

Print : ISSN : 0019-512X | Online : ISSN : 2454-6801

THE INDIAN JOURNAL OF COMMERCE

Quarterly Publication of the Indian Commerce Association

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Printed by : Raghavendra Graphics, Achaiah Nagar, Baghlingampally, Hyderabad - 500 044.

Published by Sr. Prof. D.Chennappa on behalf of the Indian Commerce Association.

Brand Trust : A Differential Perception Analysis Across Income Categories Among Motor Cycle Owners

FEMINA E P AND P. SANTHI

Abstract : Branding the product and attracting trusted customers are the most important elements in the contemporary marketing strategies. Consumers recollect the brands which provide them unique experiences and satisfaction. Brand Trust is the consumers' feeling of security, and their readiness to rely on a particular brand. This study examines the determinants of brand trust among owners of motor cycles and to analyze the influence of owners' income on various determinants of brand trust using well-structured questionnaire. Responses were collected of 120 motorcycle owners. An equal proportion of the sample respondents were drawn from each income class as per Mckinsey classification using non probability sampling namely convenience sampling method in Palakkad District of Kerala. The results derived from descriptive statistics indicate that the high income group or Global Indians have high degree of perception in Brand Expectation, Brand Confidence, Brand Experience, Brand satisfaction and Brand reliance, which influence the brand trust than other categories of customers; and the outcome of this could be generalized within the country.

Keywords : Brand Trust, Motor Cycle Brands, Mckinsey Classification of Customers, Brand Expectation, Brand Satisfaction.

Introduction

Attaining brand trust among customers is an important strategy for business. Brand is the most powerful dimension that differentiates the products and services of one company from others which satisfy similar needs

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(Kotler *et al.*, 2013). A Company's brand name itself acting as a stimulus to induce the customers to purchase the product (Kaushal *et al.*, 2016). Customer perception of a brand's friendliness and integrity is the brand trust; based on the effectiveness of the products and the intensity of their expectations for the company, customers build confidence in a variety of brands (Coelho *et al.*, 2018). Trust creating a valid and important relationship to the brand and trusted customers are always loyal to their brand, ready to pay high price and they share product related information to others (Chaudhuri and Horlbrook, 2001). Customers must trust brands for them to be successful, and those who do so are more likely to succeed than those that do not (Portal *et al.*, 2019).

Customers provide a higher personal importance for the purchase of high involvement products, which involve a comparatively higher degree of risk (Dholakia, 2001; and Nayeem *et al.*, 2022). Companies that sell high-involvement products take the required steps to build customer brand awareness, brand trust, and product self-reputation. These internal selection criteria will have a significant impact on the buyer's intention to purchase (KIM *et al.*, 2020).Brand trust is significant in high involvement, premium product markets like automobiles and the stronger brand trust leads to increased purchase and loyalty to the brand (Sahin *et al.*, 2011).

Motor cycle markets are the most growing retail market; to attract customers and maintain long term relationship with them are the most essential elements in the contemporary customer oriented marketing. A number of makes and models are entering in to market day by day. Motor cycles are the most demanded forms of transport due to its affordability, easiness to operate and convenience to park. As these are high involvement product, customers are highly conscious about brand apart from the features and functional differentiation. Honda, Hero, Suzuki, Yamaha, TVS, Royal Enfield and Harley Davidson, are the commonly available brands in motor cycle market in India. Companies charging different prices for different models and try to positioning their brand in top of mind of customers.

Literature Review

Brand Trust

Brand Trust is the customers' sense of security towards a particular brand (Delgado and Munera, 2001; and Shin *et al.*, 2019). It indicates customers' degree of expectations about the performance of the brand; perceive the reliability of the brand and to recall while taking repurchase decision (Chaudhuri and

Horlbrook, 2001). There are two aspects or dimensions to brand trust. First one is the capacity of brands to meet its promises to customers and; the other dimension comprises of all attributes and intentions of the brand for keeping in mind the customers' interest and welfare. Hence a trust worthy brand is one which consistently keep its promises to customers through its product development, differentiation in production, sales, services and advertisements (Doney and Cannon, 1997; and Gansser et al., 2021). The important further constructs for measuring brand trust are trust, reliability, honesty and safety (Chaudhuri and Horlbrook, 2001). Risk perception, service providers' consistency, sincerity, honesty and employees' fairness are elements of brand trust. (Adewale et al., 2016).Brand trust influences the cognitive and emotional aspects of the customers, and leads to brand development (Zhang et al., 2020). Brand trust helps the customers to reduce difficulties to take purchase decision and the uncertainties of their feelings (Charton-Vachet and Lombart, 2018). Brand trust happens as a result of brand care, brand expectation, brand confidence, brand awareness, brand satisfaction, honesty, brand reliance, brand effort and compensation (Sahin et al., 2011). Hence brand trust performs a crucial role in sustainable customer relationship. The Review of Literature explicitly brought out the factors influencing the brand trust of customers; namely Brand Expectation, Brand Confidence, Brand Experience, Brand satisfaction and Brand reliance; and which are used for the analysis in this study.

Brand Trust and Income

Income considered as the most typical demographic attribute for the segmentation of goods and service markets; and an important basis on which businesses target their market and offer products and services (Saad *et al.*, 2013). Socio economic variables are the generally used means for categorizing customers in to groups; Most of the marketing aspects namely need, desires, product preferences and brand preferences are highly related with these variables (Kotler *et al.*, 2013).Customers with higher income generally seek for quality products and are less prone to attraction by deals and sales promotion. But the low and middle income segments are attracted by various deals and offers (Dastidar, 2016).The income of buyers plays a moderating role between the emotional attachment and the brand trust (Atulkar, 2020).

Income of the consumer will definitely reflects their buying potential and consumption propensity. Income is the suitable basis for consumer classification of customers (Ramaswami and Namakumari, 2013). National Council of Applied Economic Research (NCAER) had introduced the first classification based on

income in the report "Income, Expenditure and Social Sector Indicators of Households in Rural and Urban India", 1998. By following this, Mckinsey Global Institute has also brought income based classification of Indian consumers; in their report "The Bird of Gold-The Rise of Indias' Consumer Market" (2007). Mckinsey classified the Indian households in to five economic classes on the basis of their annual disposable income, by making a minor variation in NCAER Classification (2007). They are :

- Global Indians (above ₹10 lakhs) : Senior corporate executives, huge business owners, elite professionals, politicians, and significant landowners in the agricultural sector make up this class. This class enjoys a very high quality of living and has truly global interests and preferences.
- Strivers (₹ 5 lakh 10 lakh) : City traders, well established professionals, senior government officials, and wealthy farmers in rural areas make up this class. They are well-off in Indian society and have a steady source of income.
- Seekers (₹ 2 lakh 5 lakh) : The people in this income class differed greatly in terms of work, attitudes, ages, and other traits. Newly hired employees, middle-level government officials, small- and medium-scale traders, and businessmen are included in this group.
- Aspirers (₹ 90000 2lakh) : This income class of consumers spends most of their income for basic necessities. This category comprises of small-scale business owners, independent farmers, and unskilled labourers.
- **Deprived (less than ₹ 90000) :** This class constitutes the BPL category. This is the poorest group.

Among these the middle class is made up of Strivers and Seekers. (Mckinsey Global Institute Report, 2007)

Brand Trust on Motor Cycles

The brand trusts of motor cycles were influenced by satisfaction, values, security and trust (Kustini, 2011). Customer engagement, customer experience and personal selling can increases brand trust among customers of motor cycles and the brand trust helps to develop repurchase intention (Ratnawati *et al.*, 2022). Brand experience has a significant role in the development of brand trust among motor cycle buyers. The satisfaction and level of confidence in the brand will

create a psychological impact on the customers and lead to brand trust (Saragib *et al.,* 2020). Brand personality increases brand awareness among motor cycle brands and it leads to brand trust; customer reviews and testimonials are also very helpful in building brand trust (Roger Seiler *et al.,* 2019).

In a country like India, with varied income categories of customers, it becomes imperative to study the relationship between the brand trust of customers of various income class with that of motorcycle brands bought by the customers.

Objectives of the Study

The objectives of the study are :

- To identify the most preferred motor cycle brands among the respondents;
- To analyze factors influencing the brand trust among motor cycle owners, and
- To examine the brand trust among owners of motor cycles across income categories.

Data and Methodology

The locale of study is the Palakkad District in Kerala. The study conducted between the period of October 2021 to September 2022. A non-probability sampling namely convenient sampling method was adopted to select sample respondents representing different classes of income as per Mckinsey classification. From each income class, 24 respondents owning motor cycles were selected resulting with the total sample size of 120 respondents. For this study, both primary and secondary data were used. For the purpose of gathering primary data, a structured questionnaire was created. Secondary data were obtained from published reports and journals. Percentage Analysis, Mean, Standard Deviation, Coefficient of variation and t test were applied to analyze the data.

The questionnaire used for the survey was designed on the basis of literature review. The questionnaire included three sections. The first section deals with the demographics of the respondents. The second section aimed to identify the brand of motor cycles owned by the respondents. The third section included the attributes on brand trust, prepared based on Sahin *et al.* (2011). The items were evaluated using a five-point Likert scale with agreement levels, ranging

from strongly disagree-1 to strongly agree-5. The reliability of Cronbach's alpha value was greater than 0.7, which proved reliability of the items to get the correct result (Griethuijsen *et al.*, 2015).

The demographic characteristics were analyzed on the basis of respondents' gender, age educational qualification and occupation; and the results are shown in Table-1.

