organizing skills like proper control, monitoring and efficient communication, and delegation. Other important skills that must be possessed by entrepreneurs are technical skills, strategic skills, and personal entrepreneurial skills.

After going through extensive literature review we found a tremendous variety of behaviors and skills among successful entrepreneurs. But after analyzing the data and listening to hours of interviews, we distilled everything down to a list that influences the behaviors of entrepreneurs and best explains success as an entrepreneurial role.

**These Skills have been identified and grouped under 5 main headings.**

1. ***Business Management Skill*** which includes team skills, decision-making skills, social skills, interpersonal skills, marketing skills, communication skills, adaptability skills, and co-operating skills.
2. ***Organizing Skills*** which include the ability to lead, control, monitor, organize, and develop external and internal resources, efficient communication, and delegation.
3. ***Technical Skills*** which include numeracy, analytical, application, analyzing skills, negotiating skills, persuading skills, investigating skills, and creative skills.
4. ***Strategic Skills*** which include formulating and implementing strategies, setting and evaluating the strategies, external networks and alliances,

innovation, and internationalization, and thinking that is lateral, critical, and creative and spotting and seeking market opportunities and decisions to develop new ventures.

5. *Personal entrepreneurial skills* which include critical thinking skills, writing skills, listening skills, learning new skills, self-awareness, self-analysis, self-confidence, and patience.

### Data Analysis & Findings

Data collected through questionnaires were analyzed through chi-square to know whether Management Education has a significant effect on the development of successful entrepreneurs. For testing hypothesis one, a total of 100 respondents' perceptions were taken into consideration as the responses of the rest were not appropriate to test hypothesis one. Out of these only (60) are students and (40) are entrepreneurs.

**Ho 1:** Management education has no significant impact on the development of entrepreneurs of Odisha.

**Table-1**  
**Data Collected through Questionnaires**

Sl. No	Questionnaires	Strongly agreed	Agreed	Dis-agreed	Strongly Dis-greed
1	Management education comprises subjects that introduce the students to be entrepreneurs.	65	21	10	4
2	Management education comprises so many skills like creativity, Leadership Communication, Interpersonal, and Basic Management Skills that make a successful entrepreneur.	67	23	8	2
3	To start a business and become an entrepreneur training in Management education is very necessarily required.	62	22	12	4
4	Management education offers	59	25	11	5

	individuals to develop the skills, abilities, fore-sightedness and understanding to handle the business affairs.				
5	Management education provides the opportunity to the students to develop creativity and the understanding about the available entrepreneurial opportunity in the business field.	53	28	11	8
6	Management education identifies and explains the role of entrepreneur in the economic development of the country.	56	29	12	3
7	Management Education must always focus attention on the fact as to how a student will become an effective, productive, and successful entrepreneur.	40	44	9	7
8	Management education develops within the students a good understanding and awareness of the economic and business activity within the society.	52	23	15	10
9	Management education contents and provides experience that prepares the individual for effective participation in business.	58	22	16	4
10	Management education especially enables one to start, perform, and progress in business occupation as an entrepreneur.	55	26	11	8

**Ho 1:** Management education has no significant impact on the development of entrepreneurs of Odisha.

**Table-2**  
**Analysis of Data**

Alternative	O	E	O-E	(O-E) <sup>2</sup>	(O-E/E) <sup>2</sup>
SA	60	15	45	2025	135
A	28	07	21	441	63

DA	07	1.75	5.25	27.56	15.75
SDA	05	1.25	3.75	14.06	11.25
		25			22.25

The calculated chi-square value of 22.5 is greater than the critical table value of 21.206 at 0.05% level of significance. Hence, null hypothesis (Ho) is rejected since chi-square calculated is greater than the table value 21.026. Therefore, the alternative hypothesis will be accepted which simply means Management education has the significant effect on the entrepreneur's development in Odisha.

**H<sub>0</sub>2:** Skills like Business Management Skills, Personal entrepreneurial Skills, Technical Skills, Strategic Skills, and Organizing Skills are the key skills that help the entrepreneurs to become successful.

This study identifies 30 skills which are necessary for the entrepreneurs to make them more successful and effective. Table No. (3) Indicates that 320 people viewed these 30 skills as important. The resultant mean importance scores ranged between 3.15 and 4.25. While the mean importance scores were closer to the highly important category in the first five factors, they were nearer to very important category in case of the other six factors.

While trying to evaluate the most important key skills for success for the entrepreneurs in the present scenario, we have extracted 30 factors from the extensive review of past literature. Then 18 variables were selected from 30 variables using principal component analysis (PCA) and finally, five constructs were framed. The selected 18 variables have been extracted from 30 variables by using SPSS 12.0 software and grouped into five constructs which are Business Management skill, Personal entrepreneurial skills, Technical skills, Strategic skills, and Organizing skills which are the key pillars to make successful and effective entrepreneurs.

**Table-3**  
**Descriptive Statistics of Skills**

<b>Skills</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Median</b>	<b>Kurtosis</b>	<b>Skewness</b>
Critical thinking skill	4.25	0.65	4	0.375	-1.059
Creative skill	4.15	0.725	4	0.161	-1.061
Team Skills	4.325	0.955	4	-0.543	-0.451
Ability to Lead	3.25	0.89	3	-0.672	0.034
Formulating and Implementing strategies	4.05	0.745	4	0.053	-0.749
Self-Analysis	3.95	0.820	4	-1.137	-0.950
Adaptability Skills	3.8	0.178	4	-0.123	-0.523
External networks and alliances	3.15	0.916	4	-0.385	0.000
Negotiating Skill	4.35	0.834	3	-0.463	0.185
Marketing Skill	4.1	0.868	4	-0.143	-0.563
Listening Skills	3.95	1.017	4	0.323	-0.702
Ability to Control and Monitor	3.75	0.825	4	-1.131	-0.855
Social Skills	3.15	0.995	3	0.330	0.025
Self-confidence & Patience	3.65	0.855	4	-1.040	-1.002
Lateral, Innovative and Strategic thinking	4.225	0.735	3	-0.332	0.026
Efficient Communication & Delegation	3.45	1.075	4	-0.970	-0.498
Co-Operating Skill	3.10	1.015	4	0.536	-0.698
Analytical skills	4.4	0.945	4	-1.002	-0.745
Spotting and seeking of market opportunities	3.95	0.976	4	-0.174	-0.216
Ability to Organize	3.90	0.788	4	-0.123	-0.523
Learning new Skills	3.35	0.105	3	0.053	0.468
Decision-Making Skills	4.20	0.685	4	0.000	-0.477
Investigating Skills	3.85	1.037	4	-0.897	-0.427
Evaluating the	4.25	0.65	4	-0.332	0.026

strategies					
Self-Awareness	4.15	0.725	4	0.532	-0.825
Delegation	3.35	0.955	4	-1.085	-1.034
Inter-Personal Skills	3.25	0.99	3	-0.463	0.085
Efficient Communication & Delegation	4.05	0.745	4	0.531	-1.055
Writing Skills	4.1	0.820	4	-0.354	-0.626
Innovation and Internationalization	4.1	0.978	4	-0.958	-0.429

Table-3 Indicates the mean, median, standard deviation, kurtosis and skewness of response values with respect to different factors listed in the questionnaire. A factor analysis was performed on the responses to the questionnaires with the help of the SPSS-20 package. Factor analysis was performed by examining the pattern of covariance between the observed measures. Table -3 indicates that out of 30 skills listed in the questionnaire, 18 skills captured 86% of the total variance of the data set.

**Table-4**  
**Constructs Derived From Questionnaire**

Constructs and constituent factors and narration		Factor loading	Cronbach's Alfa	Standardized regression weight
<b>1.</b>	<b>Business Management Skill</b>	-	0.867	-
	Team Skills	0.854		0.792*
	Marketing Skill	0.827		0.732*
	Decision-Making Skills	0.871		0.853*
<b>2.</b>	<b>Personal entrepreneurial skills</b>	-	0.861	-
	Writing Skills	0.807		0.808*
	Self-Awareness	0.813		0.818*
	Self confidence	0.801		0.855*
	Self-Analysis	0.812		0.692*
	Critical thinking skills	0.873		0.638*
<b>3.</b>	<b>Technical Skill</b>	-	0.881	-



	Creative skill	0.834		0.815*
	Analytical skills	0.802		0.889*
	Negotiating Skill	0.864		0.915*
4.	<b>Strategic Skills</b>	-	0.889	
	Formulating and Implementing strategies	0.889		0.896*
	Lateral, Innovative, and Strategic thinking	0.864		0.801*
	Evaluating the strategies	0.841		0.413*
5.	<b>Organizing Skills</b>	-	0.883	-
	Leadership qualities	0.769		0.800*
	Proper Control and Monitoring	0.788		0.874*
	Ability to Organize	0.767		0.821*
	Efficient Communication and Delegation	0.749		0.812*

\*95% level of significance

On the basis of study, the hypothesis two (H2) Skills like Business Management Skill, Personal entrepreneurial skills, Technical skills, Strategic skills and Organizing skills are the key skills that help the entrepreneurs to become successful.

**Table-5**  
**Correlation of Entrepreneurial Skill variables**

	<b>Business Mgt Skill</b>	<b>Personal Entrepreneurial skills</b>	<b>Technical Skill</b>	<b>Strategic Skills</b>	<b>Organizing Skills</b>
Business Mgt Skill	1				
Personal Entrepreneurial skills	0.5237*	1			
Technical Skill	0.4751*	0.6618*	1		
Strategic Skills	0.5294*	0.5868*	0.5380*	1	
Organizing Skills	0.6391*	0.6106*	0.6715*	0.6463*	1

Significant at 0.01% level of significance

It is observed from the table that most of the key entrepreneurial skills are correlated with each other and the correlation between Business Management skills with organizing skills is more than other skills. But Business Management skills are less correlated with technical skills. Personal Entrepreneurial skills are highly correlated with technical skills.

## **Results and Discussion**

The study on Management education and its impact on entrepreneurs to become successful have been 'carefully' examined and the overall finding of the study is that there is a strong relationship between them. There is a significant impact of Management Education and Entrepreneurship skill development on Entrepreneurial success in Odisha. The Business Management students have become more successful as Entrepreneurs. It was observed that majority of the respondents, in the study, indicated their willingness and belief that they have benefited from business education courses offered at BPUT and Utkal University. Thus, this study affirms that the provision of Management Education to both students and entrepreneurs has impacted their skills and knowledge as well as their success.

From the study, it is also observed that though there are so many skills provided by Management Education, few of them known as Key Skills are very important to the growth and development of Entrepreneurs. Here, the results of PCA are very influential for determining the key skills for the success of entrepreneurs. From the factor analysis using PCA, 18 factors emerged.

These are

1. Business Management Skill which includes Team Skills, Marketing Skill and Decision-Making Skills is potent weapon for the success of the entrepreneurs.
2. Personal entrepreneurial skills which includes Writing Skills, Self-Awareness, Self-confidence, Self-Analysis and Critical Thinking is striking component and needs special attention for success of entrepreneurs.

3. Technical Skill which includes Creative skill, Analytical skills and negotiating skill otherwise termed as influential factor for growth and development of the entrepreneurial skills.
4. Strategic Skills, which is a crucial and striking factor, includes features such as innovation and creativity, risk taking and pro-activeness.
5. Organizing Skills which includes Ability to Lead, Control and Monitor is considered as prominent factor for the skill development of entrepreneurs.

### **Suggestions and Conclusions**

Based on the results of the data analyzed in the tables, the following key suggestions were made:

1. Students who want to become entrepreneurs should attend business development awareness program and should take entrepreneurship education in the various institutions.
3. Based on this study, Business Education, which must be practical oriented, should be encouraged and funded by the government of Odisha as this will motivate more to become entrepreneurs, and contribute to nation-building in the near future.
4. Entrepreneurship education has made MBA students to acquire business, technical, managerial, and marketing skills. So instead of traditional education, more focus should be on business education.
5. It is justified that the need to inculcate and solidify entrepreneurship education in Odisha universities in order to create and develop an entrepreneurship culture, attitude and drive especially within the young educated group.
6. Business Education has a significant impact on students. both male and female, to motivate them to become entrepreneurs, more and more awareness should be created among the students to go for both Business Education and Entrepreneurship Education.

Management education has vast potential to build skills and competencies among the students and entrepreneurs who are not otherwise able to pay and develop their entrepreneurial skill. The main barriers and obstacles to entrepreneurs are their poverty, lack of capital, lack of unique idea, fear of failure, lack of entrepreneurship opportunities, lack of appropriate technical and practical skills, or other significant barriers like aversion to risk etc. An effective way to develop the skills and entrepreneurial abilities is that efforts should be made by the Central and State governments to improve the study of Management Education, which must be practical oriented rather than mere theory dissemination. There should be collaboration and partnership between education providers, vocational training centers and NGOs. The skills and knowledge of educational sector when combined with NGOs and vocational institutes are likely to result in improved competencies in the entrepreneurs. Successful and effective entrepreneurs, in turn, will contribute to the growth and development of the nation as a whole. So, it is high time to suggest making entrepreneurship education more affordable, influential and practical. It is justified that there is a need to proliferate and solidify entrepreneurship education in Odisha universities in order to create and develop an extensive entrepreneurship culture, attitude and drive especially among the youth.

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# Digital Word-of-Mouth Dynamics: Unpacking the Influence of Product Engagement and Brand Perception

\*Mr. Debadeepti Jagaty

\*\*Dr. Umakanta Dash

## ABSTRACT

Electronic word-of-mouth (eWOM), which can be thought of as a digital form of word-of-mouth recommendation, has emerged as a significant source of information for consumers. This research paper explores the impact of eWOM on consumers' purchasing intentions. Additionally, the study investigates how product involvement and brand image moderate the connection between eWOM and purchase intentions. The participants of this study have previously sought online opinions or reviews when considering a purchase. The survey is divided into three sections, addressing eWOM search experiences, measuring various variables, and collecting demographic and internet usage data. Structural equation modeling (SEM) is employed to analyze the relationships within the research model. Examining online reviews and comments can boost consumers' confidence in their buying choices. Research findings demonstrate that the quality and quantity of electronic word-of-mouth (eWOM) content, as well as the expertise of the sender, positively influence the likelihood of making a purchase. Significantly, the level of interest in a product and the brand's perception play a role in moderating the connection between eWOM and purchase intentions. In essence, this study offers fresh insights into impact of eWOM on customer purchase intentions.

**Keywords:** Electronic word-of-mouth (eWOM), Product involvement, Brand perception.

## Introduction

Compared to typical retail formats, the World Wide Web is a new marketing channel that is very different. Unlike in actual locations, customers who purchase online are unable to directly handle or smell the items. As such, the product

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\***Debadeepti Jagaty**, Research scholar, Srusti Academy of Management (Autonomous), Bhubaneswar, Odisha, Email: debadeeptijagaty@gmail.com

\*\***Dr. Umakanta Dash**, Professor, Srusti Academy of Management (Autonomous), Bhubaneswar, Odisha, Email: drukdash@srustiacademy.ac.in

information that websites provide plays a major role in their purchase decisions. Online retailers seek to enable user-generated product reviews on their platforms in order to overcome this constraint. Because it provides oblique insights into the items, this user-generated content is essential for assisting consumers in making knowledgeable buying decisions.

Word-of-mouth (WOM) is informal communication that is aimed at other customers and discusses the ownership, use, or features of certain products and services, or the sellers of individual vendors. The dissemination of word-of-mouth (WOM) has traditionally occurred through casual conversations among friends, but its usefulness has also been recognized and applied in real-world situations. WOM is a key factor in the acceptance of new goods by non-adopters, as demonstrated by Bass's groundbreaking research in 1969. Additionally, marketing experts have made great use of the idea of good word of mouth, using it as a reliable source of information about products as well as a way to assess the efficacy of marketing tactics like advertising (Li and Zhan, 2011).

The reach and influence of Word-of-mouth communication have increased dramatically due to the quick expansion and enhanced communication capabilities of the Internet. As the digital equivalent of conventional word-of-mouth advertising, online reviews have become an indispensable source of information for customers. These come from people who have purchased and used goods, and they are essential to many company management activities, including building a brand, attracting and keeping customers, developing new items, and ensuring quality. Leading businesses make it simple for customers to read and leave product evaluations on their websites, like Circuit City and Amazon.com. Referral value is the most important measure of a customer's propensity to suggest a product to others.

Electronic word of mouth, or eWOM, is word of mouth sent digitally and has emerged as a major information resource for customers making decisions about what to buy. While several researches have looked at how online product reviews affect sales, few have examined how eWOM affects customers' inclinations to buy. The purpose of this study is to close this gap by examining how customers' purchase



intentions are affected by eWOM, taking into account its amount, quality, and sender's level of competence. This research also looks at potential moderators of the association between eWOM impacts and purchase intention, such as product participation and brand image.

### **Electronic Word of Mouth (e WOM): Theoretical Foundation and Development of Hypotheses.**

Word-of-mouth has always been a powerful force in the consumer market, especially when it comes to influencing customers' information searches and subsequent decision-making processes (Brown & Reingen, 1987; Money, Gilly, & Graham, 1998; Silverman, 1997). Electronic communication has become a crucial phenomenon as a result of the explosive growth of the Internet. This encompasses computer-mediated communication techniques including blogs, message boards, and emails, according to Buttle (1998). Electronic word-of-mouth, according to Hennig-Thurau et al. (2004), is "any positive or negative statement made by potential, current, or past customers regarding a product or company, which is accessible to a wide audience through the Internet" (p. 39). This term supports this idea. Bickart and Schindler (2001) show that eWOM might have greater credibility than traditional word-of-mouth. In contrast to conventional word-of-mouth, Bickart and Schindler (2001) showed that eWOM could be more credible, empathetic, and relevant to customers than material created by online marketers.

Three aspects of electronic word-of-mouth (eWOM) are investigated in this study: the quantity, quality, and sender's level of experience. The persuasiveness of remarks in an educational message is known as eWOM quality. Demand-driven factors impact consumer purchasing decisions, and perceived information quality influences consumers' propensity to purchase. Determining the quality of information that consumers believe to be available is therefore essential to estimating their likelihood to make a purchase. The total number of posted comments is often referred to as eWOM quantity. The number of online comments on a product is used to determine its popularity and can provide insight into its success in the market. Additionally, reference points help consumers feel more confident and less likely to make mistakes when they are purchasing. People may

assume that a product's popularity and importance are higher when it has more reviews. In addition, the term "expertise" describes the knowledge, abilities, and training specialized in a certain field. Another way to think about it is as qualities like "authoritativeness," "competence," and "expertise." Users are drawn to adopt the knowledge and make judgments based on the sender's expertise when they leave comments in customer reviews.

## **Purchase Intention**

Purchase intention, in essence, refers to a consumer's inclination or willingness to buy a specific product or service. This concept, first highlighted by Fishbein and Ajzen in 1975, has proven to be a remarkably accurate predictor of actual buying behavior. Numerous studies have explored this notion and consistently discovered significant connections between purchase intention and real purchasing actions. In particular, within the realm of consumer durable goods, purchase intention has demonstrated its reliability as a metric for gauging actual buying behavior, as noted by Kalwani and Silk in 1982.

In the realm of marketing research, Godes, and Mayzlin's 2009 investigation delved into leveraging external word-of-mouth communication to boost sales. Their findings indicated that such word-of-mouth communication plays a pivotal role in driving higher sales for organizations. Word of mouth, often deemed one of the most credible forms of recommendation, holds sway over consumers' product choices, as demonstrated by studies by Henricks in 1998, Brown and Reingen in 1987, and Herr, Kardes, and Kim in 1991. Additionally, the advent of the internet has made people's opinions readily accessible to others, with advice and user experiences influencing consumer behavior significantly, as outlined by Thompson in 2003.

Electronic word of mouth (eWOM) stands out as a critical information source guiding consumers in their purchasing decisions. Various studies have also suggested that eWOM messages play a vital role in conveying information about the quality of products or services, as pointed out by Chevalier and Mayzlin in 2006. Furthermore, these messages effectively mitigate the risks and uncertainties that

consumers associate with buying products or services, thereby exerting a profound influence on their purchase intentions and decision-making processes, as highlighted by Chatterjee in 2001. Certainly, we can rephrase the provided text:

Evaluating the quality of electronic Word-of-Mouth (eWOM) involves assessing the content of a review in terms of information characteristics like relevance, understandability, sufficiency, and objectivity. When people browse the internet, they tend to be skeptical of reviews that lack sufficient information, especially because previous buyers are often anonymous online (Ratchford, Talukdar, and Lee, 2001). Generally, more convincing reviews have a stronger positive impact on consumers' intentions to make a purchase when all other factors are equal. Additionally, the quantity of eWOM for a product, denoted as eWOM quantity, reflects the product's popularity and its online word-of-mouth influence, as it correlates with the product's sales volume (Chatterjee 2001; Chen and Xie 2004). This can lead consumers to rationalize their buying decisions by thinking that many other people have bought this product too. Moreover, consumers tend to trust experts because they possess specialized knowledge (Alba & Hutchinson, 1987). As a result, our study proposes the following:

Certainly, here are the paraphrased hypotheses:

- H1:** Consumers' intentions to buy are favourably impacted by the quality of eWOM.
- H2:** The volume of online recommendations influences customers' propensity to buy in a favourable way.
- H3:** Sender's knowledge influences customers' propensity to buy favourably.

## **Product Involvement**

The degree to which a person considers a product to be relevant to their innate needs, values, and interests is known as product participation. As opposed to prior knowledge or experience, involvement is related to the incentive to comprehend information (Celsi and Olson 1988; Petty and Cacioppo 1984). In contrast to low-involvement situations, which tend to place more weight on peripheral cues like the

characteristics of information sources or the volume of arguments in influencing decisions, high-involvement situations typically prioritize issue-relevant arguments and product-related attributes. Thus, the following recommendations are made by this study:

**H4a:** Product participation moderates the association between eWOM quality and desire to buy.

**H4b:** Product participation moderates the association between eWOM volume and desire to buy.

**H4c:** The association between the sender's competence and purchase intention is moderated by the presence of the product.

## **Brand Image**

Keller (1998) defined brand image as the perception customers have of a company when they interact with it, which is influenced by the connections they have with the company. These brand connections are complex and include judgments of the brand's value as well as emotional and behavioural attitudes towards it. Brand image is vital because, depending on customers' overall experiences with the brand, it shapes their cognitive, emotional, and behavioural reactions (Padgett and Allen, 1997).

According to Moore (1981), an organization's image is a mental evaluation of the degree of satisfaction gained from its operations and performance. Organizations may learn more about consumer attitudes toward their brands, their degree of comprehension, and their preferences by researching brand image. In essence, it offers insightful data on how clients view and interact with these businesses. Brand image is a strategic technique in brand management that aims to improve and hone how customers perceive a brand, according to Park, Jaworski, and McNish (1986). Companies work to develop a good and favorable brand image, which in turn results in a favourable perception of the brand as a whole. Customers could show a larger preference for a specific brand just because it presents a unique image in comparison to its rivals (Schiffman and Kanuk, 1994).

Consumers rely on both internal and exterior information when making decisions, Engel et al. (2001) pointed out. Consumers find it tough to decide when there is a mismatch between the brand's perception and the information at hand. As a result, this research recommends that:

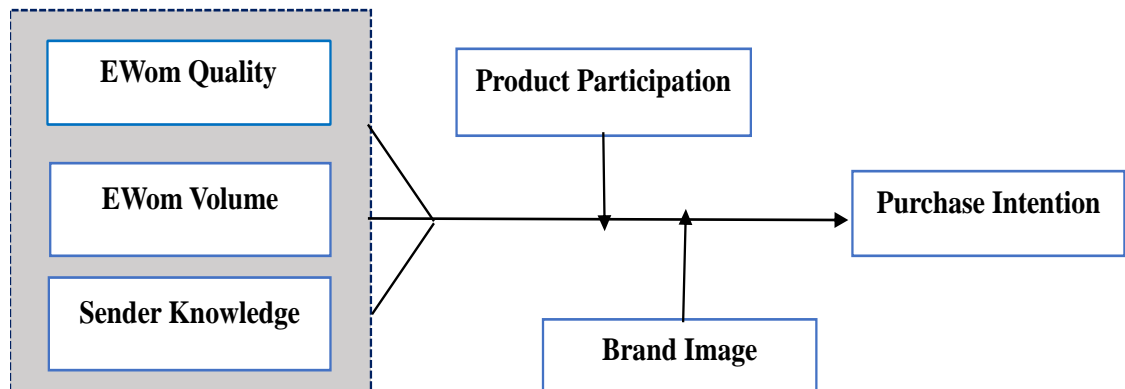
**H5a:** The association between eWOM quality and purchase intention is moderated by brand image.

**H5b:** The relationship between eWOM volume and purchase intention is moderated by brand image.

**H5c:** The relationship between the sender's knowledge and the purchase intention is moderated by brand image.

**Research Assumption:**

The research model for this study is presented based on the literature review:



**Figure -1**

**Table -1**

**Research Hypotheses**

Hypotheses	Content
<b>H1</b>	Consumers' intentions to buy are favourably impacted by the quality of electronic word-of-mouth.
<b>H2</b>	The volume of online recommendations influences customers' propensity to buy in a favourable way.
<b>H3</b>	Sender knowledge influences customers' propensity to buy favourably.
<b>H4a</b>	Product participation moderates the association between eWOM quality

	and desire to buy.
<b>H4b</b>	Product participation moderates the association between eWOM volume and desire to buy.
<b>H4c</b>	The association between the sender's competence and purchase intention is moderated by the presence of the product.
<b>H5a</b>	The association between eWOM quality and purchase intention is moderated by brand image.
<b>H5b</b>	The relationship between eWOM volume and purchase intention is moderated by brand image.
<b>H5c</b>	The relationship between the sender's knowledge and the purchase intention is moderated by brand image.

## Research Design

This study targeted individuals who have used the Internet to seek reviews or opinions before making purchases. The primary data collection method employed was an online survey. To gather responses, the survey link was distributed through personal websites and social media platforms such as Facebook, with the help of friends who shared the link. In total, the study received 182 genuine responses. In terms of data analysis, the researchers used descriptive statistics to summarize and describe the collected data. Additionally, they utilized structural equation modeling (SEM) with the AMOS 20 structural equation program. SEMs are statistical models that illustrate the relationships between observed (manifest) and unobserved (latent) variables, aiming to estimate coefficients within a set of structural equations. In this study, AMOS was employed to investigate causal links among variables, assess the significance of path coefficients, and evaluate the goodness-of-fit of the structural model.

Several measures were used to evaluate the structural model's goodness of fit. One tool used by the researchers to assess the goodness-of-fit of both measurement and structural models is the chi-square test ( $\chi^2$ ). In addition, they employed the root mean square error of approximation (RMSEA) as an additional measure of model fit and the goodness-of-fit index (GFI) as an absolute fit index. To further assess the

model's fit, incremental fit indices like the comparative fit index (CFI) and the incremental fit index (IFI) were used.

In conclusion, this study examined people who conduct pre-purchase research online. Data were gathered using an online survey, and descriptive statistics and structural equation modeling in AMOS were utilized for analysis. Examining causal links between variables and evaluating the structural model's fit using a variety of fit indices, such as chi-square, GFI, RMSEA, IFI, and CFI, were the objectives of the study.

## **2.1 Data Analysis and Results**

Gender distribution in the sampled population indicated that 45.4% of the population were female and 54.6% were male. The age bracket of 21 to 30 represented a massive 72.8% of the entire sample, making it the most noticeable. 58.3% of the population had graduated from a college or university, and 37.6% had earned a master's or doctorate degree. A significant 75.5% of respondents said they have used the internet for more than 8 years, showing that the user base is experienced. Additionally, the majority of respondents (82%) regularly accessed the internet. With 41.6% of respondents favoring it, forums have become the most popular place to look for product evaluations or comments. In addition, 38.2% of users looked for evaluations of 3C items (computers, consumer electronics, and communication devices), while 30.6% were looking for information on food. These data give a complete picture of the characteristics, internet usage habits, and preferences of the sampled population.

## **2.2 Reliability and Validity Test**

As depicted in Table -2, the results of the Confirmatory Factor Analysis (CFA) reveal that the convergent validity, as denoted by construct reliability (CR) and average variance extract (AVE), exceeds the thresholds of 0.7 and 0.5, respectively.

**Table -2**  
**The Result of the Confirmatory Factor Analysis (CFA) for the measurement model**

	<b>Factor Loading</b>	<b>Construct reliability</b>	<b>Eigen value</b>
<b>EWOM Quality</b>			
The reviews and comments posted online are clear.	0.863		
The comments and evaluations seen online make sense.	0.871		
The evaluations and comments found online are beneficial.	0.860		
The online reviews and feedback are credible.	0.752	0.876	1.752
The online reviews and feedback provide enough justification for the viewpoint.	0.782		
Each internet review and remark is generally of good quality.	0.755		
<b>EWOM Volume</b>			
The volume of internet reviews and comments suggests that the product is well-liked.	0.873	0.853	1.746
The volume of reviews and comments found online is significant, suggesting that the product has strong sales.	0.846		
Highly rated and recommended reviews, imply that the product has a solid reputation.	0.768		
<b>Sender Knowledge</b>			
I believe the people who posted evaluations and comments online are knowledgeable.	0.882	0.850	1.684
I believe that those who posted internet evaluations and comments have a wealth of product expertise.	0.876		
I believe the people who posted reviews and comments online possess judgment.	0.812		
The thoughts presented here are distinct from those offered by other sources.	0.761		
Some points that this individual brought up that I hadn't thought about.	0.752		
<b>Product Intention</b>			



Reading internet reviews and comments makes me want to purchase the goods.	0.884	0.869	1.728
I'll think about purchasing the product after reading an internet review or remark.	0.879		
I'm going to attempt the good or service mentioned in the web review or remark.	0.872		
I'll look for the good or service mentioned in the web review or remark in the future.	0.860		
I want to purchase the item that was the subject of the online review or remark in the future.	0.844		
<b>Product Participation</b>			
In my opinion, the product is quite important while looking for online reviews and comments.	0.873	0.842	1.673
When I look for online reviews and comments, I believe the product to be crucial.	0.870		
I consider the product to be valuable to me when I search for internet reviews and comments.	0.867		
I consider the thing to be important to me when I check for internet reviews and comments.	0.849		
When I search for internet evaluations and comments, I feel drawn to the product.	0.765		
I am interested in the goods when I search for internet reviews and comments.	0.820		
<b>Brand Image</b>			
The brand is Secure.	0.817	0.784	1.569
The brand is dependable.	0.824		
The brand is of high quality.	0.808		
The brand is interesting.	0.739		
The brand makes me feel joyful.	0.746		

## 2.3 The Structure Model's Fit Test for Goodness of Fit

AMOS was used to build the model, and Table -3 shows the structural model's goodness-of-fit outcomes. These findings suggest that the model does a good job of fitting the data. In particular, there is a good match as evidenced by the chi-squared statistic ( $\chi^2$ ) of 367.891 with 2.485 degrees of freedom (df) and a p-value less than 0.000. Furthermore, the root mean square error of approximation (RMSEA) is 0.057, the normed fit index (NFI) is 0.909, and the comparative fit index (CFI) is 0.914. All of these fit indices fall within reasonable bounds, indicating that the structural model as a whole provides a strong match to the data.

**Table -3**  
**The effectiveness of the structure model's fit**

Goodness fitting of a model	Preferred outcome	Value
CMIN/DF	<3	2.835
GFI	>0.9	0.902
AGFI	>0.8	0.883
RMR	<0.5	0.036
RMSEA	<0.08	0.057
NFI	(0,1) and approaches 1	0.909
RFI	(0,1) and approaches 1	0.902
IFI	(0,1) and approaches 1	0.914
CFI	(0,1) and approaches 1	0.914

### Hypothesis Test

As can be seen in Table 1.3, the outcome shows that pathways for H1, H2, and H3 are supported.

		E. W	S. E	C.R	P -Value
H1: EWom Quality	Purchase intention	0.452	0.051	8.626	***
H2: EWom Volume	Purchase intention	0.436	0.045	7.947	***
H3: Sender Knowledge	Purchase intention	0.385	0.047	5.563	**

E.W -Estimate weight \*\*\*p-value <0.001, \*\*p-value <0.05, \*p-value <0.1

### The Moderating Effect

Table -4 shows the results of Hypotheses 4a, 4b, and 4c as well as Hypotheses 5a, 5b, and 5c with regard to the moderating impact. The association between eWOM and purchase intention can be moderated by product participation and brand perception.

**Table -4**  
**Brand Image and Product Involvement**

Variables	Model 1	Model 2	Model 3
EWom Quality	0.508***	0.487***	
EWom Volume	0.427***	0.442***	
Sender Knowledge	0.258	0.351**	
Product Participation		0.406	
EWom Quality x Product Participation		0.198	
EWom Volume x Product Participation		0.205	
Sender Knowledge x Product Participation		0.283**	
Brand Image			0.278***
EWom Quality x Brand Image			0.196**
EWom Volume x Brand Image			0.105*
Sender Knowledge x Brand Image			0.063*
R <sup>2</sup>	0.537	0.298	0.362
ΔR <sup>2</sup> (Changed R <sup>2</sup> )	0.526	0.288	0.335
F value	29.361***	22.714***	18.683***
Durbin -Watson(D-W)	2.348	2.153	2.217

## **Discussion and Conclusion**

This study aims to delve into the evolving landscape of consumer behavior in the digital age, specifically focusing on the impact of electronic word of mouth (eWOM) on purchase intention. Employing the Structural Equation Model (SEM), the research underscores the necessity for marketers to grasp how eWOM shapes consumer decisions in light of the substantial growth in online communication. The findings reveal that consumers, particularly those grappling with uncertainty regarding a product, turn to online comments as a source of guidance. Accessing online comments not only helps alleviate uncertainty but also bolsters consumer confidence in their purchase decisions. Crucially, the study highlights that the quality of eWOM matters greatly—clear, logical, and persuasive comments backed by specific product-related facts exert a pronounced positive influence on purchase intention. Moreover, the study uncovers a noteworthy moderating effect wherein the relationship between eWOM and purchase intention is influenced by factors such as the consumer's level of product involvement and perceptions of brand image. This study provides valuable insights for marketers aiming to harness eWOM effectively and tailor their strategies to align with consumer preferences and engagement levels.

This study offers several practical implications that underscore the significance of effectively managing online consumer reviews. The key findings highlight the dual role of online word of mouth as both sources of information and recommendations, suggesting that businesses can strategically leverage this channel for communication purposes. To implement this strategy, online sellers, for instance, can design review formats that encourage reviewers to contribute high-quality content, with a particular focus on serving the informative role of online consumer reviews. This approach aims to enhance consumers' understanding of a product and guide their purchase decisions more effectively. Furthermore, the research provides valuable insights for corporations looking to incorporate electronic word of mouth into their strategic marketing efforts, enabling them to attract new customers.

Interpersonal communication is more important than conventional marketing strategies. The exchange of products, ideas, views, and many types of information is

facilitated by communication. It also has a crucial function in developing supportive connections with people and relationships that are marked by loyalty and a sense of duty to one another.

The ability to develop strong customer connections may be attributed to its knowledge base. Furthermore, the organisation bears the obligation of taking significant measures depending on the information that consumers voluntarily supply.

However, it's essential to bear in mind that electronic word of mouth is predominantly consumer-generated, and marketers, in principle, play a secondary role, marketers should exercise caution when attempting to influence electronic word of mouth and be mindful of the associated risks.

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# Unveiling Customer Churn: Harnessing the Power of Supervised Machine Learning in Telecom Services

\*Mr. Chinmaya Mishra

\*\*Prof. (Dr.) Manoranjan Dash

\*\*\*Dr Alaka Samantaray

## ABSTRACT

Customer retention is a vital requirement for organizations, to recognize the significance of customers as their most valuable assets. This principle holds true for telecom companies operating in a competitive environment. The advent of machine learning, leveraging existing information technologies and extensive data, presents a powerful tool for extracting valuable insights. In this study, we employed the binary logistic regression technique to develop a predictive model that incorporates this knowledge. The outcomes reveal distinctive characteristics of churned customers, enabling retail managers to proactively identify potential churners. Armed with this classification, managers can devise targeted strategies for customers displaying similar features, aiming to prevent churn.