Variables	Categories	No. of Respondents (n=120)	Percentage
Gender	Male	98	82
	Female	22	18
	18-30	53	44
Age (in years)	31-40	31	26
	41-50	14	12
	Above 50	22	18
	School	39	32
Education	Graduate	38	32
	Post Graduate	43	36
	Government Employee	28	23
Occupation	Private Employee	42	35
	Business	50	42

Table-1 : Demographic Profile of the Respondents

Source : Primary Data

The sample respondents were aged above 18 years; 44 percent of them came preferably from the younger group of 18-30 years. Based on gender, 82 percent are male and only 18 percent are female two wheeler owners. 36% of respondents have postgraduate degrees. As regards to the occupation of the respondents, 35 percent of them are employed in private sectors, 42 percent doing their own businesses, and remaining 23 percent of the respondents are Government employees.

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Brands of two wheeler owned by the respondents were identified. Royal Enfield brand of motorcycles owned by 20 percent of the respondents, Honda and Yamaha brands of motorcycles owned by 16 percent each of the respondents, 14 percent each owned Suzuki Hero and TVS brands of motorcycles and six percent of the respondents owned Harley Davidson brand of motorcycles.

Results and Discussion

Differential Perception of Customers Across Income Categories

Brand Trust is the customer awareness and perception about the kindness and integrity of the brand. The antecedents of Brand Trust are Brand Expectation, Brand Confidence, Brand Experience, Brand Satisfaction and Brand reliance. Brand Trust among the selected respondents was examined through various statements, and the respondents were opined through Likert Scale.

Brand expectation and Brand trust

Customer expectation about the performance of a brand is brand trust (Delgado and Munera, 2001). The expectation is the ultimate determinant of brand trust. Customers' expectation on brand will enhance the brand trust (Sahin *et al.*, 2011). This perception is essential for developing future repurchase intention. So it is proposed that :

 H_1 : Brand expectation has a significant influence on brand trust across income class of respondents

Income Class	Mean	SD	cv	t value	p value	H1
Global Indians	4.3	0.64031	0.14891	2.29528	0.03117	Supported
Strivers	3.8	0.60000	0.15789	-1.63299	0.11609	Not Supported
Seekers	3.9	0.53852	0.13808	-0.90972	0.37241	Not Supported
Aspirers	3.9	1.22066	0.31299	-0.40134	0.69187	Not Supported
Deprived	4.1	0.83066	0.20260	0.58977	0.56110	Not Supported

Table-2 : Brand Expectation and Brand Trust Across Income Class of Respondents

Source : Primary Data

The table-4 indicates that the expectation of owners of motor cycles of various brands. Among all the income class, mean score of Global Indians was highest with 4.3 and Deprived 4.1. It implies that the Global Indians with higher disposable income, purchased the latest, luxurious model of motor cycles, and their expectations were met. The Deprived category of customers with lower disposable income were also fulfilled their expectation for motor cycle purchased by them, and their needs of owning motor cycles were met with their brands. The H₁ is supported only in the case of Global Indians (t=2.29528, p=.03117 (p<0.05)), as brand expectation significantly influences brand trust.

Brand Confidence and Brand Trust

Confidence is an important element in building brand trust (Alhaddad, 2015). A scenario in which one party has the confidence to preserve a connection with another party is described as trust (Ghondaghsaz *et al.*, 2022). Consistency and Confidence are the important ways to build brand trust among customers (Alhaddad, 2015). Hence this study proposes that :

 \mathbf{H}_2 : Brand confidence has a significant influence on brand trust across income class of respondents

Income Class	Mean	SD	CV	t value	p value	H ₂
Global Indians	4.5	0.67082	0.14907	2.33695	0.02851	Supported
Strivers	3.9	0.70000	0.17949	-1.95959	0.06227	Not Supported
Seekers	3.9	0.83066	0.21299	-1.65135	0.11226	Not Supported
Aspirers	4.4	0.48990	0.11134	2.20000	0.03812	Supported
Deprived	4.2	0.74833	0.17817	0.13093	0.89697	Not Supported

Table-3 : Brand Confidence and Brand Trust Across Income Class of Respondents

Source : Primary Data.

The owners of motor cycles feel confident through the brands of their vehicle. The mean score computed for Global Indians, Aspirers and Deprived resulted 4.5, 4.4 and 4.2 respectively, which are higher than other income group of respondents. The Global Indians placed high confidence on the model of motor cycle owned. The Aspirers also exhibited confidence from the brand of motor cycle they owned. The brand confidence significantly influence brand trust of

Global Indians (t= 2.33695, p=.02851 (p<0.05)) and Aspirers (t= 2.2, p=.03812 (p<0.05), in these cases H₂ is supported.

Brand Experience and Brand trust

The customers' experience with the brand develop a direct interaction between them; and it is an unavoidable determinants of brand trust (Gurbarino and Johnson, 1999; and Khan and Fatma , 2019). Brand experience creates a platform to establish strong relationship between brand and customers and to develop brand trust (Sahin *et al.*, 2011). According to Khan *et al.* (2017) Brand experience definitely leads to brand trust. Hence it is proposed that :

 H_3 : Brand experience has a significant influence on brand trust across income class of respondents

Income Class	Mean	SD	CV	t value	p value	H₃
Global Indians	4.1	0.53852	0.13135	4.54859	0.00014	Supported
Strivers	3.5	0.80623	0.23035	-0.60764	0.54938	Not Supported
Seekers	3.5	0.67082	0.19166	-0.73030	0.47258	Not Supported
Aspirers	3.5	1.20416	0.34405	-0.40684	0.68789	Not Supported
Deprived	3.4	1.11355	0.32752	-0.87988	0.38802	Not Supported

Table-4 : Brand Experience and Brand Trust Across Income Class of Respondents

Source : Primary Data.

The brand trust of motor cycle owners are influenced by the experience from their brand. The Global Indians resulted with highest mean value of 4.1 than all the other classes of customers. The higher income class of respondents purchased costly and luxurious brand never faced underperformance or disappointment from the brands of motor cycle they owned. Hence H_3 is supported only in the case of Global Indians (t= 4.54859, p=.00014 (p<0.05)), and there is a significant influence of brand experience on brand trust.

Brand Satisfaction and Brand Trust

There is a strong relationship between Customer satisfaction and trust; and these two factors satisfaction and trust together influencing customer loyalty (Feng and Zhang, 2009). Companies can create a bonding of customers with that of their brand by meeting customers' needs and wants; hence customer satisfaction shows positive significant relationship with brand trust (Atulkar, 2020).

 H_4 : Brand satisfaction has a significant influence on brand trust across income class of respondents.

Income Class	Mean	SD	CV	t value	p value	H4
Global Indians	4.6	0.48990	0.10650	7.60000	0.00000	Supported
Strivers	3.5	0.92195	0.26342	-1.80665	0.08392	Not Supported
Seekers	3.8	0.97980	0.25784	-0.20000	0.84324	Not Supported
Aspirers	3.8	0.74833	0.19693	-0.26186	0.79576	Not Supported
Deprived	3.5	1.11803	0.31944	-1.48981	0.14986	Not Supported

Table-5 : Brand Satisfaction and Brand Trust Across Income Class of Respondents

Source : Primary Data.

The satisfaction derived from the motor cycle owned guaranteed brand trust. The Global Indians with highest mean 4.6, lowest Standard Deviation 0.48990 and Co efficient of Variation 0.10650, than other categories of the respondents. The Global Indians acquired high level of satisfaction from the brand of motor cycle they owned, and hypothesis supported in the case of Global Indians and there is significant influence of brand satisfaction on brand trust (t= 7.6, p=.000 (p<0.05)).

Brand Reliance and Brand Trust

The agreeableness to rely on a brand in which one has faith is known as brand trust (Moorman *et al.*, 1992; and Rosmayani and Mardhatillah, 2020). Brand trust is viewed as the customers' reliance on the capacity of the brand to carry out its function efficiently (Chaudhuri and Horlbrook 2001). The brand reliance is an important determinant of brand trust. So it is proposed that:

 H_5 : Brand reliance has a significant and positive influence on brand trust across income class of respondents

Income Class	Mean	SD	CV	t value	P value	H₅
Global Indians	4.1	0.94340	0.23010	2.70031	0.01277	Supported
Strivers	3.2	0.87178	0.27243	-2.13542	0.04360	Supported
Seekers	3.5	1.02470	0.29277	-0.38247	0.70562	Not Supported
Aspirers	3.7	0.90000	0.24324	0.65320	0.52011	Not Supported
Deprived	3.4	1.28062	0.37665	-0.68858	0.49797	Not Supported

Table-6 : Brand Reliance and Brand Trust Across
Income Class of Respondents

Source : Primary Data.

The motor cycle owners rely on their brand on the basis of their relationship with the brand owned by them. In the analysis the mean score of Global Indians is the highest with 4.1 and Aspirers scored 3.7. It is inferred that Global Indians have strong relationship with the brand of motor cycle currently owned by them The hypotheses supported in the cases of two income classes Global Indians (t=2.70031, p=.01277 (p<0.05)), and Strivers (t=-2.13542, p=.04360 (p<0.05)) and there exist a significant influence of brand reliance on brand trust among these income classes of respondents.

Implications of the Study

Brand trust significantly varies according to the brand expectations of Global Indians. With the high income they prefer to spend to meet their expectations. The implementation of advanced technology, improvement of product performance and differentiation from other brands enhance the customer expectation and strengthen the trust towards the brand, while purchasing motor cycle.