**Keywords:** Binary Logistics, Churn Prediction, Supervised Machine Learning

## Introduction

In the fiercely competitive telecommunications sector, customer churn, where customers terminate their association with a company, presents a formidable obstacle for businesses. Predicting and comprehending customer churn can yield valuable insights for telecom companies, empowering them to devise effective retention strategies and enhance customer satisfaction. The telecom industry, characterized by cutthroat competition, rapid technological advancements, and a diverse range of services, constantly challenges telecom companies to retain their

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\*Mr. Chinmaya Mishra, Faculty of Management Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Email: chinmaya\_mishra123@yahoo.co.in

\*\*Prof. (Dr.) Manoranjan Dash, Faculty of Management Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Email: manoranjandash@soa.ac.in

\*\*\*Dr. Alaka Samantaray, Faculty of Management Sciences, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Email: alakasamantaray@soa.ac.in



customer base and mitigate churn. Customer churn not only results in revenue loss but also entails substantial costs associated with customer acquisition and retention endeavors. In the telecommunications sector, conventional approaches to analyzing customer churn have typically involved descriptive statistics and basic metrics. However, the landscape has evolved with the advent of data analytics and machine learning. These advancements have given rise to more sophisticated techniques, such as binary logistic regression, which serve as potent tools for predicting churn and unveiling the underlying factors driving it. Customer churn refers to the phenomenon where customers switch from one company to another. Apart from causing a loss in income, churn also has various negative effects on a company's operations like churn management is the process of identifying customers who intend to switch to a competing service provider and now this is an integral part of customer relationship management, considering its importance in establishing long-term relationships and maximizing the value of the customer base. This study aims to investigate customer churn in the telecommunications sector by employing a binary logistic regression model. Logistic regression is a widely used statistical technique for modeling binary outcomes, making it suitable for predicting whether a customer will churn or not. Through the utilization of this model, the study seeks to uncover the key factors that influence customer churn. By providing actionable insights, telecom companies can effectively mitigate churn rates and enhance customer retention strategies. In a binary logistic regression, the relationship between a set of independent variables (such as customer demographics, service usage, and contract details) and a binary outcome variable (churned or not churned) is modeled. By estimating the probabilities of churn based on these variables, telecom companies can gain valuable insights into the factors that significantly influence customer attrition. With this information, they can tailor their strategies to effectively address churn. The outcomes of this study will contribute to the existing knowledge of customer churn analysis within the telecommunications sector. The findings will assist telecom companies in making data-driven decisions aimed at reducing churn rates, enhancing customer loyalty, and improving overall business performance. By employing a robust analytical approach and harnessing the power

of binary logistic regression, this study aims to provide a comprehensive understanding of customer churn dynamics in the telecommunications industry. Ultimately, this research endeavor aims to enable telecom companies to develop improved customer retention strategies, giving them a competitive edge in the market.

## **Literature Review**

Keiningham et al.,(2007), in their study, explored the relationship between customer satisfaction, loyalty (measured by Net Promoter Score), and revenue growth in the telecommunications sector. It highlights the importance of customer loyalty in driving business growth and emphasizes the need to focus on customer retention to minimize churn rates. Verhoef et al ., (2002) examined the impact of customer relationships on referrals and service adoption, this study provides insights into the role of customer satisfaction, trust, and commitment in reducing churn rates. It emphasizes the importance of building strong customer relationships to foster loyalty and reduce the likelihood of churn. Van et al.,(2004) et al., .While focusing on the financial services industry, this study demonstrates the application of proportional hazard models in predicting customer attrition. The research highlights the relevance of various factors such as customer demographics, transactional history, and service usage patterns in identifying customers at high risk of churn. Liu et al.,(2014) employed data mining techniques to identify the key factors contributing to customer churn in the telecommunications industry. The study emphasizes the importance of customer demographics, contact details, customer service interactions, and usage patterns in predicting churn, providing valuable insights for customer retention strategies. Wang et al.,(2016) study focused on applying survival analysis modeling, specifically the Cox proportional hazards model, to predict customer churn in the telecommunications sector. The research emphasizes the significance of contract-related variables, customer behavior, and service usage patterns in predicting churn probabilities. Kumar et al., (2010) study focused on the concept of customer engagement and its impact on customer churn. It highlights the importance of measuring and understanding the overall customer

engagement value to identify customers who are undervalued or overvalued. By recognizing the different levels of engagement, telecom companies can design appropriate retention strategies for each customer segment. Reichheld (2003), This influential article introduces the concept of the Net Promoter Score (NPS) as a metric for customer loyalty. It discusses the correlation between NPS, customer satisfaction, and business growth. By analyzing NPS scores, telecom companies can identify potential churners and implement strategies to improve customer loyalty. Verhoef et al.,(2007) explored the multichannel nature of customer interactions and its impact on customer churn. It emphasizes the need to understand the research-shopper phenomenon, where customers gather information from multiple channels before making a purchase decision. Telecom companies can leverage this understanding to optimize their multichannel strategies and reduce churn rates. Hwang et al.,(2004) focused on customer churn prediction in the Korean mobile telecommunications industry. It examines the effectiveness of data mining techniques, including decision trees, neural networks, and logistic regression, in predicting churns. The research identifies key factors such as call patterns, service usage, and customer demographics that significantly impact churn rates. Li et al.,(2017) explored the application of ensemble learning techniques, including random forests and gradient boosting, for customer churn prediction in the telecommunications industry. The study highlights the advantages of combining multiple models to improve predictive accuracy and identifies relevant features for churn prediction, such as customer behavior and service usage patterns.

## **Model Building**

Customer churn analysis in the telecommunications sector using a binary logistic regression model can be an effective approach to predict and understand customer churn.

- ❖ ***Data Collection:*** Gather relevant data about your customers, including demographic information, usage patterns, customer service interactions, and historical churn data. Ensure that you have a binary churn variable indicating whether each customer has churned or not.

- ❖ **Data Pre-processing:** Clean and pre-process the data. Handle missing values, remove duplicates, and transform categorical variables into numeric representations (e.g., one-hot encoding).
- ❖ **Feature Selection:** Identify the most relevant features that are likely to impact churn. This can be done through various techniques such as statistical tests, correlation analysis, or domain knowledge. Consider including variables like customer demographics, service usage, contact details, payment history, and customer interactions.
- ❖ **Train-Test Split:** Split your dataset into a training set and a testing set. The training set will be used to train the logistic regression model, while the testing set will be used to evaluate its performance.
- ❖ **Model Training:** Fit a binary logistic regression model to the training data. In logistic regression, the dependent variable is binary (churned or not churned), and the independent variables are the selected features. This model will estimate the probability of churn based on the input features.
- ❖ **Model Evaluation:** Evaluate the performance of your model using the testing set. Common evaluation metrics for binary classification models include accuracy, precision, recall, F1 score, and the receiver operating characteristic (ROC) curve.
- ❖ **Interpretation of Results:** Analyze the coefficients of the logistic regression model to understand the impact of each feature on the likelihood of churn. Positive coefficients indicate a positive relationship with churn, while negative coefficients indicate a negative relationship.
- ❖ **Predictions:** Once the model is trained and evaluated, you can use it to make predictions on new, unseen data. Provide the input features of a customer to the trained model, and it will output the probability of churn.
- ❖ **Customer Segmentation:** Segment your customers based on their predicted churn probabilities. This will help you prioritize your retention efforts by focusing on customers at high risk of churn.
- ❖ **Retention Strategies:** Based on the insights gained from the model and customer segmentation, develop targeted retention strategies to reduce

churn. These strategies could include personalized offers, proactive customer support, loyalty programs, or service improvements.

## **Key Factors for Customer Churn**

Subscribers churn analysis varies across countries and cultures, leading to potential variations in the pivotal factors that play an important role in this analysis. Therefore, this paper aims to compile factors identified by scholars that impact customer relationships and supplement them with insights from experts within the same country. One key factor that has a direct impact on customers is service quality. Service providers are keenly aware of its significance as a critical determinant of customer ecstasy, as highlighted by Mannan et al. (2017). “Service quality was positively and significantly related to customer loyalty”. Bhuian et al. (2018) found a direct and significant relationship between service quality and customer loyalty, while Adebisi et al. (2015) noted that call quality is an important factor influencing customer retention decisions. Promotion is one of the factors emphasized by researchers. Effective promotional strategies have been shown to increase mind awareness about the brand, customer retention, and company profitability. When customers are satisfied with the promotions offered by their service providers, the likelihood of churn decreases. “Factors that significantly contribute to the prediction of customer churning intention are; tariffs, transparency level, promotions, technical assistance, privacy, and response to complaints” (Hamelin et al, 2009). Therefore, this study will incorporate the following factors to analyze customer churn in the telecommunications sector, considering their relevance and impact: service quality, Usage and revenue, technical assistance, and response to complaints.

- ❖ Customer Data
- ❖ Usage and Revenue Data
- ❖ Customer Care Data as per SLA
- ❖ Network Data

Like the other business companies, Telecommunication also has millions of customers. This implies the necessity of maintaining the database that contains the information about these customers. This database contains personal information like name, address, age, gender, income, and service-oriented information like plan, contact information, credit score, payment history, etc, Usage and Revenue Data ensure whenever a call is made on the telecommunication network, detailed record of a call is stored with certain descriptive information. Due to the increase in customers, detailed data of the call has a huge number of records. Each record in the call detail data defines the characteristics of the call (Qining Lin., 2007). It contains the basic information like-:

- I. Out Going Call Minutes
- II. Incoming Call Minutes
- III. Data Downloading Quantity in MBS
- IV. Prepaid recurring revenue

- ❖ **Customer Data:** Similar to other businesses, the telecommunications industry serves millions of customers, necessitating the maintenance of a comprehensive customer database. This database contains personal information such as name, address, age, gender, income, and service-oriented details including plans, contact information, credit scores, payment history, and more.
- ❖ **Usage and Revenue Data:** For each call made within the telecommunications network, a call detail record is generated, resulting in a substantial number of records due to the large customer base. These call detail records capture various call characteristics, including outgoing call minutes, incoming call minutes, data downloading quantities in megabytes (MBs), prepaid recurring revenue, postpaid billing amounts, and the utilization of value-added services.
- ❖ **Customer Care Data:** To meet service level agreements and ensure customer satisfaction, telecom companies maintain call center databases that gather valuable information. This includes the total number of calls made by

a customer during a specific period, the percentage of calls categorized as queries or requests for services, the average query handling time by customer care executives, and the number of repeat calls made for the same issue.

- ❖ **Network Data:** Telecommunication networks are complex systems composed of interconnected components, generating a vast amount of error and status messages. Recording and analyzing network data is crucial for efficient network management. Network data encompasses percentages of dropped calls, percentages of calls successfully connected on the first attempt, average data downloading and uploading speeds in megabits per second (Mbps), location-specific busy and non-busy hours, as well as average network uptime and downtime.

The data analysis process in this study is divided into several key stages. It begins with data collection, where information is gathered from the telecom company's database. The collected data comprises various types of variables to find as many factors as possible that might influence customer churn.

Next is the data display stage, where the factors considered in the prediction of customer churn in the telecommunications sector are summarized and presented using tables. This visual representation helps in understanding and interpreting the data effectively. The focus of this paper is customer churn prediction utilizing the binary logistic regression model.

## Data Analysis and Results

The following table shows the Cases included in the analysis, we have a total of 7043 cases, and the dependent variable in this is those who will churn are classified as 0, and those who will not churn are classified as 1.

**Table-1**

<b>Case Processing Summary</b>			
Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	7043	100.0
	Missing Cases	0	.0
	Total	7043	100.0

Unselected Cases	0	.0
Total	7043	100.0
a. If weight is in effect, see classification table for the total number of cases.		

**Table-1.1**

<b>Dependent Variable Encoding</b>	
Original Value	Internal Value
Yes	0
No	1

**Table-2**

<b>Omnibus Tests of Model Coefficients</b>				
		Chi-square	df	Sig.
Step 1	Step	8150.146	9	.000
	Block	8150.146	9	.000
	Model	8150.146	9	.000

**Table-3**

<b>Hosmer and Lemeshow Test</b>			
Step	Chi-square	df	Sig.
1	1.341	8	.967

Omnibus Tests of Model Coefficients were used to test the model fit. The model shows a good fit. The Hosmer and Lemeshow test indicates a poor fit if the sig value is less than 0.05. Here the model adequately fits the data.

**Table-4**

<b>Contingency Table for Hosmer and Lemeshow Test</b>						
		Churn = Yes		Churn = No		Total
		Observed	Expected	Observed	Expected	
Step 1	1	704	704.000	0	.000	704
	2	704	704.000	0	.000	704
	3	461	461.000	243	243.000	704
	4	0	.000	704	704.000	704
	5	0	.000	705	705.000	705
	6	0	.000	704	704.000	704
	7	0	.000	704	704.000	704
	8	0	.000	704	704.000	704
	9	0	.000	704	704.000	704
	10	0	.000	706	706.000	706



**Table-5**

Classification Table <sup>a</sup>					
Observed			Predicted		Percentage Correct
			Churn		
			Yes	No	
Step 1	Churn	Yes	1869	0	100.0
		No	0	5174	100.0
	Overall Percentage				100.0

a. The cut value is .500

**Table-6**

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	.000 <sup>a</sup>	.686	1.000

a. Estimation terminated at iteration number 20 because maximum iterations have been reached. Final solution cannot be found.

Nagelkerke's R<sup>2</sup> is an adjusted version of the Cox & Snell R-Square that adjusts scale of the statistics to cover the full range from 0 to 1. The model correctly classified 100% of the cases overall referred to as the percentage accuracy in classification. It is the rate of correct classification. it indicated the degree to which the observed outcomes are predicted by our model.

**Table-7****Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	TOM	.000	3.292	.000	1	1.000	1.000	.002	634.610
	TOI	.001	6.614	.000	1	1.000	1.001	.000	426410.691
	DaM	.000	1.936	.000	1	1.000	1.000	.022	44.435
	DaG	.231	1981.078	.000	1	1.000	1.260	.000	.
	Noc	-.011	200.674	.000	1	1.000	.989	.000	6.449E+170
	CC	-.278	2843.129	.000	1	1.000	.757	.000	.
	ADD	12.523	610.170	.000	1	.984	274698.927	.000	.

	CD	1536.538	68040.541	.001	1	.982	.000	.000	.
	CM	4767.566	258178.335	.000	1	.985	.000	.000	.
	Constant	4255.092	229653.297	.000	1	.985	.	.	.
a. Variable(s) entered on step 1: TOM, TOI, DaM, DaG, Noc, CC, ADD, CD, CM.									

The percentage in the first two row provided the information regarding specificity and sensitivity of the model in terms of predicting the churn. Specificity also called as True Negative Rate is 100%. Sensitivity also called True Positive Rate was 100%

## Conclusion

Managers in service companies place significant emphasis on building strong customer relationships. When the relationship between customers and the service provider is positive, it fosters loyalty, which directly impacts the company's profitability. To ensure sustained success, companies must try to find out the reasons behind customer churn and proactively work to reduce churn rates. In this paper, we proposed a model for customer churn analysis utilizing the Binary Logistic Regression Model, a well-known statistical methodology. The purpose of this model is to provide companies with a clear idea of how they can analyze their data, identify customers with a higher probability of churning, and determine the key factors influencing this analysis. Armed with this knowledge, companies can closely watch these factors and develop strategies to decrease churn probability effectively by employing this model, we can delve into the daily dynamics of customer behavior. This enables the service provider to proactively take appropriate actions to retain customers before their dissatisfaction reaches a level where they voluntarily decide to churn. Through the application of this algorithm, companies can gain valuable insights and implement targeted measures to improve customer retention and satisfaction.

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# Adoption of Digital Payment with reference to small retail outlets in Nalgonda Town

**\*Dr. Sabina R Harold**

**\*\*Dr. Swetha Suram**

**\*\*\*Dr. V. Anuradha**

## ABSTRACT

The foundation of efforts to promote financial inclusion in developing nations is the use of digital payment methods in small retail establishments. These techniques include online banking, mobile wallet money, Unified Payments Interface (UPI), and credit/debit cards. Digital payments are now accepted at all levels, from street vendors to internet retailers. In order to understand, whether the small-scale retailers are sufficiently literate to use digital payment systems, and whether the retailers are able to build the infrastructure needed to conduct business digitally (such as bank accounts and smartphones), a study with a sample of 120 is conducted on tiny retail establishments in Nalgonda town of Telangana District. The objective is to assess the technical glitches the small retailers face and the satisfaction level of small retailers with the utilization of digital payments.

**Keywords:** *Digital payments, UPI, Retailers.*

## Introduction

The Indian government is dedicated to enhancing the quality and strength of the financial sector as well as the standard of life for its people by increasing the number of digital transactions in the Indian economy. The efforts to promote financial inclusion in developing nations is the use of digital payment methods in small retail establishments. These techniques include online banking, mobile wallet money, Unified Payments Interface (UPI), and credit/debit cards. Digital payments

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*\*Dr. Sabina R Harold, Assistant Professor, Department of Business Management, UCC & BM, Mahatma Gandhi University, Nalgonda, Telangana, Email:venu\_sabina@gmail.com*

*\*\*Dr. Swetha Suram, Assistant Professor, Department of Business Management, UCC & BM Mahatma Gandhi University, Nalgonda, Telangana, Email: swethaparine@gmail.com*

*\*\*\*Dr. V. Anuradha, Assistant Professor, Department of Business Management, UCC & BM, Mahatma Gandhi University, Nalgonda, Telangana, Email: vanapatlaanu@gmail.com*

are now accepted at all levels, from street vendors to internet retailers.

Due to the strenuous efforts of the entire government and all interested parties, the number of digital payment transactions has greatly increased, rising from 2,071 crore in FY 2017–18 to 8,840 crore in FY 2021–22. Table below shows the total number of digital payment transactions and total value of digital payments undertaken during the last five financial years are as under:

**Table-1**  
**Number of Digital Transaction and the Value of Digital transaction during the study period**

<b>Financial Year (FY)</b>	<b>Total number of digital transactions (in crore)</b>	<b>Total value of digital transactions (in lakh crore)</b>
2017-18	2,071	1,962
2018-19	3,134	2,482
2019-20	4,572	2,953
2020-21	5,554	3,000
2021-22	8,840	3,021
2022-23	9,192*	2,050*

\*Data till 31<sup>st</sup> December 2022

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=1897272>

Though digital payments have become a more common phenomenon in metropolitans, the adoption of digital payments in rural areas has been a bit slow in pace. The benefits of digital payments in small retail sector outweigh the cash transactions like instant payments, and convenient transactions with the customers, but still the fear of unknown due to literacy levels and the age group who are not convenient in using the smart phones has raised few concerns on whether the adoption of digital payments is happening in rural towns at par with the other world, specifically with reference to small retail outlets. So a study has been conducted with the following research objectives.

### **Research Objectives**

The objectives of this research are:

- i. To assess the technical glitches that the small retailers face and
- ii. To understand the satisfaction level of small retailers with the utilization of Digital payments.

## **Research Methodology**

The present study is empirical in nature. A questionnaire was designed to collect the required data and survey method was adopted to collect data from the primary respondents especially the small retail outlet operators of Nalgonda town. Convenience sampling method was used to collect the data from 71 small retail outlets, offering digital – UPI Payments.

## **Literature Review**

Dr. Shilpa Bhimrao Gaonkar's study (2018) has explored various payment instruments available to the people, and its benefits and revealed that various new instruments are emerging. Benefits of going cashless are increased transparency, efficiency and convenience, easier tracking, etc. The study of Dr. N. Rakesh, Dr. K. Suresh Kumar, & Dr. S. Satheesh Kumar (2018), has examined the present scenario of electronic payments and to study the range of service facilities that UPIBHIM technologies offer. The study found that Electronic transactions have increased. This could happen only with extensive recognition and acceptance of popular instruments such as credit and debit cards, net banking 17, and e-wallets by the Indian population. But surprisingly, UPI came out to be the real distinct advantage. The study of Subho Chattopadhyay, Payal Gulati and Indranil Bose (2018) has evaluated the awareness of the small retailers for the cashless transaction and its modes. And also aims to understand their difficulties and perceived convenience with it. There was no significant difference found in convenience for cash and cashless modes of transactions. Also, the retailers strongly believe that it is easier for the retailers to deal with cash as compared to digital payment methods. Efforts ought to be engaged towards changing behaviour and attitude towards cashless than to scarcely make awareness.