The brand confidence significantly influences the brand trust among Global Indians and Aspirers. The customers whether belong to high income and low income category feel more confident on the brand, when they receive better experience from the brand, and keep promises which are relevant to them (Delgado and Munera, 2001).Transparency in business also increase confidence in customers. The companies should utilize social media platform to provide proper information and to post feedback of existing customers. Kaushal *et al.* (2016) also suggested that the marketers should be give adequate attention to

selecting the brand name and to endorsing their products through various mass media advertisement techniques. These will give confidence to the customers.

The brand experience is a key factor for determining the brand trust of Global Indians. Brand experiences create a platform for developing strong relationship among brand and customers. Brand experience arises in different situations; while search for the product, while shopping and while consuming the brand (Sahin *et al.*, 2011). Hence the automobile companies should provide unique and memorable experiences in their advertisement, and while offering pre and post purchase incentives and services.

There is significant influence of customer satisfaction on the brand trust of Global Indians. Satisfaction of customers can be achieved through better performance and emotional attachment. Chakkambath *et al.* (2022) identified functions and features as important factors to increase satisfaction of customers. To satisfy customers, the Company should focus on customers' needs and attitude, provide certain status and uniqueness and there by enhance the brand trust.

The brand reliance significantly influences the brand trust among Global Indians and Strivers, ie, both high and middle income groups of customers, who rely on a particular brand if they feel attachment to the brand. The companies should try to increase their credibility and reliability through attractive and trust worthy information system, through service quality and through efficient and trusted staff. Internal and external image of showroom and the courtesy of the sales personals play a magnificent role in customers for relying in a particular brand (Kumar and Narayanan, 2016).

Different groups of customers showing different levels of brand trust. Chakkambath *et al.* (2022) analysed a significant difference in the emotional states of customers among different categories of income. Hence the marketers of motor cycles should classify their consumers on the basis of their income, to adopt positioning strategies by understanding their expectations and try to increase the customers' attachment towards the brand. Customers are less inclined to switch brands when there is a high level of brand trust.

Conclusions

On the basis of the findings from the descriptive statistics, it is concluded that all customers are brand conscious and they exhibit a moderate level of brand trust irrespective of their income class, while purchasing motor cycle. But high income customers are showing a higher degree of brand trust, this will definitely reflect in their repurchase intention. Hence creating brand contacts and building brand trust are the most important tasks of marketers to maintain long term and sustainable relationship with customers. The companies should try to market their high involvement products like motor cycle after categorizing the consumers on the basis of their disposable income.

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Business Incubator's Success Factors : Scale Development and Refinement

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Abstract : Business incubators/incubation centres play an important role globally in developing innovation and entrepreneurship ecosystem. They have evolved as highly efficient systems for the economic development of industrialized nations. This study tries to identify the measures of incubation performance and further delves into developing a research instrument comprising measures of Business incubator performance. This research instrument was refined and tests for reliability and validity were performed. The measures which are critical to the performance of business incubators are identified from the literature and it was found that the role of networking is critical and influences business incubator performance, other factors such as University linkage and incubation facilities provided to the startup firms also play an important role as far as business incubator performance is concerned. Further, research scale was refined and tested through CFA for assessing the measurement model, where scales were found unidimensional. The present study thus develops a conceptual model and a research instrument that would help managers in executing their functions by focusing on these critical areas for the enhancement of business incubator performance.

Keywords: Business Incubators, Entrepreneurship, Startup, University Linkages, Networking.

1. Introduction

Every country tries to focus on knowledge & technology augmentation for innovation and entrepreneurship. These areas are on the priority in their development agenda as they are critical for advancement. Developing countries are always in search of new inventions which are going on around the globe

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and try to innovate indigenously that can be adapted to their local conditions. Now majority of them focus on trying to create conditions in which entrepreneurship and innovation lead to socioeconomic development. The importance of entrepreneurship in creating employment opportunities, innovative products/services and the formation of new business firms is seen as the engine of economic growth and progress (Lalkaka and Abetti, 1999; Khalil and Oiafen, 2010; Audretsch et al., 2016). Developing countries realised the potential of startups, started implementing policies to encourage entrepreneurs by offering financial and non-financial incentives through a variety of sources (Lalkaka and Abetti, 1999). These initiatives support the startup culture and assist small and medium-sized businesses in acquiring cutting-edge equipment and management techniques.

The first business incubator was formed in the United States back in the 1960s to stimulate innovation and encourage entrepreneurship (Lewis, 2003). By providing infrastructure and other support services, business incubation, a subdiscipline of entrepreneurship, aids in the development of new businesses, their early survival, sustainment, achievement of growth, and improvement of the chances of progress in nascent years (Bergek and Norman 2008; Ramussen 2011). Business incubators are viewed as an effective tool by the macro authorities and decision-makers for fostering innovation and economic growth. In emerging countries, Incubators can significantly benefit entrepreneurs by increasing human capital and developing their networking (Abdelgawad, 2022). Additionally, business incubators play an important role in the formation of new technology-based growth enterprises in these domains. The goal of a business incubator is to aid the entrepreneurial team with various tangible and intangible resources in the development of a new company (Nair and Blomquist, 2019; Mohan and Chinchwadkar, 2022). In order to achieve this, they offer their services and participate in endeavours that aid in the creation of high-tech startups with a scalable business model.

By using a business incubation mechanism, which offers specialised services like shared office space, business counselling, and knowledge sharing, new firms are nurtured and closely watched in the early stages of growth (Birch, 1979; Gissy, 1984; Allen and Rahman, 1985; Deyanova et al., 2022). It is crucial to determine the success elements for effective incubation. This study tried to develop and refine a research instrument comprising antecedents and measures of Business incubator performance.

2. Literature Review

An elaborative and orderly literature related to business incubation was keenly reviewed by various author such as Allen and Rahman (1985), Mian (1996), Hackett and Dilts (2004) and Theorakopoulos et al. (2014) in order to provide a systematic platform for entrepreneurial activities by doing a critical assessment of business incubation.

Despite the consistent definition of a business incubator, it converges three dimensions as business incubation model itself, its very purpose and the support services it provides to startups (Ayyash et al., 2020). As stated in the description of business incubators, these organisations assist entrepreneurs in combining their concepts into a cohesive whole and sustaining business by mentoring and guiding them from the starting so that the new venture can transform into a growing and a successful business enterprise (NBIA 2010).

Business incubators become an essential policy tool for promoting the growth and development of entrepreneurship and business start-ups. Through its external networks, business incubators assist tenant companies in generating entrepreneurial value (Nair and Blomquist, 2019). The objective of the business incubators is intended to improve the survival rate as well as scaling up of newly launched businesses by offering a method for identifying companies that are constrained by a lack of resources and managerial assistance (Ayatse et al., 2017; Pattanasak, 2022). It includes the provision of facilities ranging from physical infrastructure, guidance and mentorship, seed capital to expertise for optimal utilization of creativity and the ability to market the entrepreneurial idea (Gandhi et al., 2021). After reviewing the relevant literature, it has been inferred that a business incubator in itself is an organization whose main objective is to nurture and support new business firms. To carry out these objectives it requires some inputs like manpower, finance, physical space and ICT infrastructure. Many supporting organisations also needed to contribute to this goal of business incubation.

The researchers find it critical for the policies regarding selection should be positively connected with the achievement of their (business incubators) goals (Hackett and Dilts, 2004; Totterman and Sten, 2005). Therefore, tenant startup firms should disclose correct details regarding their proposed business and company while seeking admission in the business incubator (Pals, 2006). It was also ascertained through literature that business incubators should implement a stringent selection process. With regard to the selection process, it is also

mentioned that those who are ambitious should be given preference during selection for admission in a business incubator (Dvoulety et al., 2018). As we now see, the mission and purpose of a business incubator/incubation centre is to aid in the establishment of new businesses (Churchill and Lewis, 1983; Birley, 1986; Pals, 2006; Al Sharif, 2022).

In this context, the stages of business development become important to mention. There are four stages of business development such as the idea stage, the attempt stage followed by the development stage, and finally the commercialization stage (Bricks, 1986). The study comes to the additional conclusion that the gap linking the idea and the attempt stages is important, and the smaller the gap, the greater the likelihood of establishing a new enterprise. Because of this, incubation aims to minimise the gap between these two stages and inspire independence by providing new business ideas. By offering them a variety of services, such as incubation space, business support services, and professional networking, business incubators are removing the factors that causes to failure for new and small businesses.

A business incubator/incubation centre thus tries to offer proper services and structure to the tenant firms by even sometimes managing their affairs partially and assisting in creation of new undertakings (Smilor, 1987; Lalkaka and Abetti, 1999; Aernoudt, 2004; Chan and Lau, 2005; Gozali, 2020). The main components of business incubators frequently listed and researched in earlier researches are :

- Office space and infrastructure
- Shared services to lessening expenses
- Professional guidance and mentoring
- Financial Support and Marketing assistance
- Networking with other stakeholders

Therefore, it can easily be concluded that business incubators not only support in establishing the new business ventures/startups but also reinforce them in their formative years in the process of their survival when there are more chances of their failure. The business incubator helps new ventures and provides them the goodwill in view of stakeholders as well as its clients (Yannopoulos, 2017; Leitao, 2020). There are various kinds of incubators and the functions/role of these incubators depends upon the type to which they belong.

3. Research Design and Methodology

Management doyen Peter Drucker's famous quote "you can't improve what you don't measure", still stays relevant. In the context of business incubation, it has become imperative to measure the performance of the same as they are either publicly funded or financed by private institutions. On the basis of literature review a conceptual model is developed (Refer Figure 01) for measuring the performance of success factors for business incubators. This study is based on primary data collected from thirty-two business incubation managers and with the aid of SPSS 20.0® and Lisrel 9.00 software, measurement model was assessed.