The study of G. Sudha and Dr.V. Sornaganesh (2019), revealed that after demonetization changes in buying behavior are clearly explained. After

demonetization, the main impact is to reduce the paper money and increase the digital cash. Most of the customers used digital cash after the demonetization, used through mobile applications, Internet Banking, etc., for paying their bills at shopping or at groceries.

The study of M.Thangajesu Sathish, R. Sermakani, and G. Sudha (2020) proves that traditional cash transaction cannot completely be replaced by card or digital payment system. People may use their mobile wallets for payment transaction, transfer fund digitally, make grocery purchase and in paying bills etc. using mobile wallets. The study has explained that trust is the major factor affecting users' satisfaction and it has a major impact on many users' intention to adopt mobile wallet.

## Results and Discussion

### 3.1: Descriptive Statistics:

Table-2

Descriptive Statistics		
Age	Count	Percentage
25-50	44	62.0
50-60	19	26.8
above 60	8	11.2
Gender	Count	Percentage
Male	51	71.8
female	20	28.2
Education	Count	Percentage
Illiterate	6	8.5
Primary Education	20	28.2
Secondary Education	18	25.4
Went to college	15	21.1
Graduate	12	16.8
Income	Count	Percentage
500-1000	23	32.4
1000 and above	48	67.6



**Interpretation:** As per the table majority of the respondents (62%) are young people followed by 26.8% from middle age group while very less proportion of respondents belongs to the older generation. Besides most of the respondents are male (71.8%), (53.6%) of the respondents are having school education only besides 67.6% of the respondents have a daily income of > 1000/-. This signifies that young generation especially male people are fast adopting the digital mode of payment irrespective of their education.

### 3.2: Association between age and number of years of offering UPI payment

#### 3.2.1: Frequency Distribution:

**Table -3**

Time period of offering UPI payment methods					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	25	35.2	35.2	35.2
	1 to 2 years	27	38.0	38.0	73.2
	More than 3 years	19	26.8	26.8	100.0
	Total	71	100.0	100.0	

**Interpretation:** As per the table 38% of respondents have the opinion that they have been offered UPI mode of payment for 1 to 2 years followed by 35.2% have been offered for less than one year and 26.8% have been offered the same since more than 3 years. This signifies UPI mode of payment in the study area is a recent practice as a substantial part of the respondents have offered this within 2 years of time.

### 3.2.2: Hypothesis Testing:

**H<sub>0</sub>:** There is no association between age and the number of years of offering UPI payment option.

**H<sub>1</sub>:** There is association between age and number of years of offering UPI payment option.

In order to find out about the association between age and number of years of offering UPI payment option, Chi-square test is performed and is presented in Table 4 below

**Table -4**  
**Chi square test result**

	<b>Age</b>	<b>Time period of offering UPI payment methods</b>
Chi-Square	60.662 <sup>a</sup>	1.465 <sup>b</sup>
df	3	2
Asymp. Sig.	.000	.481

As the significance value is 0.481 which is more than 0.05, the null hypothesis is accepted. Therefore, it is interpreted that there is no association between age of the respondent and number of years of offering UPI payments.

### 3.3: Association between Gender and accepting Cash or Cash less transactions:

#### 3.3.1: Frequency Distribution:

**Table -5**  
**Cash or Cash less transactions**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Digital/Cash less	9	12.7	12.7	12.7
	Digital and Cash	62	87.3	87.3	100.0
	Total	71	100.0	100.0	

**Interpretation:** As most of the respondents (87.3%) have adopted digital and cash mode of payment it is to be assumed that the study area is not adopted digital payment system at its highest.

### 3.3.2: Hypothesis Testing

**H<sub>0</sub>:** There is no association between Gender and accepting Cash or Cash less transactions

**H<sub>1</sub>:** There is association between Gender and accepting Cash or Cash less transactions

In order to find out about the association between Gender and accepting Cash or Cash less transactions, Chi-square test is performed and is presented in Table 6 below:

**Table - 6**  
**Chi square test result**

	<b>Gender</b>	<b>Cash or Digital Payments</b>
Chi-Square	13.535 <sup>a</sup>	39.563 <sup>a</sup>
df	1	1
Asymp. Sig.	.000	.000

As the significance value is 0.000 which is less than 0.05, the null hypothesis is rejected. Therefore, it is interpreted that there is association between gender of the respondent and whether they are taking cash payments or going digital either through UPI or through debit/credit card.

### 3.4: Hypothesis 3: Association between Education and Number of years of offering UPI payment

**H<sub>0</sub>:** There is no association between Education and Number of years of offering UPI payment option.

**H<sub>1</sub>:** There is association between Education and Number of years of offering UPI payment option.

In order to find out about the association between education and number of years of offering UPI payment option, Chi-square test is performed and is presented in Table 7 below:

**Table -7**  
**Chi square test result**

	<b>Education</b>	<b>Number of years of offering UPI payment methods</b>
Chi-Square	8.507 <sup>a</sup>	1.465 <sup>b</sup>
df	4	2
Asymp. Sig.	.075	.481

As the significance value is 0.48 which is more than 0.05, the null hypothesis is accepted. Therefore, it is interpreted that there is no association between education of the respondent and number of years of offering UPI payments.

### **3.5: Association between education and facing technical glitches:**

#### **3.5.1: Frequency Distribution:**

**Table- 8**

**Technical Problems while using Digital Payments.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	52.1	52.1	52.1
	No	34	47.9	47.9	100.0
	Total	71	100.0	100.0	

**Interpretation:** While 52.1 % of the respondents have faced technical problem in using UPI the rest does not have. This signifies almost half of the respondents either is not technically sound or they don't have the requisite awareness about the technical aspects of using UPI.

#### **3.5.2: Hypothesis Testing:**

**H<sub>0</sub>:** There is no association between education and facing technical glitches

**H<sub>1</sub>:** There is association between education and facing technical glitches

In order to find out about the association between education and facing technical glitches, Chi-square test is performed and is presented in Table 9 below:

**Table -9**

**Chi-square test result**

	3.Education:	Technical issues while using Digital payments.
Chi-Square	8.507 <sup>a</sup>	.127 <sup>b</sup>
df	4	1
Asymp. Sig.	.075	.722

As the significance value is 0.722 which is more than 0.05, the null hypothesis is accepted. Therefore, it is interpreted that there is no association between the education of the respondent and facing technical glitches while using digital payments.

**3.6: Association between education and fear of Government intervention or fear of payment of taxes by using UPI payments**

**3.6.1: Frequency Distribution:**

**Table-10**

**Fear of Government intervention/ Payment of taxes by using UPI Payments.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	49.3	49.3	49.3
	No	36	50.7	50.7	100.0
	Total	71	100.0	100.0	

**Interpretation:** As per the respondents’ data 49.3% has a fear of governmental intervention or payment of tax while the rest does not. This indicates the awareness level of the respondents with respect to governmental practices and regulations that almost half of the respondents do have not adequate idea about governmental practices and regulations for which they have fear psychosis.

**3.6.2: Hypothesis Testing**

**H<sub>0</sub>:** There is no Association between Education and fear of Government intervention or fear of payment of taxes by using UPI payments

**H<sub>1</sub>:** There is an Association between Education and fear of Government intervention or fear of payment of taxes by using UPI payments

In order to find out about the association between education and fear of Government intervention or fear of payment of taxes by using UPI payments, the Chi-square test is performed and is presented in Table 11 below:

**Table -11**  
**Chi-square test result**

	Education:	Fear of Government intervention/ Payment of taxes by using UPI payments
Chi-Square	8.507 <sup>a</sup>	.014 <sup>b</sup>
df	4	1
Asymp. Sig.	.075	.906

As the significance value is 0.906 which is more than 0.05, the null hypothesis is accepted. Therefore, it is interpreted that there is no association between the education of the respondent and fear of Government intervention or fear of payment of taxes by using UPI payments.

### **3.7: Association between education and the process followed for UPI payment validation.**

#### **3.7.1: Frequency Distribution.**

**Table- 12**  
**Validation of UPI Transaction.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Check my phone	27	38.0	38.0	38.0
	Audio message device installed in my store	7	9.9	9.9	47.9
	Check customer phone and also check my phone	3	4.2	4.2	52.1
	Check my phone and also the audio message device installed	34	47.9	47.9	100.0
	Total	71	100.0	100.0	

**Interpretation:** As the table signifies 47.9% of respondents have the opinion of validating UPI transactions after checking their mobile phone and by installing an

audio message device followed by 38% only through checking their mobile phone. This shows that people are more sensitive while validating their UPI transactions.

### 3.7.2: Hypothesis Testing:

**H<sub>0</sub>:** There is no association between education and the process followed for UPI payment validation.

**H<sub>1</sub>:** There is association between education and the process followed for UPI payment validation.

In order to find out about the association between education and the process followed for UPI payment validation, the Chi-square test is performed and is presented in Table 13 below:

**Table -13**  
**Chi-square test result**

	Education	How do you validate your UPI transaction?
Chi-Square	8.507 <sup>a</sup>	38.465 <sup>b</sup>
df	4	3
Asymp. Sig.	.075	.000

As the significance value is 0.000 which is less than 0.05, the null hypothesis is rejected. Therefore, it is interpreted that there is Association between Education and the process followed for UPI payment validation.

### 3.8: Association between income and the percentage of daily transaction done through UPI.

#### 3.8.1: Frequency Distribution:

**Table -14**  
**Percentage of Daily Transaction Done Through UPI**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25%	6	8.5	8.5	8.5

	25% to 50%	36	50.7	50.7	59.2
	50% to 75%	27	38.0	38.0	97.2
	Above 75 %	2	2.8	2.8	100.0
	Total	71	100.0	100.0	

**Interpretation:** As per the table 25% to 50% of daily transaction have been made through UPI in almost 50% of small retail outlets in the study area while 50% to 75% of daily transaction is made in almost 38% of small retail outlets and cumulatively in 88% of small retail outlets in the study area 25% to 75% of the daily transaction have been done through UPI mode. This clearly shows the rising tendencies among the people to adopt the UPI system of payment mode in the study area.

### 3.8.2: Hypothesis Testing

**H<sub>0</sub>:** There is no association between income and the percentage of daily transaction done through UPI.

**H<sub>1</sub>:** There is association between income and the percentage of daily transaction done through UPI.

In order to find out about the association between Income and the percentage of daily transactions done through UPI, the Chi square test is performed and is presented in Table 15 below:

**Table -15**  
**Chi square test result**

	Income	Percentage of daily transaction done through UPI.
Chi-Square	8.803 <sup>a</sup>	45.338 <sup>b</sup>
df	1	3
Asymp Sig.	.003	.000

As the significance value is 0.000 which is less than 0.05, the null hypothesis is rejected. Therefore, it is interpreted that there is association between Income and the percentage of daily transaction done through UPI.



## **Conclusion**

The present research has been undertaken to understand the utilization of digital/UPI as a mode of payment especially in the small retail outlets. The general assumption is that small retail outlets, especially the pushcart vendors do not offer digital/UPI payment mode, the reasons cited are - often these vendors are illiterate, do not have bank accounts hence making it a barrier to offering digital/UPI mode of payment.

**As opposed to expected assumption, an analysis of the data reveals the following:**

The general assumption regarding UPI payments is that vendors belonging to a younger generation and those who are educated are more inclined to offering UPI/Digital payments. But the results reveal otherwise. This research refutes the assumption that only the educated and younger generation use digital /UPI payments making it evident that with the changing times the digital/UPI payment mode have penetrated the market.

Also it has been assumed that the more educated the vendors the better they are able to handle the technical glitches they face in the process of making/accepting digital payments, but then analysis reveals there is no association between education of the respondent and the technical glitches they have been facing while using digital payments. It was unanticipated but there is an association between gender of the respondent and whether they are taking cash payments or digital either through UPI or through debit/credit card. The reason may be that the small women vendors may prefer cash payment so that their income is not revealed to other family members.

Education plays an important role in the method used to validate UPI payments, the educated seem to check their phones while the illiterate seem to be using the voice method for validation. Also as the income of the outlet is higher the more they prefer UPI/Digital mode of payments. In conclusion, the present research has helped

understand that digital/UPI method of payments has become an inclusive method adopted by the small retail outlets also.

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# Enhanced Bank Performance and Digitalization of Banking Services: A Causal Study of Indian Public Sector Banks

Dr. Sangram Keshari Panda (CMA)

## ABSTRACT

A report of the IBEF reveals that the % of the Indian population holding bank account was 17% in 2009 which significantly grew to 80% in the year 2022. After the successful combat with COVID -19 India has emerged as the 3<sup>rd</sup> largest Fintech ecosystem globally. The use of digitalization in all the banking services has been achieved reducing the paper-based documentation works. As per the report of RBI the Return on equity of the scheduled commercial banks for the year 2022 is 10.1% which is highly remarkable. This paper applies panel regression to establish empirically the relationship between the variables measuring the digitalization of banking services and the variables measuring the profitability of the banks. The paper finds that the variables of the bank digitalization affects the profitability of the public sector banks in India to the extent of 56%

**Keywords:** Digitalization, panel regression, profitability, PSU Banks.

## Introduction

In the banking industry, the practice of services by digital banking (DB) has increased substantially. As changes in user interfaces, the surge of digital banking has a considerable impact on banks' marketing strategies and practices (Dootson, Peatson, & Drennan, 2016). Banks and their consumers using of financial services thanks to digital banking. Banks face a difficulty because of the shift to digital banking brought on by changed client behavior, notably in the delivery of services.

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Dr. Sangram Keshari Panda (CMA), Lecturer in Commerce, ISPAT Autonomous College, Rourkela, Email: sangramgcwa@gmail.com

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After the financial crisis of 2008, attracting and keeping clients, as well as boosting profitability, became increasingly important due to rising customer expectations and bank rivalry (Estrada-Guillén, Monferrer-Tirado, Moliner-Tena & Sánchez, Fandos-Roig, 2016).

Digitalization is a sociotechnical process that builds on digitizing, which enables the conversion of analogue data to digital form (Legner et al. 2017). The term "digitalization" refers to the process of "applying digitizing methods to broader social and institutional contexts" (Tilson et al. 2010). Therefore, the broad usage of IT serves as the base for digitization (Chen and Tsou 2006). Short digital innovation cycles are a result of the fast-moving nature of IT, the commoditization of technology, and the phenomena of ubiquitous computing. As a result, firms must be extremely nimble in responding to their constantly changing environments (Gimpel et al. 2018, Fichman et al. 2014). During last few decades, the financial services sector has undergone substantial transformation and experienced numerous breakthroughs because of these digital innovations (Yoo 2010, Chen and Tsou 2006; Brynjolfsson and Hitt 2000;).

It is widely understood and acknowledged that innovation refers to "the creation, adoption, and implementation of new ideas, methods, and products." digital institutional infrastructures, Digital organizational forms, and digital institutional building blocks are the three different types of digital innovation that Hinings et al. (2018) identify. Innovative digital organizational forms, like Uber and Airbnb, are built on digital technology and allow for novel "arrangements of practices, structures, and values defining an organization's core that are acceptable in a specific institutional setting" (Hinings et al. 2018). "Digital institutional infrastructures" strive to develop new norms based on cutting-edge methods for inter-organizational collaboration, governance, and regulation. These infrastructures challenge current organizational infrastructures (Raynard 2016, Hinings et al. 2018;).

## **Literature Review**

Few of the past studies reviewed for the paper are mentioned below:

Digital banking is attractive to banks and clients because of its exceptional features and service quality (Amin, 2016, Jun & Palacios, 2016;). Customers can take advantage of banking and other services, and numerous services can be launched at once. Customers can simultaneously communicate, access the internet, and conduct banking activities. For its increased accessibility and user-friendliness, internet banking enables banks to provide services, providing a variety of advantages from any location (Yiu, Grant & Edgar, 2007, Martins et al., 2014;). It enables clients to complete most tasks easily from their homes (Mols, 2001).

Studies on digital banking have been dispersed, with researchers focusing on certain channels, which is a drawback. In contrast, Jun and Palacios (2016) found that m-banking service quality affects customer happiness and loyalty in the US banks. Amin (2016), Raza et al. (2015), and Amin (2016) explore the relationship between the quality of the e-banking service and customer satisfaction and loyalty. Saleem, Zahra, Ahmad, and Ismail (2016) point out that customer loyalty is related to social influence, market orientation, and service quality, with satisfaction acting as an antecedent. These studies have benefits in some situations, but to properly sell bank services and develop theories, it is necessary to comprehend the many perspectives on digital banking. Convenience, accessibility, service quality, and value obtained from them are arguably among the factors that should make digital banking desirable to users. Further research will be done on this material.

Internet banking is referred to as e-banking, mobile banking as m-banking, and telephone banking as t-banking (Sarokolaie, Rahimipoor, Nadimi, & Taheri, 2012; Hanafizadeh et al., 2014; Lin, 2011). (Sundarraaj & Wu, 2005). The key distinction between these digital channels and other services is the transmission medium, which in digital banking can either be mobile or internet digital networks. Additionally, as digital services are intangible and cannot be retained in an inventory, they are consumed as they are produced (Hatch, 1997).

Changes in service quality might result from interactions between banks and clients during the service delivery process (Amin,2016). Customers undoubtedly have a variety of service expectations, and how well service providers meet those

expectations affects how satisfied customers are. Therefore, there is an urgent need for research into the factors that influence customer service expectations in digital banking about customer experience, happiness, and loyalty.

Banking institutions can provide new consumer services through digital innovation. This can stop customers from travelling and waiting in line at branches to do banking operations. As some banks are already cutting the number of branches, this could improve operational efficiency for banks. Research into its acceptance is particularly intriguing due to these features and developments in banks (Hanafizadeh et al., 2014; Alsajj and Dennis, 2010; Yoon, 2010).changes in service quality might result from interactions between banks and clients during the service delivery process (Amin, 2016). Customers undoubtedly have a variety of service expectations, and how well service providers meet those expectations affects how satisfied customers are. Therefore, there is an urgent need for research into the factors that influence customer service expectations in digital banking about customer experience, happiness, and loyalty.

The findings of a study by G & Vikram (2018) examining the effect of IT expenditures on a bank's profitability in comparison to marketing costs show that IT has a bigger impact on a bank's profitability than marketing. According to the research done by Vekya (2017), point-of-sale (POS) and ATM transactions are the two main drivers of e-banking since they each have a significant positive impact on the efficiency and profitability of financial institutions in Kenya. In contrast, the success of Kenya's commercial banks is not significantly impacted by mobile banking transactions.

The banking system would not be able to succeed without the usage of information and communication technology, according to Sabhaya J. Ranjan's (2014) analysis of how the banking business has changed with the entrance of modern technology. It has broadened the banking industry's role in the economy. Technology-enabled banks are more capable in the financial sector and can increase bank profitability.