3.1 Objectives of the Paper

Establishing relationships between existing factors such as Government Policies, affiliation with universities, infrastructural facilities, networking and business incubation success, is the major goal of evaluating the research.

3.2 Research Constructs and Conceptual Relationships

Many researchers in the area of business incubation argued the basis for measuring success of a business incubator is different in every country i.e. it is not a universally accepted criteria (Phan et al., 2005). Some indicators such as formation of networks, support of financial institutions for tenant capitalisation are important measures of performance (Campbell and Allen, 1987). Sustainability and growth of the incubator itself and the tendency of providing services are the mean indicators of incubator performance (Mian, 1997).

As far as India as a developing nation is concerned, it's on growth and development path and at this very stage the role of business incubators becomes pivotal and therefore included in the government's economic development strategy post 2000s. As a result, the current study aims to pinpoint the key success elements influencing incubator outcomes and suggest strategies for improving business incubator performance. This study looks into how connections to universities, infrastructure, and network use might improve the performance of business incubators.

3.2.a. University Linkages

Business incubators linked with academia emphasizes on innovation and growth. Universities are redefining themselves as an entrepreneurial educational hub. Credit goes to their well-developed infrastructure, presence of expert faculty members, access to various databases through libraries, laboratories for R&D, and alumni connect. Business incubation centres are important for fostering an entrepreneurial culture among students and growing entrepreneurship in a nation, in addition to providing entrepreneurial education and training (Mian, 1997; Grimaldi and Grandi, 2005; Aerts et al., 2007; Pauwels et al., 2016). Studies emphasize on university linkage and advocates that this construct plays an important role as far as the performance of business incubator is concerned. It is also argued that the type of business incubator depends upon the country in which it is operating and most of the incubators act as research centres under the influence of the university. The incubators in developing nations are either government-funded or foreign-country-funded (Koshi, 2011). The performance and behaviour of business incubator is influenced by the interaction between the university, industry and government in a knowledge-based economy (Etzkowitz, 2009).

3.2.b. Incubation Facilities

The incubation facilities are the set of tangibles provided to the tenant firm like physical space, shared offices, laboratories for R&D for developing prototypes and access to databases for patent search etc. before starting a business. Studies emphasizes on the influence of incubation facilities on enhancing the performance of business incubator. The incubation facilities rages from writing a business plan, supporting product design, developing and testing the prototype, financial assistance and providing workforce and skill-based training to incubatees are the priority support services (Mavuri et al. 2020). The facilities are of immense importance at every incubation phase. In a pre-incubation phase when the business incubators are facilitating new business plans, knowledge intensive business techniques are being provided. In the incubation phase financial services and business incubator extends its support to the firms successfully graduated from the business incubator (Fernandez et al., 2015).

3.2.c. Networking

Another important construct behind success of any business incubator is a network with the different agencies for knowledge sharing, obtaining finance and smooth operations, stems from the network theory (Nohria and Eccles, 1992). This theory advocates the main feature of business incubator is to channelize the knowledge for the development of its clients and find out ways to commercialize the innovations. The use of networks for the enhancement of the performance of business incubator/incubation centre is well mentioned in several

studies and considered that networking can be used as a major strategy to benefit both incubator and incubatee (Akcomak, 2009). Like other incubator facilities, networking facilities also helps business incubator/incubation centre in different stages of the incubation process and exploitation of networks acts as a critical success factor for any business incubator (McCann, Reuer and Lahiri, 2016). Networking can be made efficient both internally as well as externally, the robustness of internal networks enhances the competitiveness of a business incubator (Hughes, Ireland and Morgan, 2007; Leitão, 2022) on the other hand the robustness of external factors helps the entrepreneurs in getting and procuring many important resources needed to survive in the market (Eveleens, van Rijnsoever and Niesten, 2017).

3.2.d. Business Incubator Performance

Till date there is no consensus on the definition and the way to measure business incubator performance but many researchers show interest in this area. Few studies tried to define and assess performance of business incubators (Ayatse, Kwahar, and Iyortsuun, 2017; Eveleens, vanRijnsoever and Niesten, 2017; Gozali, 2020; Pattanasak, 2022). We have to consider some definitions of performance of business incubator in order to develop a conceptual model as the performance is generally referred as the goal attainment activity in comparison to the expected outcome (Mosselman and Prince, 2004). It is worth mentioning that the goal of a business incubator should be centred on the clients' successful graduation in order to accommodate new admissions.

The number of successful graduates is therefore regarded as a sign of a constructive incubation process. Survival rate and graduation rate become significant when evaluating the effectiveness of a business incubator. In a similar vein, business incubators are renowned for producing jobs (Brooks, 1986; Al-Mubaraki and Busler, 2010). Consequently, an incubator should foster an inventive culture and provide support for technology transfer (Mian, 1997; Phillips, 2002). Studies also argued that business incubators are crucial in the development of industry clusters and economic growth (Hansen et al. 2000; Fukugawa, 2013). The items pertaining to all these sub-constructs can be added to the scale while measuring the performance of a business incubator.

3.3 Conceptual Model of Research

A Conceptual model should have both independent and dependent variables (Anderson & Gerbing, 1991). The model specification of the study may be given as :

$BIP = f \{UL, NG, IF\}$

BIP = Business Incubator Performance (Endogenous/Dependent variable).

UL = University linkage (Exogenous/Independent variable).

IF = Incubator Facilities (Exogenous/Independent variable).

NG = Networking (Exogenous/Independent variable).



Figure-1 : Conceptual Model for Study Constructs

3.4 Respondents Profile

The data was collected from a sample of 32 respondents, 56.2 percent of the sample of 32 people were women, 75.4 percent were single, and 20.8% of people were married, and the average age was 30. Regarding education levels, 14.1 percent finished higher education, while the highest level of education held by 10% of those was a postgraduate degree. We created the first goal of the article to validate the components utilised by factorial confirmatory analysis once we knew the profile of the respondents.

4. Analysis

Assessment of Unidimensionality, Reliability and Validity

The magnitude of the factorial load must also be observed in CFA, and variables with low loadings should be eliminated from the model. Cronbach's alpha (Cronbach, 1951) was used to assess the construct's dependability, with values greater than 0.7 being acceptable. By analysing standardised residuals, it is possible to confirm the construct's unidimensionality. The results for CFA are shown in Figure-2.



Figure-2 : CFA for all Study Scales

Convergent validity was also established through independent t test. The values for all the scales were above recommended 1.96. The results are shown in Figure-3.



Figure-3 : t Values to Establish Convergent Validity

Table-1 : Test Results of Validity & Reliability

Construct	Cronbach Alpha	Construct Reliability	Variance Extracted
UL	.77	.79	.46
NG	.84	.96	.80
IF	.88	.89	.67
BIP	.85	.85	.55

Source : Computation by the author.

5. Conclusion

This study is useful for further investigation on the condition of incubators right now and what initiatives are required for the advancement of business incubators in the future. The research instrument is established from the comprehensive literature review and measures are identified. Only a conceptual model is developed in this study from data which is obtained from 32 incubation managers. It can be empirically tested in future research by conducting a quantitative survey of a subset of Indian BIs.

Through this data the research scale was refined and testing required for the assessment of the measurement model was performed. Initially, CFA was performed and all the scales were found unidimensional. Further, tests of validity and reliability were also performed, where the scale was found valid and reliable. The existing research serves as a foundation and identifies relationships that could be enhanced and reinforced by a cross-sectional/longitudinal or even a case-based analysis of business incubators' best practices. Therefore, we propose that this scale can be used for further research and the findings obtained can be generalized.

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A Study of Disclosure of the Qualification of the Independent Directors in the Annual Report by the Companies in India

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Abstract : The motive of this study was to inspect the impact of the factors and features of disclosure of the qualification of the independent directors by companies in India. With this study, the authors wanted to determine association between the disclosure of the Qualification of Independent Directors (QIDR) in board and the age, size, origin, sector and profit of the companies in India. A binary logistic regression was undertaken to assess whether disclosure of qualification of the independent directors was related to the age, size, company's origin, sector and profit. The study has reflected that there is a significant difference between the QIDR and Non-QIDR (NQIDR) companies. The likelihood that the companies will publish the information regarding the qualification of the independent directors in the annual report is greater in the case of private sector companies and companies that have higher profits.

Keywords : Binary Logistic Regression, India, National Stock Exchange, Qualification of Independent Directors, Disclosures.

Introduction

It is rightly said by Beaver (1989) that the effective functioning of the capital markets essentially depends on the disclosure made by the companies. In fact, Lev (1992) rightly pointed out that it is vital to have precise and accurate information about the performance potential of the companies, so that the money allocated in the stock markets bears fruits. There are two ways by which the information disclosure can create value, first is by directly narrowing down the information gap and thus reducing the uncertainty of the investors about the company and second is by indirectly enhancing value-creating activities through

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a reduced cost of capital and better terms of trade between the suppliers and customers. In the recent years a lot of attention has been paid to the information disseminated by the companies through various means viz., annual reports, websites, news reports etc. With the increased level of information dissemination there is a need to focus on the investor protection, corporate governance, corporate disclosures, etc because the quality of information disclosed by the companies has a great impact on the investment decision made by the investor (Elliot et. Al. 1994).

Types of Disclosures

The word disclosure includes a wide spectrum of information disclosed by the company which is classified as mandatory and voluntary disclosure. When the company is bound by law to disclose certain information at specific times and format it is called mandatory disclosure. For instance, information disclosed regarding the financial performance of the company in its annual report involves adherence to various laws, along with that it has to be presented in the format prescribed under the law. Along with that companies have to stick to the time frame provided under the law. If a company fails to follow these norms there are provisions for strict punishment and fines. So, it is extremely important for the companies not to deviate from these requirements. Company must also ensure that the information presented in these financial statements is correct and is backed by evidences i.e., audited results are presented in the annual report. The stakeholders of the companies, the potential investors, regulatory authorities, etc are also interested in information beyond the ones which are mandatory to be disclosed by the company, this information is nothing but the voluntary disclosure made by the company. This information, by default is considered to be valuable for the various stakeholders of the company and is crucial in order to assess the correct position of the company. For instance, the information disclosed by the company in the annual report under the discretionary requirements section, media reports, earning calls, etc. Nowadays with the improved means of communication disclosure can be made by the company through several means. Investors feel the need to know more about the company and its future growth prospects given the uncertainty of returns. If credible information disseminated from the insiders of the company, it helps boost the investor confidence and reduces the information asymmetry. This automatically enhances the usefulness of the financial statements and other mandatory information disclosed by the company. It is seen that few companies restrict themselves to the mandatory disclosure and hesitate to make voluntary disclosures while few choose to have a mixture of both in their disclosure pattern, this important aspect was highlighted by Verrechia (1983).

The Need for Corporate Disclosures

The disclosure of financial information by the company plays an integral part in decision making both at individual and corporate level (Elsayed et. Al. 2010). The financial reporting practices that evolved during the early twenty-first century defined the disclosure practices we find today. Its significance keeps on increasing as the financial reporting practices transform in this highly informed era. Today as the investors find it very difficult to make investment decisions given the complexities and situations, disclosure finds more and more relevance in the business world and it is equally important to study and make necessary improvements in this field. Regulatory authorities and the government of India has been constantly emphasizing on the need to make more and more quality disclosure so that it reduces the information asymmetry between the providers and users of disclosure information.

Laws Pertaining to Disclosure of the Board in Companies in India

Over the years several attempts have been made to encourage companies to make more disclosure in their financial statements, press release etc. SEBI (2005) amended the existing Listing Agreement Clause 49 and it said that all existing listed companies with a paid-up share capital of Rs. 3 crores or more or with a net worth of Rs.25 crores or more shall submit quarterly compliance report to the stock exchanges. The stock exchanges also have to ensure that all provisions of the clause 49 have been complied with by the company seeking listing for the first time. For this the company has to setup its board and constituted committees i.e., Audit Committee, Shareholders / Investors Grievances Committee etc., in accordance with revised clause before seeking in principle approval for listing. A separate cell with identified personnel is maintained by the stock exchanges to monitor the compliance with the provisions of the revised clause 49 on corporate governance. A consolidated report is prepared by the stock exchanges after receiving the compliance reports from the companies and is submitted to SEBI within 60 days from the end of each quarter.

SEBI (2008) amended the disclosure requirements of the board in Annexure 1D of clause 49 of listed companies. It said that

"a non-executive chairman is allowed to maintain an office for the chairman. These expenses are to be borne by the company and he shall receive the
reimbursement for any expense borne by him for performing his duties. The tenure of the Independent Directors on the Board of a company shall not exceed nine years. The independent directors who are qualified and have the required experience shall be appointed by the company. The company may check the requisite details before the appointment of the independent directors".

Affairs (2009) issued Corporate Social Responsibility Voluntary Guidelines in order to assist and encourage companies to make more disclosures. The fundamental principles listed in the guidelines include formulation of a CSR policy along with participation of various levels of executives and approved by the board. The core elements of the guidelines emphasise on care for all stakeholders i.e., respecting the interests of and being responsive towards shareholders, develop a mechanism to engage with stakeholders, inform them of innate risks and lessen their impact. On the ethical functionality, the companies must engage into governance with ethics, transparency and accountability.

Companies Act (2013) defines the qualifications of an independent director in the following manner :

Section 149(6) defines an independent director of a company as, "a person who doesn't hold the position of either a managing director or whole-time or nominee director. The board believes that the person has requisite experience and skills. The person or his relative is not or was not the promoter or related to the promoters or directors of the company (holding, subsidiary or associate company) during the current financial year or two immediately preceding financial years. In case of any transaction during the two immediately preceding financial years or during the current financial year, it should not exceed two per cent of the gross turnover/total income/fifty lakh rupees whichever is lower. The person or his relative is or has not held any important managerial post in the company (holding, subsidiary or associate) in three financial years immediately preceding the financial year (year of appointment). He is or was not an employee or owner or a partner in the company in the immediately preceding three financial years (year of appointment) in the following firms or institutions- an audit firm, company secretary, cost auditor, legal consultancy firm. The person or his relative does not hold voting power of the company (two per cent. or more). The person is not the Chief Executive or director of any Non-profit organisation (NGO) that is in receipt of twenty-five per cent. or more from the promoters/directors/company (holding, subsidiary or associate) that holds voting powers (two per cent. or more)".

Section 149(7) emphasises that each and every independent director "shall give a declaration that he/she fulfils the criteria of independence or are qualified to be an independent director under sub-section (6) at his/her first board meeting and at every first board meeting of every financial year".

Review of Literature

In order to adhere to the principles of the corporate governance the company needs to be more transparent regarding its day-to-day operations (Harun et Al. 2018). Bamber (2010) said that the high-profile strategic operational and financing decisions like mergers, acquisitions, strategic marketing, product expansion etc are taken by the top-level management who work as the economic agents. They are more inclined towards these key decisions however when it comes to making secondary decisions like making choices regarding disclosure, they do not seem to have much effect. While making a disclosure, utmost care needs to be taken as these decisions are enigmatic and obscure. These decisions require trade-off among several contradictory goals, i.e., they need to disclose information in a way that it benefits the investors, doesn't increase the litigation risk of the company and doesn't let the competitors know the insights of their business, these important revelations were made in a study by Dye (1986); (Evans et. Al. 2002). The disclosure level of the companies can be ascertained by the disclosure index which comprises of both voluntary as well as mandatory disclosures made by the company. This disclosure index can be calculated from the information revealed by the companies in their annual report, websites, and other media (Marston et. Al. 1991). The financial and non-financial information revealed by the company in its annual report and other media reports is known as disclosure (Gibbins et Al. 1990). Ackerlof (1970); Trueman (1986) found in their study that disclosure of information is beneficial to all the stakeholders of the firm. It is strongly dependent on the signalling managers capability to interpret and predict the changes in the economic environment of the business. The orientation of the investors' expectations with the managers' assessment is really important (Ajinkya et. Al. 1984) and (King et Al. 1990). Skinner (1994) and (Kasznik et. Al. 1995) observed that the management needs to prevent the negative news, as it is important to attract new capital (Frankel et al. 1995). Time and degree of accuracy of the information disclosed by the companies enhances its value in the eyes of the investors (Elliot et. Al. 1994). The more the information disclosed by the company the more it creates a positive effect on its stock market price (Lev et. Al. 1990). The disclosures made by the firm has various ramifications on both the management and the stakeholders of the firm as it reflects the firm's position (Gibbins et Al. 1992). When a firm witnesses a change in the credit ratings it tends to make more voluntary disclosures regarding its future prospects and decisions, this was an important finding of the study conducted by He (2018). The companies with large ownership concentration namely the public limited companies tend to make more financial information disclosure through the electronic media (Tatjana et Al. 2018). Fernando (2017) found out in his study that the stock price movement is less during the announcement of the earnings and the companies make more disclosure to in increase the trading volume. Cassar (2018) suggested that the performance and holdings of the high return hedge funds are not disclosed by the managers due to high proprietary cost. Lin (2018) said that the increase in the institutional ownership leads to enhancement in the information environment which creates pressure on the other rival firms in the industry to disclose more information. Hales (2018) discovered that the employee reviews about the companies on various social networking platforms are helpful in predicting the future corporate disclosures by the company. Golden (2017) argued that firms controlled by members of the same family offsets the stock-based incentives which is the motivation for managers to make timely disclosures.

Objectives of the Study

The study is mainly confined to achieve the following objectives:

- 1. To study and analyse the relationship between the financial/non-financial factors and the disclosure of the qualification of the independent directors of the board of the companies in India.
- 2. To identify areas where disclosure of the qualification of the independent directors made by the company can be improved and suggest measures if any.

Scope of the Study

The study focuses on the association between the financial aspects (namely size, profit), non-financial aspects (namely age, sector and origin of the company) and the disclosure made by the company regarding the qualification of the independent directors (QIDR) of the company (Tatjana et al. 2018). There has been a lot of study on the disclosure of information by the companies, banks and other institutions across the globe but very little focus has been given to disclosure of information in annual reports of the firms in India in particular. The study aims to study the disclosure level of the Indian companies that are listed on the NSE. There is a need to study the numerous issues surrounding the disclosure by the companies in India and their impact.

Sample for the Study

Sample selection for the study has been done through purposive sampling technique. The selected companies are listed on the NSE. The period of study is 2020-2021. Banks and other financial institutions are kept outside the purview of the study in order to avoid any variations in regulations. The study aims to perform an over the sector comparison of the disclosure of the board made by the companies. The sample for the study consists of 537 public and private sector companies operating in India.

Period of the Study

The study has been conducted for a period of 1 year i.e., 2020-2021.

Data Collection, Analysis and Interpretation

The study has been primarily based on secondary data. The various sources of data are the annual reports published by the firms, the official website of the firms, the official website of Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), reports and SEBI guidelines, etc. Various statistical tools like Percentage, Comparative Analysis, Unweighted disclosure Index, Content Analysis, Test of Significance, binary logistic regression etc. has been applied to draw useful inferences out of the study. Statistical software like MS Excel, SPSS, etc. has been used for the analysis.