According to Kujur Teju (2015), the implementation of e-banking increases banks' capacity for profit-making and boosts customer happiness, which in turn improves

banks' performance. The advancement has a bad relationship with security and risk. The developing nations confront several obstacles to successfully implementing new technological projects in comparison to developed nations. Customers of Nigerian banks should use electronic banking for comfort and ease since it has a significant impact on banks' performance using ATMs, mobile banking, and online banking (Ezekiel & Olaleakn , 2016).

The impact of Internet banking on banking performance was also examined by Ceylan Onay (2008), who concluded that in Turkey, both are positively correlated in terms of ROE (returns on equity) and ROA (return on assets), with ROA increasing in tandem with improvements in the use of and investments in electronic banking initiatives. According to research done by Sumra (2011), the use of ICT in banking increases customer happiness, efficiency, and profits while lowering costs or expenses.

### **Measuring Financial Performance**

As banks use and analyze financial statistics in a variety of ways, measuring financial success can be challenging. As per the study of Keisidou et al. (2013), numerous metrics have been used by academics to quantify the impact of customer satisfaction and loyalty on financial success. In their study of consumer satisfaction, Anderson et al. (1994) applied Return on Investment to gauge financial performance (ROI). In a study of 2009 on the hospitality industry in the USA, Chi and Gursoy asked managers to rate their profitability, return on investment, and net profit in relation to three key competitors. In contrast, Return on Assets (ROA) or Return on Investment ROI, Net Profit Margin (NPM), and Return on Equity (ROE) are said to be the three commonly used measures to assess the financial performance of banks (Keisidou et al. (2013). The above measures will improve the customer experience. It has been discovered that these factors influence consumer loyalty, which finally affects sales growth and ROA.

## **Objectives and Research Methodology:**

The research has the objective to empirically establish the impact of the digitalization measures on the profitability of the public sector banks in India.

### **Methods followed:**

The sample taken for this study are the top performing ten Indian public sector banks. For the period of 10 years starting from 2012 to 2022.

The analysis is carried out by using the SPSS25 and Eviews statistical software. The statistical tools used in the paper are descriptive statistics and panel regression.

The performance of the bank is being measured by three major variables like return on asset (ROA). The other variables which measure the degree of digitalization (also taken as the independent variables of the study) are inward NEFT (INNEFT), inward RTGS (INRTGS), outward RTGS (OUTRTGS), outward RTGS (OUTRTGS), mobile banking transactions (MOBBANK), total ATM transactions (TOTALATM), total credit card transactions (TOTALCREDIT), total debit card transactions (TOTALDEBIT), and total POS (TOTALPOS).

### **The Significance and Probable Outcome of the Paper**

This study will enable the academia and industry to identify the digital means which has the highest impact on the profitability of the banks. This will help the banks to focus more on those modes of digitalization that bring more profit to the banks. The study will also confirm the degree of contribution of these digital parameters to the profitability of the banks under study.

### **Data Analysis Results of Public Sector Banks**

The proposed research model of panel regression has some pre-requisite conditions. One of the prime conditions is that the data series of the variable under study should be normally distributed. Therefore, to access the normality and other characteristics descriptive statistics of the panel data have been presented in Table – 1 below.



**Table-1**  
**Descriptive Statistics of the Variables**

	INNEFT	INRTGS	MOBBANK	OUTNEFT	OUTRTGS	ROA	TOTAL ATM	TOTAL CREDIT	TOTAL DEBIT	TOTAL POS
Mean	3184777.	80357.84	1.58E+08	2139817.	86591.12	0.099364	10553.63	28921.70	593590.4	75986.99
Median	325422.5	1430.586	6598027.	172982.7	1522.195	0.300000	6081.500	565.5399	79616.95	11868.50
Maximum	61059299	1707919.	3.63E+09	43164147	1900509.	1.310000	65617.00	1327631.	10240726	827254.0
Minimum	16121.25	44.57383	13.04000	11303.19	40.81823	-3.010000	502.0000	0.000000	7523.800	0.000000
Std. Dev.	8667392.	251358.0	4.57E+08	6714045.	269972.0	0.752678	14757.04	155368.3	1639067.	158969.2
Skewness	4.933113	5.057695	5.280848	5.278035	5.111918	-1.350439	2.542844	7.352895	5.124977	3.075097
Kurtosis	29.43788	29.58713	35.84887	30.99519	30.64185	5.151304	8.398646	57.05720	29.46714	12.22825
Jarque-Bera	3649.725	3708.819	5456.905	4102.822	3981.078	54.64642	252.1273	14384.52	3692.201	563.6835
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	3.50E+08	8839362.	1.73E+10	2.35E+08	9525023.	10.93000	1160899.	3181387.	65294948	8358569.
Sum Sq. Dev.	8.19E+15	6.89E+12	2.27E+19	4.91E+15	7.94E+12	61.75106	2.37E+10	2.63E+12	2.93E+14	2.75E+12
Observations	110	110	110	110	110	110	110	110	110	110

Source: Author's own calculation

The information provided in Table – 1 reveals that all the variables are highly skewed indicating that they are not normally distributed. To be statistically confirmed we look at the Jarque-Bera statistics and their corresponding p-values. It is observed that all the variables have p-values of the Jarque-Bera Statistics have less than 0.05. this leads to the rejection of the null hypothesis (the data series comes from a normal distribution). In this case, the alternative hypothesis is accepted and concluded that the data series does not follow normal distribution. To ensure normality subsequently the data series were converted to logarithmic values. Again, this log converted values were tested for normality by using descriptive statistics. The results of the descriptive of the log converted variables are presented in Table – 2 below.

**Table – 2**  
**Descriptive Statistics of Log Converted Variables**

	LGATM	LG CREDIT	LG DEBIT	LGINNEFT	LGINRTGS	LGMOB	LGOUTN EFT	LGOUTR TGS	LGPOS	LGROA
Mean	8.676291	7.200148	11.74463	13.10651	8.336407	14.70517	12.56399	8.407440	9.605675	-0.974640
Median	8.712936	6.361552	11.28495	12.69231	7.265796	15.69932	12.06093	7.327907	9.398934	-0.733969
Maximum	11.09159	14.09891	16.14188	17.92736	14.35079	22.01141	17.58052	14.45763	13.62587	0.270027
Minimum	6.218600	3.058707	8.925827	9.687893	3.797147	2.568022	9.332841	3.709129	3.135494	-3.912023
Std. Dev.	1.023224	2.279000	1.678503	1.910585	2.447206	4.518675	1.942371	2.450594	1.985402	0.858554
Skewness	0.480564	0.701572	0.574080	0.016437	0.040709	-0.610416	0.576002	0.837383	-0.094307	-0.242555
Kurtosis	3.162806	2.913202	2.502357	2.419544	2.414570	2.459616	2.479056	2.425879	2.973636	4.309202
Jarque-Bera	4.355419	8.728860	7.177125	6.433885	14.52868	8.169550	7.326450	14.36627	0.163216	25.97053
Probability	0.113301	0.112722	0.087638	0.060077	0.090700	0.076827	0.085650	0.078759	0.921633	0.650002
Sum	954.3920	763.2157	1291.910	1441.716	917.0048	1617.568	1382.039	924.8184	1037.413	-76.99658
Sum Sq. Dev.	114.1217	545.3531	307.0937	397.8864	652.7809	2225.608	411.2356	654.5896	421.7751	57.49496
Observations	110	110	110	110	110	110	110	110	110	110

Source: Author's own calculation

The skewness values of all the variables are very close to zero giving a preliminary confirmation of near-normal data series. Further, confirmation of the normal statistics is obtained from the Jarque-Bera statistics and their corresponding p-values. It is revealed from Table – 2 that all the p-values are greater than 0.05. This led to the acceptance of the alternative hypothesis. The acceptance of the alternative hypothesis confirms that the data are normally distributed.

Now having ensured that the data are normally distributed, we can proceed for the panel regression. In the subsequent section the results of the panel regression have been analysed.

**Table-3**  
**Hausman test with ROA as Dependent Variable**

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	21.221130	9	0.0117

Source: Author's own calculation

In this section the panel regression has been applied by using the Return on asset data of all the public sector banks as the dependent variable and the other measures of the bank digitalization as the independent variable. To choose the better regression model among the fixed effect model and random effect model of the regression model at the first test the Hausman test was run by choosing the panel random effect of the panel regression. The result of the Hausman test is presented below.

The Random effect model is the most appropriate model for panel regression, according to the null hypothesis for the Hausman Test. The Hausman Test's p-value is less than 0.05, as shown in Table 3, and this indicates that the null hypothesis is rejected. The alternative hypothesis' acceptance demonstrates that the fixed effect is in this instance the best option for this panel regression.

The outcomes of the fixed panel regression with Return on Asset as the dependent variable are shown in Table 4 below.

**Table-4**  
**Panel Regression Results with ROA as Dependent Variable**

Dependent Variable: LGROA				
Method: Panel Least Squares				
Date: 08/20/09 Time: 00:25				
Sample: 2012 2022				
Periods included: 11				
Cross-sections included: 10				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.442654	1.109573	0.398940	0.0014
LGATM	0.232784	0.232727	1.000243	0.3214
LG CREDIT	0.208450	0.055092	3.783702	0.0004
LG DEBIT	0.110043	0.182131	0.604197	0.0081
LG INNEFT	0.075267	0.310624	0.242309	0.0094
LG OUTNEFT	0.177727	0.274150	0.648283	0.0194
LG INRTGS	0.392679	0.766224	3.122689	0.0028
LG MOB	0.072035	0.038442	1.873876	0.0661
LG OUTRTGS	0.149906	0.781057	2.752561	0.0079
LG POS	0.178106	0.065520	2.718339	0.0087
Effects Specification				
R-squared	0.566887	Mean dependent var	-0.944197	
Adjusted R-squared	0.430115	S.D. dependent var	0.851066	
S.E. of regression	0.642477	Akaike info criterion	2.165345	
Sum squared resid	23.52824	Schwarz criterion	2.748028	
Log likelihood	-63.28311	Hannan-Quinn criter.	2.398213	
F-statistic	4.144744	Durbin-Watson stat	1.727614	
Prob(F-statistic)	0.000020			

Source: Author's own calculation

The data shows that, except for the variables total ATM and value of mobile banking transactions with p-values more than 0.05, all independent variables are significant in affecting the dependent variable. Inward RTGS values have the greatest impact on the dependent variable (39%) followed by total credit card transactions (20%) and total POS transactions (17 percent). The dependent and independent variables have a substantial overall association, as indicated by the F-statistics p-value of 0.000. In other words, the model has value and is trustworthy. The r-square result reveals a 56 percent overall influence of all variables on the dependent variable. It is concluded that public sector banks' Return on Assets is impacted by digitalization measures to the tune of 56%.

**The equation of the above regression model has been presented below.**

$$\begin{aligned} \text{LGROA} = & 0.442653520919 + 0.232783563505 * \text{LGATM} + 0.208450211935 * \\ & \text{LGCREDIT} + 0.110043224369 * \text{LGDEBIT} + 0.0752670393389 * \text{LGINNEFT} + \\ & 0.177726691634 * \text{LGOUTNEFT} + 0.39267869887 * \text{LGINRTGS} + \\ & 0.0720350172476 * \text{LGMOB} + 0.14990600009 * \text{LGOUTRTGS} + \\ & 0.178105502288 * \text{LGPOS} + [\text{CX}=\text{F}] \end{aligned}$$

## **Conclusions**

The banks selected for this article represent the top ten public sector banks by considering their profitability. The results of the panel regression confirm that the digitalization component having the highest impact on the ROA are inward RTGS values (39%) followed by total credit card transactions (20%) and total POS transactions (17%). Therefore, the banks should focus more on the improvement of these services. The overall impact of all the digital parameters of the study on the ROA of the selected public sector banks is to the extent of 56%. The other unexplained parts of the variances are the subject matter of further study.

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# Expert Interview

## The Role of HR Executive as a Transformational Leader

### Introduction

In a digitally fastened world, where workplaces are fast transforming, there needs a new eye to look upon as an HR leader and expert. HR dynamics are changing frantically, thereby exfoliating a new leadership style so as to meet the changing demands. From the People Manager, HR has to evolve and enact the role of a **People Leader-More of a Listening person and an Empathetic persona**. Therefore, in the present times, *HR Leaders should be Transformational*, where they can transform the mindset of the people and curate a new work climate-with the changed practices, processes and strategies - Aiming for a Leaderless Culture. Keeping this in mind, here is an Exclusive Expert Interview with **Dr. Simanta Mohanty, Head of HR, Milk Mantra** which was jointly done by Prof. Abhipsa Mishra and Prof. Abhijit Mohanty of ASTHA School of Management.



### Background of the Expert:

#### Professional Background of the Expert

Currently, the Head-HR for Milk Mantra ([www.milkmantra.com](http://www.milkmantra.com)) where I handle the entire gamut of HR responsibilities for the mid-sized dairy company located in the east coast of India. Have set into motion a culture of continuous learning and established the Milk Mantra Learning Academy as a training and certification body within the company.

- Fully cued into developing collaboration with and within teams and serving as an internal counsellor to the senior management team; have been a member of strategic and leadership teams for the past 15 years.

- Skilled in government relations, project management, team building and leadership, mentoring and coaching, performance management, community relations and consultation, project delivery and monitoring
- An experienced management professional who has worked in Project Management, Human Resource, Corporate Affairs, Communication and External Affairs, across sectors – non-profit, profit, academia and the government – enabling a gathering of best practices from all sectors;
- Career track includes Program Support Manager of the non-profit CARE-India, Chief Consultant with Ministry of Education, Government of India, Lead of the State Mission Management Unit for NULM in Odisha, leadership HR roles in Wipro and IBM;
- Worked with CARE in Sri Lanka for program management inputs; Served in Sri Lanka and lead a major recruitment drive to scale up the CARE Sri Lanka mission 20
- Interests lie in programs of empowerment of disadvantaged populations with livelihood skills and stimuli, emphasis on involvement of women and gender equality, and raising the theme of climate change to the centre of developmental planning.

**Prof. Abhipsa: Sir, could you share some of the enlightening moments experienced in your professional journey?**

**Expert :** I have a rich experience of 33 years in my professional career. I have diversified exposure in private, Government and non-profit organisations across the globe. I started my career as a management trainee (administration) at SAIL. Subsequently, I also worked in the non-profit organisation CARE International. Where I dealt with matters relating to infant health, maternity health, HIV AIDS, livelihoods, girls' education and many other poverty-related aspects. I also went to Sri Lanka post Tsunami where I played an instrumental role in disaster management. And there is how I



advocated for resilience building and a community service attitude of the management towards people. I also served for many years in IT sectors with Wipro and IBM. Now, I am associated with Odisha's most-prized dairy Company, Milk Mantra. as Head of HR.

**Prof. Abhijit: What HR interventions and initiatives have you taken in the HR department so far?**

**Expert :** Although, I am a front-runner in implementing many HR strategies some of the most notable initiatives in the field of HR were "Wipro@home". It is a family engagement program at Wipro to give a home-like feeling to the family members of the Employees with the objective of shaping positive perceptions about night shifts at the workplace. Similarly, at IBM I devised an innovative program "Voice of Employee Clinic" (VoCE) that enabled the communication flow between the senior leadership and the lower-level force in a one-on-one setting to foster employee engagement. In this program, they are free to talk whatever for one hour with their seniors. It was a great success and it is followed in all the IBM offices around the globe. At Milk Mantra I architected an innovative initiative i.e., "make it happen". This program has a unique objective to continuously nurture and develop a small cohort of 40 high-potential employees for their fast-tracked performance and growth.

**Prof. Abhipsa: What are your values and ideologies to better manage the people?**

**Expert :** As a leader, I don't seek to lead. I don't separate myself from people I am very empathetic, caring and people friendly. that's how I win the trust of my people and manage them better.

**Prof. Abhijit: What is your take in this age of digitalisation and AI?**

**Expert :** Yes, I believe that AI plays a very significant role more so in the supply chains. At Milk Mantra we are planning to bring people who will digitalise our entire supply chain. In the HR department, we

have already implemented HRMS to keep track of our personnel records relating to their personal inventory, performance, leaves, holidays, communication etc.

**Prof. Abhipsa: Sir, in this war for talent when we are facing the Talent crunch, we are left with two options "make in Talent or buy out Talent". Sir, which one would you vote for?**

**Expert :** We are prepared for both. This year we have established Milk Mantra Learning Academy to impart in-house training for our employees to update their skills. on the other hand, buying talent is always welcoming at Milk Mantra believing that there should be no rigidity. Agile and adaptive people are in need of the hour.

**Prof. Abhijit: HR seems at the forefront of many challenges in an organisation. What are the biggest concerns that you have explored and you have faced within a HR department?**

**Expert :** I have a natural ability to get along with people. Getting people and attracting people is the biggest challenge for every company and organisation. Attracting people is not through advertisements or any recruiting ads. Every HR leader must have experience in public relations, and communication, and must be a forward-looking, confident, inclusive and progressive person. So, he must have the right knowledge of managing the image of the company. I think these are some of the key ways to tackle any challenges in an organisation.

**Prof. Abhipsa: What skills do you look for when hiring a potential talent for Milk Mantra?**

**Expert :** We look for a person with basic knowledge, technical skills, strong ethics and a person of moral values. For lower-end jobs tacit knowledge is a must. Whereas, for high-end profile jobs for example Sales head and other managerial positions, a candidate should have a great deal of market understanding, analytical skills, strategic thinking, and an experimental intent.

**Prof. Abhijit: Sir, could you please tell us about your leadership Mantra at Milk Mantra?**

**Expert :** I don't seek to lead. If you live like an ordinary person, you will never suffer. I always believe we are all one team you don't need to be led; we are all Champs. My role is to streamline the process.

**Prof. Abhipsa: An HR has to focus on managing the team and fostering Team Spirit. how have you been able to create an effective team?**

**Expert :** At Milk Mantra we organise off-site engagement activities. We select a small proportion of employees approximately 40 in number and we take them to luxurious hotels where they chill and relax for 2 days. In my opinion, communication is the backbone for building a great team. I personally vouch for open and continuous interaction with people.

**Prof. Abhipsa & Prof. Abhijit : Thank you Sir for sharing your experience and insights!**

**-00-**

# **Diverse Techniques in Evaluating Mutual Fund Performance: A Comparative Study of Risk and Return**

**\*Mr. Nihar Ranjan Nayak**

**\*\*Dr. Pallavi Mishra**

## **Introduction**

People in India usually like to save money. People save their money in five ways ; 1. Saving A/C ,2. Fixed deposit, 3.Gold and Jewellery, 4.RealEstate, 5.Stock Market. In every investment, there are 3 things Return, Risk, Time. Return means how much profit you can earn through investment (they are usually in%) suppose if your inflation is 4% then profit should be more than 4%. Risk means how risky is it to invest, what is the chance of losing all our money in that investment. and, Time means for how long you are investing. If you want more return on investment, then you have to take more risk and have to invest for longer period. Mutual fund is a special kind of investment through which you can invest on different types together (means you can do a diversified investment by investing at one place) through mutual funds we can invest in gold, real estate, share market, debt funds. In simple words, people give their money to Asset Management Company (AMCs are the companies that manage the funds), and that company invests all money collectively at different places. Asset Management Companies also appoint experts. For every mutual scheme fund managers are appointed. To manage the funds of investors, AMC charge some fees which is known as expense ratio e.g., ICICI prudential, SBI mutual funds, Motilal Oswal, etc. are some of the asset management companies. SBI mutual fund has more than 70+ mutual fund schemes such as magnum balanced fund, SBI blue chip fund, SBI regular saving fund etc. In mutual funds, money is invested mainly in two classes Debt and Equity.

## **Types of Mutual Fund**

Mutualfundhas3boardcategories

### **A. On the basis of Flexibility:**

- i. Open ended
- ii. Close ended

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**\*Nihar Ranjan Nayak**, Student, Department of Business Administration, Utkal University, Bhubaneswar

**\*\*Dr. Pallavi Mishra**, Assistant Professor, Department of Business Administration, Utkal University, Bhubaneswar

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- iii. Interval fund
- B. On the basis of Dividend:**
  - i. Growth Funds
  - ii. Dividend funds
- C. On the basis of principle Investment:**
  - i. Equity
  - ii. Debt
  - iii. Hybrid
  - iv. Solution oriented scheme
  - v. Other schemes

## **Review of Literature**

The present study deals with the review of literature on 'Evaluating the performance of Indian mutual fund schemes'. Review of some of the studies is presented in the following discussion.

Ms. Saranya K, Mr Parthiban (2018), conducted a research on performance evaluation of Indian equity mutual fund schemes. This paper examines the performance of selected open-ended Scheme. The performance of this fund is analyzed using three-year NAV and to evaluate the performance these statistical tools were used (Sharpe ratio, Treynor ratio, Jensen alpha). Finding of the study reveal that based on the Sharpe method Kotak Mahindra equity saving fund secured 1st position, and according to the Treynor HDFC mutual fund secured 1st position, and according to Jensen alpha Axis mutual fund secured 1st position. According to this research, it says that return is not only the factor investor should look upon. In order to have good return investors should have the proper information of the fund and their asset management company where they are investing. Aashak Thakkar (2017) attempts to study the performance of selected equity mutual fund by using various risk and return measures i.e., Sharpe ratio, Treynor ratio, Jensen alpha and in his research, it was concluded that none of the selected fund shows consistent return. Birla Sun Life growth scheme has shown good performance in all three

measures, while Tata equity performed well as per the Sharpe measure but didn't perform in other measures.

Vikas Choudhary and Preeti Sehgal Chawala (2014) attempt to analyze the performance of growth-oriented equity diversified scheme on the basis of risk and return by using various financial test like average return, Sharpe ratio, Treynor ratio, standard deviation, beta and co-efficient of determination. The entire selected fund had beta less than one, and positive which implies that they were less riskier than the market portfolio and in terms of coefficient of determination. All the selected 8 funds were near to one which indicates higher diversification. Seven out of eight selected funds have shown superior performance under the Sharpe as well as Treynor ratio.

Geeta Rani and Vijay Singh Hooda (2016) evaluate the performance of selected mutual fund schemes by using Sharpe, Jensen, and Treynor ratio. In the study, it was found that according to Sharpe, Jensen, Treynor ratio Tata equity P/E fund, Sundaram Rural India fund, Birla Sun Life India was found to be top performing fund.

Vikas Kumar and Ankit Srivastav (2016) evaluated the performance of 20 open-ended equity schemes of private sector mutual funds. The period of study was from 1st April 2006 till 31 March 2015. The research analyzed the data with the help of various statistical tools. By comparing overall performance ranking of all schemes, it has been seen that Reliance pharma fund has been the best.

Ratnarajan and P. Madhav (2016) analyzed the risk and return relationship and market volatility of the selected mutual fund and examined the performance of selected schemes from March 2-12 to 2016 by using Sharpe and Treynor model. The author investigates the performance of 30 open ended diversification equity schemes performance of reliance regular saving fund equity, SBI contra fund, HDFC equity fund was not found as good. It was found that the Sharpe ratio was positive for all selected scheme.

R. Narayanasamy V. Rathnamani (2013) evaluates the performance of selected equity large cap mutual fund scheme in term of risk and return relationship. The

performance analyses of the selected five equity of large cap fund and the study conclude that all the fund has performed well in high volatile market movement expect Reliance vision.

## **Research Objectives**

The present study attempts to provide an idea about the performance of selected mutual fund schemes prior and during the COVID-19 outbreak. The study has concentrated on open ended schemes & direct growth Plan. This study will help the investor to understand the performance of various schemes prior and during the COVID-19 pandemic. The objectives are mentioned next.

1. To study the performance evaluation of selected (open ended) large cap mutual fund scheme before and during COVID-19 pandemic
2. To examine the performance of selected schemes by using portfolio evaluation model (Sharpe and Treynor)
3. To understand the Market return & Fund return
4. To know, which scheme has given highest return within before & during COVID-19 out break.

### **1. Research Hypotheses**

There is no significant relationship between Index Return and Fund Return.

### **2. Research Methodology**

#### **Data Collection Plan**

All the data required for this study have been obtained mainly from Secondary Source. Secondary Data have been collected from various websites like BSE, NSE, Association of Mutual Fund etc.

#### **Sampling Plan**

There are various schemes available in the mutual fund like debt, balanced, equity etc. But out of this scheme we have selected Equity Growth Scheme. 10 equity mutual funds have been selected (open ended- large cap growth direct plan) on the basis of AUM (Asset Under Management).

## Data Analysis Tool

Techniques used: The tool used for the present study is Average Return, Beta, Standard Deviation, Sharpe Ratio, Treynor Ratio, Jensen alpha.

The following statistical tools used are as follow:

**Table - 1**

No.	Technique	Formula	Result
1.	Rate of Return	Closing Price/Opening Price-1 Or Closing price-opening price/Opening price*100	AVERAGE Return
2.	Standard Deviation	$\frac{\sqrt{\sum (R-R)^2}}{N}$	Variance and total Risk
3.	Beta	Covariance/ $\sigma m^2$	Measures the level of volatility associated with the fund compared to the benchmark
4.	Sharpe's Ratio	$R_i - R_f / SD$	Measures the excess return earned on fund per unit of total risk
5.	Treynor's Ratio	$R_i - R_f / \beta$	Measures the excess returns earned per unit of systematic risk
6.	Jensen alpha	$RP - [R_f + \beta (R_m - R_f)]$	The Jensen measure is the difference between Actual Return and expected return.

## Limitations

- The study is based on the past data. The expected returns, standard deviation and beta are calculated using past data.
- The study is done using three indicators of portfolio evaluation i.e., Sharpe and Treynor ratio & Jensen alpha.
- The data are collected for a limited period
- Studied only open-ended direct growth plan fund
- The study has been conducted and analysed on the information available.



## Data Analysis and Interpretation

For the basic analysis of scheme regarding their returns & risk, mean return, standard deviation & beta were calculated for the year 2019 from (1-1-19 to 31-12-19) assessing their performance in more reliable manner. Further, for assessing their performance in more reliable manner Sharpe, Treynor & Jensen Alpha measures were applied as these techniques are considered and recommended for analyzing.

**Table - 2**

### **Mean Return, Standard Deviation & Beta of the selected Mutual Fund**

<b>Large cap fund</b>	<b>Fund house</b>	<b>MEAN</b>	<b>S.D.</b>	<b>BETA</b>
SBI Blue chip fund	SBI Mutual fund	0.03%	0.009	0.97
ICICI Prudential blue-chip fund (direct plan-growth)	ICICI Prudential mutual fund	0.02%	0.008	0.93
Axis blue chip	Axis Mutual fund	0.06%	0.008	0.85
Mirae Asset large cap fund	Mirae Asset mutual fund	0.04%	0.009	0.26
Aditya Birla sun life front line equity fund- growth-direct plan	Aditya Birla sun life mutual fund	0.02%	0.009	0.97
HDFC top100fund	HDFC Mutual fund	0.02%	0.001	1.05
Nippon India large cap fund	Nippon India mutual fund	0.02%	0.011	1.15
UTI master share	UTI mutual fund	0.03%	0.008	0.92
Franklin India blue chip Fund	Franklin Templeton mutual fund	0.01%	0.009	0.99
Canara Robeco blue chip Equity fund	Canara Robeco Mutual fund	0.05%	0.008	0.92

In this comparative analysis it is observed that Axis blue chip fund indicates high returns & low market risk among the selected funds. Franklin India blue chip fund is providing low return with high risk. In context to the beta, it is observed from the table that Out of the 10 selected schemes, 2 schemes that is HDFC top100 fund, Nippon India large cap fund are having beta more than 1 which means that they are highly risky Franklin India blue chip fund is having beta close to 1.

**Table-3**  
**Performance of the Fund Based on Sharpe Ratio(2019)**

<b>Large cap fund</b>	<b>Fund house</b>	<b>SD (daily)</b>	<b>Ri (Mean) Average return</b>	<b>Sharpe index</b>
SBI Blue chip fund	SBI mutual fund	0.0087	0.032%	0.037
ICICI Prudential blue-chip fund	ICICI prudential mutual fund	0.0083	0.024%	0.029
Axis blue chip	Axis mutual fund	0.0079	0.058%	0.073
Mirae asset large cap fund	Mirae asset mutual fund	0.0086	0.037%	0.043
Aditya Birlasun life frontline equity fund	Aditya Birla sun life mutual fund	0.0086	0.017%	0.019
HDFC Top 100 fund	HDFC mutual fund	0.0096	0.016%	0.016
Nippon India large cap fund	Nippon India mutual fund	0.0107	0.016%	0.015
UTI Master share	UTI mutual fund	0.0083	0.028%	0.034
Franklin India blue chip	Franklin Templeton mutual fund	0.0092	0.011%	0.012
Canara Robeco blue-chip equity fund	Canara robeco mutual fund	0.0083	0.048%	0.058

Standard deviation is the variation in the return of the specific funds. Standard deviation helps to know how risky or volatile your investment is. It indicates stability of a mutual fund. Higher standard deviation means higher the volatility. Such figure is obtained in course of field work. Rate of risk-free return is taken (Interest rate offered by RBI on bonds) @7%.

$$\text{Sharpe Index} = \frac{\text{RP} - \text{RF}}{\text{SD}}$$

**Interpretation:**

Sharpe Ratio is important measure that evaluates the return that a fund has generated relative to its risk taken. This ratio helps an investor to know whether it is safe to invest in this fund by taking quantum of risk. Fund with higher Sharpe ratio is better because it implies that it has generated higher returns for every unit of risk

taken.

As per Sharpe Ratio, Axis blue chip fund is the best performer and placed in the 1<sup>st</sup> position according to the ranking. In simple words for every 0.02% of Total risk axis scheme provide the returns of 0.073 % (Risk is low and returns are high). Canara Robeco blue-chip equity fund and Mirae asset large cap fund occupied 2<sup>nd</sup> and 3<sup>rd</sup> rank respectively. In the study, the Sharpe ratio is positive for all schemes which show that fund is providing return greater than risk free rate.

**Table-4**  
**Performance of the Fund Based on Treynor Ratio(2019)**

Large cap fund	Fund house	Beta	Ri	Treynor index
SBI Blue chip fund	SBI mutual fund	0.97	0.032%	0.00033
ICICI Prudential blue-chip fund	ICICI prudential Mutual fund	0.93	0.024%	0.00026
Axis blue chip	Axis mutual fund	0.85	0.058%	0.00068
Mirae asset large Cap fund	Mirae asset Mutual fund	0.26	0.037%	0.00145
Aditya Birla sun Life front line equity fund	Aditya Birla sun Life mutual fund	0.97	0.017%	0.00017
HDFCTop100 fund	HDFC mutual fund	1.05	0.016%	0.00015
Nippon India Largecap fund	Nippon India Mutual fund	1.15	0.016%	0.00014
UTI Mastershare	UTI mutual fund	0.92	0.028%	0.00030
Franklin India bluechip	Franklin Templeton mutual fund	0.99	0.011%	0.00012
Canararobcco blue-chip equity fund	Canara robeco mutual fund	0.92	0.048%	0.00053

**Interpretation:**

Treynor ratio, it measures the excess return per unit of risk taken. It uses beta (market risk) instead of total risk. Treynor ratio relates excess return over the risk-free rate to the additional risk taken.

As per the Treynor index method, calculation is based on systematic risk. Mirae asset large cap fund is the best performer and placed in the 1<sup>st</sup> position according to the ranking it has

beta less than 1 which is 0.26 means it is less volatile and risky. Axis blue chip fund and Canara Robeco blue-chip fund occupied 2<sup>nd</sup> and 3<sup>rd</sup> position respectively. HDFC & Nippon are having beta more than 1 that means they are more volatile and riskier and Franklin has low Treynor ratio than other selected schemes.

**Table-5**  
**Performance of the Fund Based on Jensen Alpha (2019)**

Large cap fund	Fund house	Rp	Rm	Beta	Rf	JENSEN ALPHA
SBI Bluechip fund	SBI Mutual fund	0.05	0.02	0.97	0.02%	0.00011
ICICI Prudential blue-chip fund (direct plan-growth)	ICICI Prudential mutual fund	0.04	0.02	0.93	0.02%	0.00001
Axis bluechip	Axis Mutual fund	0.08	0.03	0.85	0.02%	0.00037
Mirae asset large cap fund	Mirae asset mutual fund	0.06	0.02	0.26	0.02%	0.00118
Aditya Birla sun life frontline equity fund- growth-direct plan	Aditya Birla sun life mutual fund	0.04	0.03	0.97	0.02%	-0.00013
HDFC top 100 fund	HDFC Mutual fund	0.03	0.02	1.05	0.02%	-0.00010
Nippon India large cap fund	Nippon India mutual fund	0.04	0.02	1.15	0.02%	-0.00008
UTI master share	UTI mutual fund	0.05	0.02	0.92	0.02%	0.00008
Franklin India blue chip	Franklin Templeton Mutual fund	0.03	0.03	0.99	0.02%	-0.00019
Canara Robeco blue chip equity fund	Canara Robeco mutual fund	0.07	0.02	0.92	0.02%	0.00030

**Interpretation:**

The Ratio in the compared schemes some are positive and few have negative alpha. Funds with negative alpha means that Actual return was less than expected Return. Alpha measure difference between fund return & bench mark return. A positive alpha means the fund has beaten the benchmarks. A negative alpha shows underperformance of the fund.

Out of 10 mutual schemes 6 mutual funds has showed positive alpha which indicates superior performance of the scheme and remaining 4 has negative alpha. Among the entire scheme Axis mutual fund has higher positive alpha that mean

fund has over performed the benchmark index by 0.037%.

**Ho=Index Return and Fund Return are not significantly related.**

To study the relationship between index, return and fund's return ,Pearson Correlation is calculated for the year 2019 between Index Return And individual fund return.

**Table-6**  
**Pearson Correlation between Index Return and Fund Return (2019)**

<b>SCHEME</b>	<b>Correlation and p-value</b>	<b>S&amp;PBSE100 TRI (Benchmark)</b>
SBI Blue chip	Pearson Correlation	.975**
	Sig.(2-tailed)	<.001
	N	243
NIPPON India Large Cap Fund	Pearson Correlation	.947**
	Sig.(2-tailed)	<.001
	N	243
UTI Master share	Pearson Correlation	.981**
	Sig.(2-tailed)	<.001
	N	243
Canara Robeco Blue-chip fund	Pearson Correlation	.974**
	Sig.(2-tailed)	<.001
	N	243
<b>SCHEME</b>	<b>Correlation and p-value</b>	<b>NIFTY100TRI (Benchmark)</b>
ICICI Prudential blue-chip fund	Pearson Correlation	.974**
	Sig.(2-tailed)	<.001
	N	243
Mirae Asset large cap fund	Pearson Correlation	.258**
	Sig.(2-tailed)	<.001
	N	244
HDFC Top100 fund	Pearson Correlation	.951**
	Sig.(2-tailed)	<.001
	N	243
FRANKLIN BLUECHIP	Pearson Correlation	.940**
	Sig.(2-tailed)	<.001
	N	243
<b>SCHEME</b>	<b>Correlation and p-value</b>	<b>NIFTY50 (Benchmark)</b>
AXISBLUECHIPFUND	Pearson Correlation	.939**

	Sig.(2-tailed)	<.001
	N	243
ADITIYABIRLA FUND	Pearson Correlation	.976**
	Sig.(2-tailed)	<.001
	N	243

**Interpretation:**

Table 5 shows the Pearson correlation coefficient and Sig. (2- tailed) value i.e., p-value between all fund index (S&P bse100, Nifty100, Nifty50) Return and selected mutual fund return over the period of 1 year (2019). There is very strong relationship between UTI Master fund and Sensex return with Pearson correlation 0.981 and p- value obtained is <.001(p<0.005).

In the case of Aditya Birla sun life growth fund and Nifty 50 the relationship is very strong with correlation of 0.976 and p-value is <0.001(p<0.005). In case of SBI Blue chip fund the relationship is very strong with correlation of 0.975 and p- value is<0.001(p<0.005).

All the fund has shown strong relationship with their benchmark index and the p-value obtained from all the fund is less than the 0.005, which state that the fund return have significant relationship with the benchmark index return and hence, the hypothesis i.e., “Index Return and fund return are not significantly related” is REJECTED.

**Calculation for the year 2020.**

For the basic analysis of scheme regarding their return& risk, mean return, standard deviation & beta were calculated for the year 2020 (1-1-20 to 31-12-20) & used to extract their performance. Further, for assessing their performance in more reliable manner Sharpe, Treynor& Jensen measure were applied as these techniques are considered and recommended for analyzing.

**Table -7**

**Mean return, Standard deviation& beta of the selected mutual fund (2020)**

Large cap fund	Fund house	Mean	Beta	S.D.
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Large cap fund	Fund house	Mean	Beta	S.D.
SBI Blue Chip Fund	SBI Mutual Fund	0.06	0.96	0.019
ICICI Prudential Blue chip	ICICI Prudential Mutual Fund	0.06	0.96	0.019
Axis Blue Chip	Axis Mutual Fund	0.07	0.79	0.016
Mirae Asset Large Cap Fund	Mirae Asset Mutual Fund	0.06	0.98	0.019
Aditya Birla Sun Life Front Line Equity Fund	Aditya Birla Sun Life Mutual Fund	0.06	0.92	0.018
HDFC Top100Fund	HDFC Mutual Fund	0.03	0.98	0.019
Nippon India Large Cap Fund	Nippon India Mutual Fund	0.03	0.97	0.019
UTI Master Share	UTI Mutual Fund	0.07	0.92	0.018
Franklin India Blue Chip	Franklin Templeton Mutual Fund	0.06	0.95	0.019
Canara Robeco Blue-Chip Equity Fund	Canara Robeco Mutual Fund	0.09	0.88	0.017

### Interpretation:

In this analysis it is observed that Canara Robeco blue-chip indicates high return among the selected mutual funds scheme. HDFC top 100 & Nippon India Large cap fund has low mean return with high risk. In the context of beta, the entire selected scheme has beta less than 1 which indicates they belong to low-risk category.