Hypotheses Development

The company's profitability and age are not significantly related to the voluntary internet financial reporting done by the company (Tatjana et Al. 2018). Older the company give more insights about their activities as compared to young companies because they are more immune to shocks (Owusu et. Al. 1998), Al-Shammari (2007). So, we decided to study the relationship between age and the QIDR and the following hypothesis was developed

H1 : There is a positive association between the age of a company and the disclosure of the qualification of independent directors in the annual report.

Disclosure made by the company depends on the size of the company because it requires a lot of resources to be able to deal with bulk information and presenting it in a way that it reaps benefits for the company (Singhvi et. Al. 1971), Buzby (1975), Cooke (1989), (Watson et Al. 2002), and (Abdullah et. Al. 2008). Thus, we tried to inspect this relationship in the light of QIDR. **H2** : There is a positive association between the size of a company and the disclosure of the qualification of independent directors in the annual report.

There is a positive impact of foreign ownership on corporate social responsibility disclosure (Khan et Al. 2013). There is appositive relationship between foreign institutional ownership and voluntary disclosure (Ling et Al. 2012). Huafang (2007) found that the higher the block holder ownership and foreign listing/ shares ownership, the higher is the voluntary disclosure. Companies which have their origin in a developed country make more social and environmental disclosures than companies which have their origin in developing countries (Adams et Al. 1998), (Kolk et Al. 2001), (Hackston et. Al. 1996), Jahamani (2003), (Niskala et. Al. 1995), (Stanwick et. Al. 2006). Thus, we intend to study the relationship between the origin of the company i.e., Indian or foreign company and QIDR

H3 : There is a positive association between the origin of a company and the disclosure of the qualification of independent directors in the annual report.

Subramanian (2006) concluded that there were no differences in disclosure pattern of public/private sector companies, as far as financial transparency and information disclosure were concerned. Since very few efforts have been made to unearth the relationship between the sector of the company (public or private sector company) and QIDR, we developed the following hypothesis.

H4 : There is a positive association between the sector of a company and the disclosure of the qualification of independent directors in the annual report.

The companies which earn a lot of profits tend to disclose more to signal the investors that the company is profitable and several studies have examined this relationship but the results are different in different situations (Oyelere et Al. 2003). There is no correlation between company's profitability and internet financial reporting (Marston et al. 2004), Marston (2003), Al-Shammari (2007), (Damaso et. Al. 2011) and (Mohamed et Al. 2015). Pervan (2006), Al-Moghaiwli (2009), (Homayoun et al. 2010) said that there is a positive correlation between profitability and IFR. So, in connection with the prior studies we developed the following hypothesis :

H5 : There is a positive association between the profit of a company and the disclosure of the qualification of independent directors in the annual report.

Experimental Procedure

The data was obtained from the companies listed on the national stock exchange and using purposive sampling technique 537 companies were selected for the purpose of conducting binary logistic regression. Information regarding the disclosure of the board made by the companies in accordance with the Listing Agreement Clause 49 Annexure 1D, Companies Act 1956, Companies Act 2013, Listing Obligations and Disclosure Requirements Regulations 2015 was collected. Since, the disclosure pattern of the board by the companies did not show any significant changes except the qualification of the independent directors. The study focussed only on disclosure of the QIDR. The list of dependent and independent variables is shown in Table-1. The purpose of the study was to determine the factors which separate the QIDR companies from the NQIDR companies. For this study, the dependent variable was classified as a binary choice between a QIDR company and an NQIDR company.

The descriptive statistics of the independent variables for both groups of companies are shown in Table-2. For the variables that measure the company's age, size (market capitalization) and profit, the average values are higher in the NQIDR companies. The Table does not include the variables "Origin" and "Sector", as they belong to the group of descriptive variables. There were 487 Indian and 37 Non-Indian Companies making QIDR disclosure and there were 40 public sector and 484 private sector companies making QIDR disclosure. However, there were 12 Indian and 1 Non-Indian company in the NQIDR category and 6 public sector and 7 private sector companies in the NQIDR category.

To test hypothesis, we used binary logistic regression analysis, since our dependent variable and one independent variable is dichotomous as followed by Jaccard (2001). We used dummy variables of '0' for the 'non- disclosure' and '1' for the 'disclosure'. All independent variables and control variables were entered simultaneously. Following Field (2009), we first checked for multicollinearity using variance inflation factor analysis (VIF), and found no evidence of multicollinearity in the logistic regression model. A VIF value greater than 10, for any variable indicates multicollinearity. The VIF of the two continuous variables in the study was 1. We also inspected the standardized residuals and deviance statistics (Cook's distance). No standardized residuals exceeded 3, and no Cook's distance exceeded 1, which also indicated an acceptable model fit as suggested by Field (2009). The Omnibus test of model coefficients (model chi-square=20.71; df=5; p=0.001) the significant p value indicates that the full model

was a good fit, which also indicates an improvement over the baseline model. The Hosmer and Lemeshow Test (chi-square = 8.499; df = 8; p = .386) the insignificant p value indicated that the full model was a good fit.

Variables	Indicator	Measuring
Dependent		
QIDR	Disclosure of Qualification of Independent Directors (in the company's annual report)	Dummy (1 = QIDR company, 0 = NQIDR)
Independent		
Age	Company's Age	Company's age in years
Size	Market capitalization	Market capitalization of the company
Origin	Country of Origin of the company	Dummy (1= Indian company, 0 = Non-Indian company)
Sector	Sector	Dummy (1= Private Sector company, 0 = Public Sector Company
Profit	Profit of the company	Profit before extraordinary items and tax

Table-1	:	The	List	of	Variables
				•••	

Note : QIDR stands for qualification of independent directors companies and NQIDR stands for non-qualification of independent directors companies in Table-1 and Table-2.

Table-2 : Descriptive Statistics of the Independent Variables for
both Company Groups

Independent Variable	Mean	S.E.	SD
Age			
QIDR	41.97	1.10	25.22
NQIDR	50.46	6.16	22.21
Size			
QIDR	2236390.35	321779.71	7365874.16
NQIDR	6350572.85	2469353.88	8903382.04
Profit			
QIDR	1191.95	141.61	3241.50
NQIDR	6619.79	2027.41	7309.91

Based on the logistic regression analysis results, it is evident that, out of the five variables included in the model, two may be considered statistically significant, namely, sector (Wald =8.734; p = 0.003), profit (Wald = 7.655; p = 0.006). All other variables, namely age, size, origin showed an insignificant effect on the QIDR. On the basis of the results from Table 3, a regression model equation can be formed

Log $[(p / (1-p)] = 4.436 - 1.870 \beta_1 + 0.000 \beta_2$

The variables in the equation also give us Exp (B):

Odds $[(p / (1-p)] = e^{84.435 + 0.154 \beta_1 + 1.000 \beta_2}$

Where, β_1 = Sector and β_2 = Profit

H4 can also be confirmed because the "sector" variable had a significant correlation with the disclosure of qualification of the independent directors in the annual report. For every one-point increase in sector, the odds of QIDR disclosure increased by a factor of 0.154 (-84.60 per cent), with all other factors being equal. However, contrasting results were reported by Subramanian (2006).

	В	S.E.	Wald	df	Sig.	Exp (B)
Full model						
Sector	-1.870	0.633	8.734	1	0.003	0.154
Profit	0.000	0.000	7.655	1	0.006	1.000
Constant	4.436	0.401	122.070	1	0.000	84.435

Table-3 : Variables in the Equation

The "profit" variable measured the company's profits. A statistically significant correlation was detected in the variable "profit". As a result, the H5 can be confirmed partially with 95 per cent reliability because of the positive correlation between the company's profit and QIDR disclosure in the annual report. For every one-point increase in the profit, the odds of the QIDR disclosure increased by a factor of 1.000 (0 per cent), with all other factors being equal. Similar results were obtained by (Oyelere et Al., 2003).

However, this study was unable to confirm three hypotheses, namely, hypotheses H1, H2 and H3, which refer to the impact of age, size, origin on the disclosure of QIDR in the annual report.

Conclusion

The paper presents the study on the factors according to which the companies which publish the disclosures of qualification of independent directors in their annual report (QIDR companies) differentiate from the companies that decided not to publish them (NQIDR companies). The study was carried out on a sample of companies in India (n = 537). It was discovered that most of them report QIDR. In the continuation of the study, a logistic regression analysis was used to formulate a model, with the help of which we identified the factors that affect the higher probability that the companies will publish the information regarding the qualification of independent directors in their annual report. To this end, a dependent variable was formulated, which was binary encoded (companies that report i.e., the QIDR and companies that do not report i.e., the NQIDR). The independent variables were related to the age, size, origin, sector, profit. The statistically significant variables, which affect the higher probability that the companies will report QIDR, are the following: company's sector (i.e., public sector or private sector), profit. The variables measuring the company's age, size, origin did not turn out to be significant statistically. The study was limited only to the determination of factors by which the QIDR companies differ from the NQIDR companies. However, the users' points of view in relation to the QIDR were not observed, which may present the subject of further studies. Such study would allow us to obtain the users' feedback in regard to the content and the method of presentation. The information could be used by the companies in formulating the strategy to present the information regarding the independent directors. It might also encourage the companies who do not use the QIDR to learn about the advantages and opportunities offered by it. Internet and other media can be used to shift from the traditional paper-based reporting to internet reporting in the future.