Axis blue chip fund and Canara Robeco blue- chip fund has low beta but Canara Robeco blue-chip fund yield higher returns than other funds. Overall Canara Robeco blue-chip fund is best in all the terms.

**Table-8**  
**Performance of the Fund Based on the Sharpe Ratio (2020)**

Large cap fund	Fund House	SD	Ri(mean)	Sharpeindex
SBI Blue Chip Fund	SBI Mutual Fund	0.019	0.06%	0.034
ICICI Prudential Blue-Chip Fund	ICICI Prudential Mutual Fund	0.019	0.06%	0.029
Axis Blue Chip	Axis Mutual Fund	0.016	0.07%	0.046

Large cap fund	Fund House	SD	Ri(mean)	Sharpeindex
Mirae Asset Large Cap Fund	Mirae Asset Mutual Fund	0.019	0.06%	0.030
Aditya Birla Sun Life Frontline Equity Fund	Aditya Birla Sun Life Mutual Fund	0.018	0.06%	0.031
HDFC Top 100 Fund	HDFC Mutual Fund	0.019	0.03%	0.014
Nippon India Large Cap Fund	Nippon India Mutual Fund	0.019	0.03%	0.013
UTI Master Share	UTI Mutual Fund	0.018	0.07%	0.040
Franklin India Blue Chip	Franklin Templeton Mutual Fund	0.019	0.06%	0.029
Canara Robeco Blue-Chip Equity Fund	Canara Robeco Mutual Fund	0.017	0.09%	0.050

- Rf= Risk free rate of return
- Ri= Rate of return on security
- Standard deviation is the variation in the return of the respective funds such figure is obtained in the course of field work.
- Sharpe ratio tells us the Correlation between the Risk and Return. It tells us the Return generated per unit for the risk taken.
- Risk free rate is 6%

$$\text{SHARPE INDEX} = \text{RP} - (\text{Rf} * \text{SD})$$

#### **Interpretation:**

A High and Positive Sharpe ratio shows a superior risk adjusted performance of the fund while low and negative Sharpe ratio shows is an indication of unfavorable performance. As per the Sharpe index method during the outbreak of COVID19 pandemic, out of the 10 selected funds, the only fund with low Sharpe ratio is Nippon India large cap fund& HDFC Top100 fund. Canara Robeco blue chip fund has occupied 1st Position and its average return is 0.09% which high among the entire fund. Axis blue chip fund has secured 2nd position and UTI master share has secured 3rd position respectively.



**Table-9**  
**Performance of The Fund Based on Treynor Ratio (2020)**

Large cap fund	Fund house	Beta	Ri (Excess mean return) (Rp-Rf)	Treynor index
SBI Blue Chip Fund	SBI Mutual Fund	0.96	0.06%	0.00067
ICICI Prudential Blue-Chip Fund	ICICI Prudential Mutual Fund	0.96	0.06%	0.00056
Axis Blue Chip	Axis Mutual Fund	0.79	0.07%	0.00093
Mirae Asset Large Cap Fund	Mirae Asset Mutual Fund	0.98	0.06%	0.00058
Aditya Birla Sun Life Frontline Equity Fund	Aditya Birla Sun Life Mutual Fund	0.92	0.06%	0.00061
HDFC Top 100 Fund	HDFC Mutual Fund	0.98	0.03%	0.00027
Nippon India Large Cap Fund	Nippon India Mutual Fund	0.97	0.03%	0.00026
UTI Master Share	UTI Mutual Fund	0.92	0.07%	0.00079
Franklin India Blue Chip	Franklin Templeton Mutual Fund	0.95	0.06%	0.00059
Canara Robeco Blue-Chip Equity Fund	Canara Robeco Mutual Fund	0.88	0.09%	0.00098

All the funds are having beta less than one, which shows that they are less risky compared to their benchmark index during this period. Canara Robeco fund with high positive Treynor ratio shows that the investment has added value in relation to its risk. As Treynor ratio is high it reflects that an investor has generated high returns for market risk he has taken. On the other hand, Nippon India Large cap fund, HDFC top 100 funds has low Treynor ratio compare to the all-other schemes.

**Table-10**  
**Performance of the Fund Based on Jensen Alpha**

Large Cap Fund	Rp	Beta	Rf	Rm	Jensen index
SBI BlueChipFund	0.08%	0.96	0.02%	0.06%	0.000031
ICICI PrudentialBlue-Chip Fund	0.07%	0.96	0.02%	0.06%	-0.000079

Axis Blue Chip	0.08%	0.79	0.02%	0.06%	0.000115
Mirae Asset Large Cap Fund	0.07%	0.98	0.02%	0.06%	-0.000021
Aditya Birla Sun Life Front line Equity	0.07%	0.92	0.02%	0.06%	-0.000013
HDFCTop100Fund	0.04%	0.98	0.02%	0.06%	-0.000337
Nippon India Large Cap Fund	0.04%	0.97	0.02%	0.06%	-0.000362
UTI MasterShare	0.09%	0.92	0.02%	0.06%	0.000162
Franklin India Blue Chip	0.07%	0.95	0.02%	0.06%	-0.000020
Canara Robcco Blue-Chip EquityFund	0.10%	0.88	0.02%	0.06%	0.000357

### Interpretation:

In Jensen measure reveal that out of 10 Selected mutual fund schemes 6 schemes have under performed which means that Fund manager fails to deliver higher returns than benchmark. Positive value indicates superior performance of the scheme and also fund manager better investment decision. Among all the selected funds highest value of Jensen ratio is found in Canara Robeco Implies that fund return has over performed the benchmark index by 0.036%.

$H_0$  = Index Return and Fund Return are not significantly related.

To study the relationship between index, return and fund's Return, Pearson correlation is calculated between Index return and individual fund's return for the year 2020.

**Table-11**

### Pearson Correlation Between Index Return and fund return for the year (2020)

SCHEME	Correlation and p-value	S&PBSE100
1. SBI	Pearson Correlation	.990**
	Sig.(2-tailed)	<.001
	N	249
2. NIPPON	Pearson Correlation	.971**
	Sig.(2-tailed)	<.001
	N	249

3.UTI	Pearson Correlation	.992**
	Sig.(2-tailed)	<.001
	N	249
4. CANARA	Pearson Correlation	.993**
	Sig.(2-tailed)	<.001
	N	249
<b>SCHEME</b>	<b>Correlation and p-value</b>	<b>NIFTY100TRI</b>
5.ICICI	Pearson Correlation	.993**
	Sig.(2-tailed)	<.001
	N	249
6.MIRAEELARGECAP	Pearson Correlation	.993**
	Sig.(2-tailed)	<.001
	N	249
7HDFC	Pearson Correlation	.975**
	Sig.(2-tailed)	<.001
	N	249
8. FRANKLIN	Pearson Correlation	.948**
	Sig. (2-tailed)	<.001
	N	249
<b>SCHEME</b>	<b>Correlation and p-value</b>	<b>NIFTY50</b>
9 AXIS	Pearson Correlation	.979**
	Sig. (2-tailed)	<.001
	N	249
10.ADITYA	Pearson Correlation	.990**
	Sig. (2-tailed)	<.001
	N	249

### Interpretation

Table 14 shows the Pearson correlation coefficient and sig.(2tailed) value i.e. p-value between benchmark index return and selected mutual funds returns over 1 year. There is very strong relationship between Canara Robeco blue chip fund and sensx return with Pearson correlation 0.993 and p –value obtained is<.001(p<0.05),

In ICICI and Mirae asset Large cap fund and Nifty return the relationship strong with the correlation of 0.993 and p-value is  $<.001(p<0.05)$ , In the case of UTI master share the relationship is very strong with correlation of 0.992 and p value is  $<.001(p<0.05)$ , In the case of SBI blue chip fund & Aditya Birla blue chip fund there is strong relationship with the correlation of 0.990 and p-value is  $<.001(P<0.05)$ , Axis blue chip fund also shows a strong relationship with the correlation of 0.979 and p-value is  $<.001(P<0.05)$ , Nippon India large cap fund also have strong correlation of 0.971 and p-value is  $<.001(p<0.05)$ . All the funds have shown strong Relationship with benchmark and p-value obtained from all the funds is then value 0.05 which state that the fund return have significant relationship with the benchmark index and hence this hypothesis i.e., Index return and fund return are not significantly related and is 'REJECTED'.

**Table-12**  
**Ranking of the fund based on the performance measure**

Fund's Name	Sharpe's Measure 2019	Sharpe's Measure 2020	Treynor's Measure 2019	Treynor's Measure 2020	Jensen's Measure 2019	Jensen's Measure 2020
ICICI Prudential Blue-chip Fund	6 <sup>th</sup>	8 <sup>th</sup>	6 <sup>th</sup>	8 <sup>th</sup>	6 <sup>th</sup>	8 <sup>th</sup>
Mirae Asset LargeCap Fund	3 <sup>rd</sup>	6 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>	1 <sup>st</sup>	7 <sup>th</sup>
HDFC Top 100Fund	8 <sup>th</sup>	9 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>
Franklin India Blue-chip Fund	10 <sup>th</sup>	7 <sup>th</sup>	10 <sup>th</sup>	6 <sup>th</sup>	10 <sup>th</sup>	6 <sup>th</sup>
AxisBlue Chip Fund	1 <sup>st</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
Aditya Birla Sun Life Frontline Equity Fund	7 <sup>th</sup>	5 <sup>th</sup>	7 <sup>th</sup>	5 <sup>th</sup>	9 <sup>th</sup>	5 <sup>th</sup>
SBIBlue ChipFund	4 <sup>th</sup>	4 <sup>th</sup>	4 <sup>th</sup>	4 <sup>th</sup>	4 <sup>th</sup>	4 <sup>th</sup>
Nippon India LargeCap	9 <sup>th</sup>	10 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	7 <sup>th</sup>	10 <sup>th</sup>
UTI Master Card	5 <sup>th</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	2 <sup>nd</sup>
Canara Robeco Blue-chip Fund	2 <sup>nd</sup>	1 <sup>st</sup>	3 <sup>rd</sup>	1 <sup>st</sup>	3 <sup>rd</sup>	1 <sup>st</sup>

**Interpretation:**

If we are examining a well-diversified portfolio, the ranking should be similar in three measures. In 2019, the funds that are having similar ranking SBI Blue-chip fund, UTI master share, HDFC top 100 fund, Franklin India blue-chip. So, if we compare only Sharpe & Treynor measure, out of 10 funds 7 funds are having similar ranking. And if we compare Treynor and Jensen measure then out of 10 funds 8 funds are having similar ranking.

So, in 2020 the funds with similar ranking in all the three measures are Canara Robeco blue-chip fund, SBI Blue-chip fund, Aditya Birla frontline equity fund, ICICI Prudential blue-chip fund, HDFC Top100 fund, Nippon India Large cap fund. If we compare only Sharpe & Treynor then out of 10 mutual fund 8 funds are having similar rankings. And if we compare only Treynor& Jensen Out of 10 mutual fund 8 funds are having similar rankings. And the only fund out of 10 fund who has similar ranking in both the period that is pre covid and post Covid-19 is SBI Blue chip fund. It has secured 4th position in both years.

**Major Findings**

**SHARPE ANALYSIS:** The best performer in 2019 was Axis blue chip fund which was having higher Sharpe Ratio than all other selected schemes and low standard deviation among all selected schemes low standard deviation means that returns will be less volatile. Whereas, Franklin India Large cap fund had a low performance and higher standard deviation. In the year 2020 Canara Robeco Blue-chip equity fund was the best performer. Low performance was observed in Nippon India large cap fund. In 2019 & 2020 all the Sharpe ratio were positive that means fund were providing returns greater than risk free rate.

**TREYNOR ANALYSIS:** All the fund in 2019 were having beta less than 1 expect 2 funds that is HDFC Top100 fund, Nippon India large cap fund, Franklin India blue-chip fund was having beta close to1. Mirae Asset large cap fund secured 1st position as it was having low beta and high Treynor ratio. In 2020 again, Canara Robeco blue-chip was the best performer. Beta in 2020 was less than 1 which means that they are less volatile.

**JENSEN ALPHA ANALYSIS:** Positive alpha indicates that Actual Return is higher than expected return. In 2019, Out of 10 mutual fund scheme 6 funds had outperformed which means Actual return was higher than expected returns. 4 mutual fund schemes underperformed the benchmark. In 2020 Out of 10 mutual fund 6 schemes had underperformed the benchmark which means Actual returns were lower than expected returns.

## **Conclusion**

Mutual fund is one of the best investment options to the investor to get better returns with a certain level of risk. This study will help the investor to understand the performance of mutual fund before and during COVID-19. Daily closing NAV were used to calculate the returns from the fund schemes. NIFTY50, NIFTY100 TRI, S&P BSE100 have been used for market portfolio. The historical performance of the selected schemes was evaluated on the basis of Sharpe, Treynor, Jensen measure. In 2019 Franklin India didn't perform well. And in 2020 Nippon India blue chip fund didn't perform well the reason might be unfavorable market or Wrong combination of stock picking of fund manager. Canara Robeco blue-chip large cap fund has been in 1st position in all the three measures in 2020. This scheme was the best performing large cap fund over the selected fund. After the Nifty and Sensex Fall in March no one expected bull in the market.

Definitely there would be some strategies of fund manager that they perform fared. Schemes that have performed better, their fund managers might have revisited the portfolio to analyses the company that may not survive in 2020. Out of 10 mutual funds scheme 4 schemes over performed their benchmark gave better returns to the investors even in high volatile market Expect 6 mutual fund scheme. Therefore, it is fundamental for the Investor to consider various parameters like Sharpe ratio, standard deviation, beta, Treynor ratio, etc.

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# **Stock Valuation of Startup: A Case Study of Ram's Associate Cold Storage Ltd.**

**\*Navrang Agrawal**  
**\*\*CA (Dr.) Prithvi Ranjan Parhi**  
**\*\*\*Dr. Sthitipragyan Biswal**

## **ABSTRACT**

As per the Efficient Market Hypothesis, information flow to the market results in change of stock prices. These information flows are absorbed by the market and reflected in stock prices making it either over-priced or underpriced. The state of under or over-pricing happens when the true value (intrinsic value) of a stock deviates from its market value hence providing opportunities to the investors to decide their strategies. Lots of valuation models are widely used by the investors for this purpose. However, the Discounted Cash Flow method is logically grounded and correct method as a true value of a stock is always the present value of all future cash flows generated by the stock discounted at the required rate of return. When it comes to the valuation of unlisted stocks, lack of handy information makes the valuation process a complex one. Keeping the above realities and challenges in consideration, the present work aims at estimating the true value of Ram's Associate Cold Storage Ltd. that is a start-up company. This work is a case study, where the DCF method is adopted to calculate the value of stocks by exploring the fundamentals of the company. Accordingly, the numerator in terms of forecasted cash flow using growth rate and the denominator using cost of equity are employed in the discounted cash flow valuation method. Data used for the research work is secondary in nature.

**Keywords:** True value, Market value, Stock valuation, Startup Company

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\*Navrang Agrawal, Student, ASTHA School of Management, Email: navrangagrawal123@gmail.com

\*\*CA (Dr.) Prithvi Ranjan Parhi, BAPS & Associates, Bhubaneswar, Email: prithvi.baps@gmail.com

\*\*\*Dr. Sthitipragyan Biswal, Assistant Professor, ASTHA School of Management, Bhubaneswar, Email: sthitifinance@gmail.com



## **Introduction**

The intrinsic value of an equity share depends on a multitude of factors. The earnings of the company, the growth rate and the risk exposure of the company have a direct bearing on the price of the share. In the real world, analysts have been grouped into either Technical or Fundamental camps for many years but in reality, there are very few pure technicians or fundamentalists who exist. Fundamental analysts cannot really ignore the effect and timing of economic announcements and technical analysts cannot really ignore various signals derived from the study of historic prices and volatility. It is fairly difficult to take into account all the different economic announcements as well as the political and social situations that affect an economy particularly, in today's global market. However, by understanding the basics and delving deeper into the various fundamentals of the economies, one will likely create a valuation model that can capture the true value of securities that are traded in market. The present case study based work tries to estimate the true or intrinsic value of stock of Ram's Associate Cold Storage Ltd. that is a start-up company by exploring its fundamentals.

## **Literature Review**

Much of the empirical research on valuation using multiples has focused on the optimal value driver and statistical procedure used to estimate the multiple of the target firm. In a comprehensive study of these issues, Liu et al. (2002) (LNT) conclude that the most accurate valuation procedure uses forward earnings as the value driver (Kenton, 2004). Kim and Ritter (1999) find a similar result in their investigation of how IPO prices are set. LNT find that the best statistic is the harmonic mean of the price–earnings multiples of comparable firms, as suggested by Baker and Ruback (1999). They also find that using the entire sample of firms in an industry is better than using the entire cross-section of firms in all industries. However, they do not examine the properties of estimates based on samples smaller than all the firms in an industry.

In an early study of the selection of the comparable group, Alford (1992) finds that using all firms in a 3-digit Standard Industrial Classification industry is as good as

other selection procedures. The alternatives, he examines select the comparable group based on leverage, return on equity, assets, and growth. Of these variables, he finds that the analysts' long-term growth forecast is the fundamental measure that contributes most to valuation accuracy. However, he finds that selecting the comparable group on the basis of forecast growth rates adds little or no predictive accuracy to portfolios of comparable firms formed on the basis of industry.

Using a different approach, Bhojraj and Lee (2002) (BL) show that accuracy in forecasting future multiples can be improved by using a closely matched set of comparable firms. They suggest that their method of selection offers a significant improvement in accuracy over comparable firms selected on the basis of industry.

**Their approach involves two components:**

- (1) regression analysis of multiples using standard value-drivers as independent variables
- (2) the selection of closely comparable firms based on the estimated relationships.

The evidence in LNT suggests that regression analysis alone does not improve the accuracy of valuations. Therefore, it seems likely that the extra accuracy in BL's procedure is coming from the information contained in the multiples of a small number of closely comparable firms. However, because BL's tests involve forecasting future multiples rather than simply examining the accuracy of current valuations, they are not directly comparable with the results in LNT. Our study adds to this literature in three ways. First, we examine theoretically the way that valuation accuracy changes as more comparable firms are added. We show the trade-off involved in increasing the number of comparable firms.