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Does the Categories of the IPOs Differs the Post Listing Performance Risk? : An Evidence Assessment of Indian SME Financing

DRASHTI KAUSHAL SHAH AND P.K.PRIYAN

Abstract : The 'Atmanirbhar Bharat Abhiyaan' is being greeted as economic revival from a global pandemic, and to restart India's MSMEs(Micro, Small and Medium Enterprises). Modi government has announced special packages and offered 15% equity infusion to MSMEs to tap the capital market. Such a move of the government increases the trust of the investors towards the investments in MSMEs. Valuation of such unorganized firms is difficult, hence investments in SME IPOs are highly risky. Volatility refers to the degree of change related to stock price, higher volatility implies a higher risk of investments. Using 187 IPOs listed on NSE Emerge, the present study measures volatility for initial one month from listing. Further, it compares the performance based on issue-specific variables, marketrelated variables, and company-specific variables. Volatility is found significantly higher for IPOs with higher RNOW, higher subscription ratio, and issued during positive market sentiment.

Keywords: Initial Return Volatility, SME IPOs, Performance Uncertainty.

Introduction

MSMEs contribute significantly to most countries' economic development and employment. (Stein, Goland & Schiff, 2010). In, the Indian context, MSMEs employ over 11 crores workers, contributes 29% of Gross Domestic Product (GDP), and encompass nearly fifty percentage of exports. Around 90.19 lakh MSMEs are registered in India and out of which 6.33 crore (99.4 %) are micro-enterprises. The 'Atmanirbhar Bharat Abhiyaan' is greeted as an important fiscal

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policy to ease India's economic difficulty due to pandemics. 'Atmanirbhar' package to restart India's MSME sector was announced by the Modi government on 13th May 2020. In order to boost the growth of MSMEs, the government has planned to provide 15% equity infusion to those who want to take finance through a public listing. The idea is to hold the funds for 2-3 years in MSMEs and sell the same when it appreciates and uses the funds in reinvesting in another encouraging MSME. The government has kept Rs 50,000 crore as a rolling fund, which will be continuously invested.

Access to finance is the biggest challenge for exponential growth of MSMEs. In the global competitive market, to compete against Chinese products, MSMEs exposure towards the capital market becomes essential. A public listing of SMEs provides growth and liquidity to investors and employees holding ESOPs and exit routes to private equity investors. In India, BSE SME and NSE Emerge, established in 2012, provide SMEs a public listing opportunity with least compliances and cost compared to the mainboard exchange. NSE Emerge and BSE SME exchange has raised 6481.22 cores since its inception to December 2019 by successfully issuing 524 SME IPOs (Source: Handbook of Statistics_2019, SEBI). During the pandemic situation of Covid19, 20 SME IPOs have successfully raised 120.07 crores from March to October 2020.

Regulations for listing at SME exchanges are significantly different than mainboard IPOs listing. Listing at SME exchanges is exempted from SEBI approval, in-principal approval of stock exchanges, and public notice requirements. Hence, the risk associated with the SME investment increases, and assessing the same becomes very important. Volatility refers to the degree of change related to stock price, higher volatility implies that a security's share price can possibly be accelerate in any direction, while less volatility implies a more stable price. The higher volatility indicates that security is riskier. Volatility is often assessed as the standard deviation which helps to identify stocks for successful investing. The present study contributes by measuring the volatility of SME IPOs India listed on NSE Emerge since its inception in the year 2012 and comparing based on various company, issue, and market-specific variables.

Literature Review

Volatility is the standard deviation of the first 30 days post listing of IPOs (Mcguinness, 2016); while for 20 trading days post listing (Sahoo, 2014b; Sahoo, 2015). Listing day volatility is the distinction between high price and low price scaled by amount of high price and low price (Sahoo, 2014a). Fundamentally

strong IPO stocks minimizes the post listing performance risk (Sahoo, 2017). Hong Kong IPOs evidenced initial period volatility of 5.361 percent and 30-day volatility of 3.563 percent (Mcguinness, 2016). Indian IPOs evidenced 0.17 percent of volatility (Sahoo, 2014a); while volatility of 12.52 percent (Sahoo, 2014b); 0.15 percent listing day volatility, and 18.03 percent 20 days post (Sahoo, 2015).

Older firms are considered as established firms that possess a lower extent of risk (Ritter, 1991). Pre-IPO profitability provides information about the business prospects, and superior information reduces performance risk (Welch, 1989). Oversubscription ratio and volatility are positively associated (Vong, 2006). Higher level of post listing volatility for the firms associated with reputable investment bank underwriters, firms backed by venture capital, firms listed on the NASDAQ stock exchange, lower levels of debt, belongs to the technology sector listed during the period with high market volatility (Gleason, Johnston & Madura, 2008).

Underpricing, market sentiment, and float size effects initial return volatility; IPOs with a large offer size, reduce the offer price spreads and the reputation of underwriters leading to less volatility (Mcguinness, 2016). Listing day returns are affected by the volume of informed investors, while the volume of uninformed investors accelerates post listing volatility (Abraham, Harris & Auerbachet, 2016). Analyst favourable recommendation reduces listing day volatility (Sahoo, 2014a). IPO firms' board diversity and reputation and a large number of outside directors shrink aftermarket IPO price volatility; venture capital-backed IPOs are less volatile for the short-run (Sahoo, 2014b). Subscription rate gives a compelling sign to assessing both listing and post-listing price variability; larger issues have reported less volatility (Sahoo, 2015). IPOs are more transparent and likely to be less volatile with the participation from anchor investors, where as the market condition emphatically increases the volatility (Sahoo, 2017).

Based on the detailed review of literature, the present study tries to fulfil the gap by following ways. **First**, the study is focused on the SME Exchange of India with the recent dataset, sample of IPOs listed on NSE EMERGE from its inception from the year 2012 to August 2019 to uncover volatility up to 30 days of listing. **Second**, the study **compares** the magnitude of volatility for issue, company, and market-specific variables.

Objectives of the Study

The present study has twofold objectives; 1) is to measure the performance of IPOs listed on NSE Emerge in terms of volatility and 2) To compare post listing volatility of 10, 20, 30 day regularly issues company and market specific variables.

Rationale

The government encourages the capital market route for MSMEs to overcome the pandemic situation of Covid-19, by providing 15% equity infusion of up to Rs.50000 crores. The pricing and performance of SME IPOs play a significant in the future interest of investors, issuers, and regulators. The present study encompasses a new segment of the volatility of post listing, which is an important but not researched area. The findings would have suggestions for the issuers, investors and regulators.

Data and Methodology

Sample Selection

The sample data for this study consists of all the IPOs that were listed on the NSE Emerge stock exchange from its inception in September 2012 to August 2019. Table-1 outlines the sample for the study. Data has been collected from various sources such as https://www.nseindia.com/emerge/, Capitaline Plus Software, NIFTY Small Cap 250 Index data collected from https://www.nseindia.com/, and few variables collected from https://www.chittorgarh.com/.

Sample period September 2012 to Aug	just 2019
Particulars	Number of IPOs
Total number of IPOs issued during sample period	196
Excluded : Traded less than 30 days from listing	7
Finance and Investment Sector Firms	2
Final Sample Size	187
Sample as percentage of total IPOs	95.41%

Table-1 : Details of Sample

Source : Primary data.

Description of Variables

This study measures the IPO volatility post one month of listing and further evaluates the difference in IPO performance with different categories. Variables mentioned below are included in the study based on significance proved in the earlier studies.

Dependent Variable : After Market Price Risk (Volatility)

Assessment of price risk (price variability) indicates the quality of IPOs. IPOs with higher price variability are considered riskier than the less price variability. The study uses Sahoo's (2017) extreme value measure for volatility measurement. The study measures the volatility i.e. risk as the natural log high price divided by the low price on listing day. Listing day volatility is termed as Vol, and simple average Vol for first 10, 20, and 30 days post listing are termed as Vol_10d, Vol_20d, and Vol_30d. Risk and volatility are used interchangeably.

Description of Categories

Table-2 enlist the definition of variables, and for the comparison based on Age, CFO_TA, PIPH, RNOW, DE, share premium, listing delay, risk factors, subscription times, offer size; the sample of 187 IPOs have been classified into four quartiles based upon the lower value (Q1) to a high value (Q4). And for market sentiment, the sample has been divided into two categories, positive and negative market sentiments.

Variables	Definition
CATEGORY-1 :	Company Specific Variables
Age	Age of the firm is defined as number of years between incorporation and IPO listing.
CFO_TA	Operating cashflow during the financial year immediately preceding the IPO, scaled by total assets of the firm is encompassed as CFO_TA.
PIPH	Percentage of equity ownership held by the promoter; post-IPO defined as PIPH.
RNOW	Ratio of profit after tax to net worth in the financial year immediately preceding the IPO is defined as RNOW.

Table-2 : Definition of Variables

DE	Debt to equity capital ratio (book value) in the financial year immediately preceding the IPO is considered as DE.
CATEGORY-2 :	Issue Specific Variables
Share Premium	Present study defines the share premium as the ratio of offer price to face value
Listing Delay	Listing delay is considered as a number of days between listing day and offer closing day.
Risk Factors	Number of Risk Factors mentioned in the IPO prospectus
Subscription Times	Subscription times are defined as the number of times the overall IPO is over scribed measured as the ratio of the total number of shares applied to the number of shares offered.
Offer Size	Offer Size is defined as IPO offer price multiplied with number of shares issued.
CATEGORY-3 :	Market Specific Variables
Market Sentiment	Nifty Small Cap 250 index average daily return during 30 trading days preceding the IPO opening is encompassed as market index return.

Source : Compiled by the Author.

Empirical Results and Analysis

Extent of IPO Performance : Volatility

The performance of SME IPOs is depicted in Table-3. The volatility of 187 SME IPOs issued during the period is depicted with the minimum, maximum, mean, and standard deviation values. Listing day volatility ratio (vol) is evidenced mean 0.08, and declined to 0.05 for average 10 days volatility, 0.04 for 20 and 30 days post listing. The minimum values for the volatility ratio are 0.00 throughout the period, which indicates no variability of price. Maximum of volatility is highest on a listing day, then declined trend of the same is evidenced.