Adopting a different valuation perspective, Bartram and Grinblatt (2018) propose a simple approach to fundamental analysis to approximate a firm's fair equity value as a linear function of almost all of its most recently reported information in financial statements. Similar to our theoretical model, this statistician's approach to valuation is also based on the law of one price and the values obtained are the market values of synthetic stocks or replicating portfolios (as each of the portfolios' fundamental

characteristics is identical to those of the firm being valued). They find that the estimation of fair market values in this way leads to trading strategies that can earn abnormal profits.

Gao et al. (2019) develop a hybrid valuation model by combining the advantage principles of multiples-valuation approach and standard discount models. They show that their hybrid model outperforms the price-to-earnings multiple which Liu et al. (2002) find performs remarkably well. Another hybrid approach is given in Cornell and Gokhale (2016), where they extend the usual multiples approach by including the information in the entire term structure of earnings forecasts and find that it improves accuracy.

Second, we show empirically how the number of comparable firms affects valuation accuracy. Across our entire sample we obtain a result that explains the preference of practitioners for relatively small samples of comparable firms. Using the 10 firms in the industry with forecast growth rates most similar to the target firm is as accurate as using the entire industry. Using only five firms selected on the basis of growth rates results in only a small decrease in accuracy. This suggests that the largest gain to be made in the accuracy of valuation using multiples may be in selecting and weighting the evidence in a small number of closely comparable firms, rather than statistical procedures for processing the information in a large sample. We also show that the incremental accuracy from using an entire industry rather than a small number of comparable firms varies between industries. This suggests that the search for a “one-size-fits-all” procedure for valuation using multiples may not work unless it makes the sample of comparable firms depend on industry characteristics.

## **Objective of the study**

The objectives of the study are as follows

- To analyse the company profile and its fundamentals
- To prepare a valuation model using DCF technique
- To estimate the true value of the stock of Ram’s Associate Cold Storage Ltd.
- To interpret the result.

## **Research Methodology**

Keeping in view the objective of this valuation, and the fact that the company is a going concern and has the capacity to generate future cash flow, and also the investor has no intention to close the business in near future, the more appropriate technique of valuation i.e., Discounted Cash Flow Method is adopted by the valuer as that reflects the future cash flows. The book value method is rejected as the investor is looking at the future cash flows whereas book value only reflects the current financial position.

The following matters are considered for preparation of this research work.

- i. The audited financial statements of the Company as at March 31, 2022.
- ii. The financial records of the company prepared up to the Valuation Date i.e. October 18, 2022.
- iii. Projections and assumptions provided by the Company for predicting the future cash flows for 10 years
- iv. Representations made by the Company in course of the valuation exercise, both written and verbal, including technical, financial and operating data.
- v. We have also obtained necessary explanations and information, which we believed were relevant to the present exercise, from the Management of the Company.

This valuation has been done pursuant to a legal/regulatory requirement using the Discounted Free Cash Flow Method and hence we are unable to comment on whether a different method will give a better indication of the value of the company or not. The Income approach includes Discounted Cash Flow method.

## **Proposed DCF Valuation Model**

Discounted Cash Flow model indicates the fair market value of a business based on the value of cash flows that the business is expected to generate in future. This method involves the estimation of post-tax cash flows for the projected period, after considering the business's requirement of reinvestment in terms of capital

expenditure and incremental working capital. These cash flows are then discounted at a cost of capital that reflects the risks of the business and the capital structure of the entity. The Discounted Free Cash Flow (DCF) as described below is based on the fundamental assumption of going concern for the business under consideration. The DCF to equity method uses the future free cash flows of the equity holders discounted by the cost of equity to arrive at the present value. In general, the DCF method is a strong and widely accepted valuation tool, as it concentrates on cash generation potential of a business. Steps involved in valuation are as follows:

### **Unlevered Free Cash Flow to Firm**

The future free cash flows to the firm have been calculated under both the most likely scenarios on the basis of financial projections. The future free cash flows to the firm are computed in the following manner:

Profit after Tax	XXX
Add: Interest(Net of Tax)	XXX/(XXX)
<i>Net Operating Profit After Tax(NOPAT)</i>	XXX
Add: Depreciation and Amortization	XXX/(XXX)
Less: Net Capital expenditure	XXX
Add/ Less: Decrease/(Increase) in Working Capital Changes	(XXX)
<i>Unlevered Free Cash Flow to Firm</i>	(XXX)
Add: Additional Future Maintainable Income( Net of Tax)	XXX
Less: Additional Future Maintainable Expenditure (Net of Tax)	XXX
Less: Future Projected Capital Expenditure (if any)	
Adjusted Unlevered Free Cash Flow to Firm	XXX

### **Type of Income or Cash Flow**

As per Para 60.4 of IVS-200, the Type of Income or Cash Flow used should be consistent with the type of interest being valued. For example:

- a) Enterprise value is typically derived using cash flows before debt servicing costs and an appropriate discount rate applicable to enterprise level cash flows, such as a weighted-average cost of capital, and
- b) Equity value may be derived using cash flows to equity, that is, after debt servicing costs and an appropriate discount rate applicable to equity cash flows, such as a cost of equity.

### **Discount Rate**

The discount rate considered for arriving at the present value of the free cash flows of the Company is WACC.

Following are the factors used for the calculation of Cost of Equity ( $k_e$ ).

- a) Risk Free Return ( $R_f$ )<sup>1</sup> –  $R_f$  is considered at 6.70 % based on average rate of return of Treasury Bills as on a date closer to the valuation date October 18, 2022.
- b) Sector Beta ( $\beta_{UL}$ ) – The unlevered beta for the relevant sector is estimated to be 1.01 on the basis of market data. This represents Systematic risk. Systematic risk is that part of the risk which is inherent to the entire market or market segment. The application of a valuation models requires computation of systematic risk ( $\beta$ ). The systematic risk is computed as the beta factor. Beta measures the sensitivity of a stock to the stock market index. The standard practice is to estimate  $\beta$  of a stock in relation to the index of the market to which it belongs. Thus  $\beta$  of an Indian industry is related to BSE Sensex, or NIFTY.  $\beta$  is usually computed with reference to market by using the following formula.

$$\beta_x = \frac{\sum x \bar{y} - \bar{n} x y}{\sum y^2 - n (y)^2}$$

Where:

x = Return of the security.

y = Return from the market.

x = Arithmetic means of the return of the security.

y = Arithmetic means of the market return.

n = Number of observations.

This report has used unlevered  $\beta$  which is gathered from publicly available data sources.

- c) Company Beta ( $\beta_L$ ) – The levered bottom-up beta for the company is computed to be 1.01
- d) Market Rate of Return ( $R_m$ ) - The average monthly returns of overall industry and of biotechnology industry from market indices have been calculated from May 2003 to September 2022 and then annualized to arrive at the Expected Market rate of return. The same comes to 13.79 % and 11.03% respectively.
- e) Cost of Equity ( $K_e$ ): Cost of Equity of the company =  $R_f + \beta_L(R_m - R_f) = 6.70 + 1.01(13.79 - 6.70) = 13.86\%$ .
- f) Cost of debt ( $K_d$ ): Post Tax Cost of debt of the company is taken into consideration which is 9.3%
- g) Weighted Average Cost of Capital (WACC): WACC of the company is computed to be 8.23%.
- h) Perpetuity growth: Perpetuity growth of the company is estimated to be 3.50% on the basis of historical GDP growth rate of India for last 10 years.
- i) HiLo Risk: Simple average of (High Price for year - Low Price / (High Price + Low Price)). It is a non-parametric and simple measure of price risk is taken from industry data as 0.4564.

## Company Background

RAM'S ASSORTED COLD STORAGE LTD is a private company incorporated on 26<sup>th</sup> May 1986, engaged in the business of Food Processing. The objective of the company is to produce better and quality product. Ram's Assorted Cold Storage Limited (RACSL) is the seafood processing/exports division of the Suryo Group of companies. The Suryo Group has been a pioneer in the field of shrimp exports and aquaculture in India. It is a family owned company, and has been growing and

expanding the business rapidly. It has its own shrimp hatchery, shrimp farms, shrimp feed distribution and shrimp processing units. With over 35 years in the seafood trade it offers unmatched quality and expertise. RACSL's vision is to cater to a global demand for healthy and ethically produced seafood products. It would like to achieve this by promoting sustainable aquaculture practices in India and contribute towards the development of the rural areas.

Hatchery: Vannamei hatchery is located at Gopalpur on Sea, Odisha. Through the careful selection of imported brood stock from Hawaii and rigorous Bio Security norms and Standard Operating Procedures, a supply of quality specific pathogen free (SPF) Post Larvae to farmers is ensured. Hatchery was BAP certified in 2017.

Farm: 65 acres of farm is located in Parikhi, Balasore, Odisha. It has the most modern and professional farmer network. The practices are imitated by rest of the farming community.

Feed Dealership / Farmers' Network: Avanti Feed in Odisha is sold through the network. Apart from that sell Pro Biotics is also sold to farmers. The network of farmers is provided with Feed, Pro Biotics and most importantly technical guidance and support. There is a buy back arrangement with these farmers.

The brief particulars of the company are as under.

**Table -1**  
**Company Details**

CIN	U63022OR1986LC001677
Company / LLP Name	RAM'S ASSORTED COLD STORAGE LTD
ROC Code	RoC-Cuttack
Registration Number	001677
Company Category	Company limited by Shares
Company Sub-Category	Non-govt. company
Class of Company	Private
Authorised Capital(Rs)	7,00,00,000
Paid up Capital(Rs)	5,01,01,500
Date of Incorporation	26/05/1986
Registered Address	DINALIPI BHAWAN A-54/1, NAYAPALI,



	BARAMUNDA BHUBANESWAR
Email Id	headoffice@racsl.com
Whether Listed or not	Unlisted
Date of last AGM	30/11/2021
Date of Balance Sheet	31/03/2021
Company Status(for e filing)	Active

*\*Company Website*

## Valuation of stock using DCF method

### Industry Growth Rate

Considering the factors in the above, Food Processing industry growth rate is computed as under:

**Table -2**  
**Calculation of growth rate**

Annual revenue in 2019 =	US\$63 billion
Expected Annual revenue in 2025 =	US\$ 150 billion
Future value factor =	2.38995
Rate that corresponds to Future value interest factor for a period of 7 years <sup>2</sup> =	13%

*\*The Author*

As computed above, the industry growth rate is 13 %. The valuer after exercising his professional judgment has considered 13% as rate of growth of operating cash flow for 10 years.

The company operates in Food Processing Sector in Indian economy. The average return of Indian Capital Market in long run considering overall industry is computed to be 0.09% per month which is annualized to 11.03% per annum.

The average return of Indian Capital Market of Food processing industry in long run is computed to be 1.82% per month which is annualized to 11.03% per annum

The book Value of the equity Shares of the Company is arrived at as under.

**Table- 3**  
**Estimated Book Value**

<i>Sl</i>	<i>Particulars</i>	<i>UoM</i>	<i>Value</i>
1	Book Value of assets of the Company	Rs.	63,10,36,459
2	Book Value of Liabilities of the Company	Rs.	52,97,34,411
3	Net Value of Equity (3=1-2)	Rs.	10,49,05,756
4	Number of Equity Shares	Nos.	5,01,015
5	Value of Equity (5=3/4)	Rs.	209.52

*\*The Author*

### **Analysis of Result & Findings**

Valuation as determined as per methodology described above and calculations in most likely scenario is produced as under;

**Table- 4**  
**Calculated True / Intrinsic Value of Stock**

<i>Sl.</i>	<i>Details</i>	<i>UoM</i>	<i>Value</i>
1	Enterprise Value	In Crores	1541.32
2	Less: Debt Obligations	In Crores	43.92
3	Add: Cash & Cash Equivalents	In Crores	2.17
4	Add: Premium	In Crores	0
5	Equity value(Fair Value)	In Crores	1499.57
6	Discount factor for lack of Marketability	25%	0.30
7	Discount for lack of Marketability	In Crores	449.87
8	Adjusted Equity Value	In Crores	1049.70
9	No. of Shares	Nos	5,01,015
10	Value per equity share	INR	209.515
11	Rounded Off	INR	209.52

*\*The Author*

Based on the assumptions and limiting conditions as described in this report, as well as the facts and circumstances as of the valuation date, we conclude that;

- i. The enterprise value is Rs. 1541.32Croresin the most likely Scenario.
- ii. The equity value before adjusting discount for lack of marketability (DLOM) is Rs.449.87Crores.

The fair value of equity shares (Post proposed issue) of the company is Rs. 209.52/- per share

**Cash Flow Projection and Value Computation (Rs. In Lakhs)**

**Table -5**

**Forecasted Cash flows using growth rate**

Cash Flow Projections and Present Values										
<i>Future Years</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
	<i>Projected</i>									
Unlevered Free Cash Flow	- 4953.65	- 10699.87	- 7382.91	4456.55	5035.90	5690.34	643.034	7266.29	821.090	9278.32
Add: Additional Future Maintainable Income (Net of Tax)	0	0	0	0	0	0	0	0	0	0
Less: Additional Future Maintainable Expenditures (Net of Tax)	0	0	0	0	0	0	0	0	0	0
Less: Future Projected Capital Expenditure (if any)	0	0	0	0	0	0	0	0	0	0
Adjusted Unlevered Free Cash Flow to Firm	- 4953.65	- 10699.87	- 7382.91	4456.55	5035.90	5690.34	643.034	7266.29	821.090	9278.32
Terminal Value beyond Projection	0	0	0	0	0	0	0	0	0	300094.6672
Total Unlevered Free cash flow to Firm for Valuation	- 4953.65	- 10699.87	- 7382.91	4456.55	5035.90	5690.34	643.034	7266.29	821.090	309372.99
Discounting Factors	1	0.9239	0.8536	0.7886	0.7286	0.6731	0.6219	0.5746	0.5308	0.4904
Present Value	- 4953.65	- 9985.50	- 6301.84	3514.46	3669.08	3830.50	399.902	4174.96	435.864	1517.2702

*\*The Author*

**Table -6**

**Enterprise and Equity Valuation:**

Enterprise Value (In Lakhs)	154132.7221	
-----------------------------	-------------	--

Enterprise Value(In Crores)	1541.3272	
Less: Debt Obligations	43.92	Crores
Add: Cash & Cash Equivalents	2.17	Crores
Add: Premium	0	Crores
Equity Value	1499.579652	Crores
Discount factor for lack of Marketability	0.30	
Discount for lack of Marketability (Rs.)	449.87	Crores
Adjusted Equity Value	1049.7057	Crores
No of Shares	5,01,015	
Value per equity share (Rs.)	209.5158	INR
Rounded Off	209.52	INR

*\*The Author*

Based on the assumptions and limiting conditions as described in this report, as well as the facts and circumstances as of the valuation date, we conclude that

- i. The enterprise value is Rs. 1541.32Croresin the most likely Scenario.
- ii. The equity value before adjusting discount for lack of marketability (DLOM) is Rs.449.87Crores.
- iii. The fair value of equity shares (Post proposed issue) of the company is Rs. 209.52/- per share.

## **Conclusion**

The present study is a case study with the objective of estimation of intrinsic or true value of a start-up company that is Ram's Associate Ltd. In the present study, the aim was to calculate the fundamental or the intrinsic value of the selected company's shares. DCF Model has been used for this purpose. Using this model, the intrinsic values of the sample companies' share is calculated. Cash flow is forecasted to future time period to 2025 using the growth rate. Growth rate is calculated considering the fundamentals of the company. Then the discount rate for the DCF model is estimated using cost of capital method. Taking the result into consideration, it can be safely concluded that "Valuation is not a total mystery. With correct values and right technique, the true value can be estimated".

## Book Review

Asst. Prof. Bishnu Prasad Kar  
Asst. Prof. Satyanath Mohapatra

**Title of the Book : This is Beyond Budgeting**

**Author : Bjarte Bogsnes**

**Edition : First, 2023**

**ISBN : 978-1-394-171124-8**

**Price : £ 22.99**

**Page : 176**

**Publisher : Wiley**



In "This is Beyond Budgeting," author Bjarte Bogsnes provides a compelling and insightful exploration of a revolutionary management concept known as Beyond Budgeting. As the Chairman of the Beyond Budgeting Roundtable, Bogsnes draws upon his extensive experience. Having led the implementation of this innovative model at prominent European companies, including the renowned energy giant Equinor, his expertise shines through in this book, making it an indispensable guide for decision-makers and seeking to transform their organizations.

Bogsnes' credentials as the founder of Bogsnes Advisory, an international business speaker, and a Beyond Budgeting coach, lend credibility to the ideas presented in the book. The book begins with an engaging foreword, setting the stage for the transformative journey ahead. Bogsnes takes readers through the initial reflections that led to the development of Beyond Budgeting by effectively addressing the problems associated with traditional budgeting processes, the author navigates the reader through the intricacies of the Beyond Budgeting model, offering practical insights and real-life cases that highlight its effectiveness. One of the strengths of Bogsnes' work is his ability to communicate complex ideas in a layman's language. The chapters are well-organized, with a clear progression from understanding the problem to implementing the Beyond Budgeting model. The book delves into the

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\*Bishnu Prasad Kar, Asst. Professor, ASTHA School of Management, Bhubaneswar, Email: [bpkar@asthaeducation.in](mailto:bpkar@asthaeducation.in)  
\*\*Satyanath Mohapatra, ASTHA School of Management, Bhubaneswar, Email: [satyanath@asthaeducation.in](mailto:satyanath@asthaeducation.in)

concept of "Separate and Improve," emphasizing the need to break away from conventional practices to achieve improved organizational performance. A notable section of the book explores the application of Beyond Budgeting in Agile Transformation, providing valuable guidance for organizations looking to enhance adaptability, and humanize their management processes. Bogsnes presents a compelling case study on Handelsbanken, illustrating the successful implementation of Beyond Budgeting in a real-world context. The author's in-depth discussion on implementation challenges and the benefits realized post-implementation provides a practical roadmap for organizations contemplating this transformative journey. By addressing concerns about the bottom line and the individual, Bogsnes demonstrates the holistic impact of Beyond Budgeting on the organization and its members. The book concludes with an insightful epilogue, summarizing key takeaway and reinforcing the importance of adopting Beyond Budgeting for sustained success. An index at the end aids in easy navigation through the rich contents of the book.

The robust structure of the book takes readers on a journey from recognizing the inherent problems in traditional budgeting to understand and implement the Beyond Budgeting model. Bogsnes' articulate exploration of the "Separate and Improve" philosophy serves as a catalyst for organizations seeking enhanced performance and adaptability. The highlight of the book is its in-depth examination of Agile Transformation, providing a blueprint for enterprises aiming to infuse agility and humanity into their management processes. Through the lens of the Handelsbanken case study, Bogsnes showcases real-world success, adding a layer of practicality to his persuasive arguments. The concluding remarks encapsulate the overarching message: Beyond Budgeting is not just a theoretical shift but a tangible and proven approach to redefining organizational success. Bogsnes masterfully addresses concerns about the bottom line and individual stakeholders, reinforcing the holistic benefits of adopting Beyond Budgeting.

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