Comparison of IPO Performance Based on Categories

Normality check of dependent variables i.e. volatility indicates that data are not normal. To compare the performance based on company, issue, and marketspecific variables, non-Parametric tests such as the Mann-Whitney U test and Kruskal- Wallis test is applied. Results of the same are depicted in Table-4.

	Ν	Minimum	Maximum	Mean	Std. Deviation
Vol	187	0.00	0.38	0.08	0.07
Vol_10	187	0.00	0.13	0.05	0.03
Vol_20	187	0.00	0.09	0.04	0.02
Vol_30	187	0.00	0.08	0.04	0.02

Table-3 : Volaility Performance of SME IPOs

Source : Compilance by the Author.

Volatility indicated the variation of share price, measured as the natural log of high to low price ratio, Table-4 depicts the comparison of volatility for the different categories, represents mean for each quartile and p-value (significance value) of Krushkal Wallis or Mann Whitney U test.

Detail study of Table-4 indicates IPOs with higher RNOW resulted in higher volatility. The highest volatility of 20 and 30 days of the listing results for IPOs falling highest RNOW quartile (Q4). Here, the difference is statistically significant for Vol_20 and Vol_30. Higher RNOW signals the higher future prospect of the firm thereby increasing the price, resulting in higher volatility.

IPOs with higher levels of subscription result in higher volatility. Volatility for 10, 20, and 30 days post listing resulted significantly highest with quartile (Q4) than other quartiles. Higher subscription during IPOs results in higher demand by investors who failed to get allotment. Results in higher demand lead to higher volatility in the price of the shares.

Positive market sentiment resulted significantly higher for vol_10, vol_20, and vol_30. The positive market condition leads to an increase in demand of investors in the secondary market for the initial days of listing, resulting in higher liquidity. Higher price volatility during the initial phase of listing for IPO stocks resulted from the higher liquidity.

Age, CFO_TA, PIPH, DE, Share premium, listing delay, a number of risk factors, offer size, lead manager prestige, method of pricing reported insignificantly different volatility for listing day, 10, 20, and 30 days from listing.

Conclusion

Volatility ratio on the listing day ratio found 0.08 which is in the declining trend up to 1-month post listing. Price variation is found to be very low, thereby age,

	P value Vol_30		0.159				0.323				0.867				0.004^{***}				0.702					0.597			
	Vol_30		0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04		0.04	0.04	0.04	0.04
	P value Vol_20		0.257				0.411				0.697				0.012^{**}				0.467					0.701			
	Vol_20		0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.04		0.04	0.05	0.04	0.04
	P value Vol_10	Company Specific Variables	0.425				0.411				0.425				0.27				0.511				Variables	0.905			
)	Vol_10	iny Specifi	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	Issue Specific Variables	0.05	0.05	0.05	0.05
	P value Vol	Compa	0.329				0.519				0.465				0.248				0.855				Issue	0.278			
	Vol		0.08	0.07	0.09	0.08	0.07	0.08	0.08	0.10	0.08	0.09	0.08	0.08	0.08	0.09	0.09	0.07	0.08	0.08	0.08	0.08		0.09	0.08	0.07	0.09
	Category No. IPOs		47	47	46	47	47	47	46	47	47	47	46	47	47	47	46	47	47	47	46	47		47	47	46	47
	Category		QI	Q2	Q3	Q4	QI	Q2	Q3	Q4	QI	Q2	Q3	Q4	QI	Q2	Q3	Q4	QI	Q2	63	Q4		QI	Q2	Q3	Q4
	Variable		Age				CF0_TA				HdId				RNOW				DE					Share Premium			

Table-4 : Volatility of SME IPOs Based on Different Categories

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Listing Delay	QI	47	0.07	0.266	0.05	0.448	0.04	0.826	0.04	0.665
	Q2	47	0.09		0.05		0.04		0.04	
	Q3	46	0.09		0.05		0.04		0.04	
	Q4	47	0.09		0.06		0.05		0.04	
Risk Factors	QI	47	0.10	0.302	0.05	0.203	0.05	0.468	0.04	0.5
	Q2	47	0.08		0.06		0.05		0.04	
	Q3	46	0.07		0.05		0.04		0.04	
	Q4	47	0.08		0.05		0.04		0.04	
Subscription Times	QI	47	0.05	0.000***	0.04	0.000***	0.04	0.000***	0.03	0.001^{***}
	Q2	47	0.09		0.05		0.04		0.04	
	<u>(</u> 3	46	0.10		0.06		0.05		0.04	
	Q4	47	0.08		0.06		0.05		0.05	
Offer Size	Ql	47	0.08	0.867	0.05	0.961	0.04	0.836	0.04	0.512
	Q2	47	0.08		0.05		0.04		0.04	
	Q3	46	0.08		0.05		0.05		0.04	
	Q4	47	0.08		0.05		0.04		0.04	
				Mark	et Related	Market Related Variables				
Market Sentiment	Positive	113	0.08	0.594	0.05	0.007^{***}	0.05	0.005^{***}	0.04	0.008^{***}
	Negative	74	0.08		0.04		0.04		0.04	
*, **, *** indicate significance at 10 %, 5 % and 1 % level respectively	gnificance at	10 %, 5 %	% and 1	% level respe	ctively					

, , indicate significance at 10 /0, 0 /0 and 1 /0 level te

Source : Compilation of Author.

CFO_TA, PIPH, DE, Share premium, listing delay, a number of risk factors, offer size, lead manager prestige, method of pricing reported insignificantly different volatility for listing day, 10, 20 and 30 days from listing. IPOs with higher RNOW (Q4), higher level of subscription ratio (Q4), and IPOs issued during positive market sentiment resulted in higher volatility.

Implications and Future Scope of Study

Comparative analysis of IPO aid in understanding its nature of it and assist in better decision-making for primary market investors. The scope of the study is limited in twofold: one is in terms of its coverage to SME IPOs listed on NSE Emerge only and the other is the only comparison. The future researcher can delimit the same by extending the study to explore the factors responsible for the difference of performance of IPO based on the above categories.

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An Impact of Working Capital Management of Tata Motors Limited on Financial Performance

GAUTAM PRASAD, GARIMA DOHAR AND ANKITA RAJPUT

Abstract : The decisions made regarding assets and liabilities over the short term are referred to as working capital management. A central concept in financial planning is working capital. Every company needs to be aware of its working capital, which needs to be managed effectively and efficiently for operations to run smoothly financial planning is working capital. Every company needs to be aware of its working capital, which needs to be managed effectively and efficiently for operations to run smoothly. The present paper examines the working capital performance of TATA Motors Ltd., a USD 37 billion organisation that is a leading global automobile manufacturer with a portfolio that covers a wide range of cars, SUVs, buses, trucks, pickups, and defence vehicles. To measure Tata Motors Ltd.'s profitability, liquidity, solvency, efficiency, growth potential, financial leverage. and other vital indicators have been used. The present study also attempts to evaluate and analyse the management efficiency of Tata Motors Limited from 2018 to 2022. For the study, the secondary data has been taken from the Tata Motor Company's annual report and published reports available on the company's website. The data has been analysed using various ratio analyses, i.e., profitability, liquidity, solvency, efficiency, and financial leverage. Working capital management is a vital decision to be taken by Tata Motor Ltd., and the positives and negatives of these decisions play a significant role in determining the future of Tata Motor Ltd.

Keywords: Working Capital Management, Tata Motors Limited, Financial Performance, Financial Liquidity, Profitability.

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1. Introduction

A company's working capital is regarded as its lifeblood. A business can exist and continue to operate without earning a profit, but it cannot do so without a working capital fund. Working capital is a financial metric that measures the working liquidity that a company, organisation, or other entity, including a governed entity, has access to. Working capital is included in operating capital along with fixed assets like machinery and tools. It is determined as current assets less current liabilities. Therefore, working capital is a measure of a business's liquidity position, operational efficiency, and short-term financial soundness. Working capital management is a crucial aspect of corporate finance because it directly affects the company's liquidity and profitability.

Working capital is a reflection of a company's operational effectiveness, shortterm financial stability, and position regarding liquidity. A sick business is not turning a profit. Over time, a lack of working capital may result in closure and insolvency. Working capital management is a business strategy designed to ensure that a company operates efficiently by monitoring and using its current assets and liabilities to their most effective use. The management of working capital is the most crucial aspect of the company's daily operations. Working capital management, which affects decisions about short-term finances, seems to have not attracted much attention in the literature on finance. By keeping an eye on and making the most use of a company's current assets and liabilities, working capital management is a business strategy used to make sure it runs smoothly. All managerial choices and actions that typically affect the amount and efficiency of working capital are referred to as working capital management. Lenders and financial analysts have a mindset that working capital is a store of value for repaying such debts as borrowings, which has influenced this way of thinking. Bankers are taught to examine financial ratios and require values that are higher than predetermined benchmarks.

The idea of working capital management focuses on how businesses handle their short-term funding to enhance shareholders' value, satisfy liquidity, and maximise profitability. Because of its impact on the firm's profitability, risk, and, subsequently, value, working capital management was crucial. The risk of liquidity may be decreased if the business employs a working capital management strategy with an excessive amount of current assets. Working capital is crucial to any company's revenue and sustainability. Companies with less working capital would report a higher return on capital, which would help shareholders with a higher return. The timely payment of short-term obligations, such as those for raw materials, wages, and other running costs, is made possible by effective working capital management. Companies with efficient working capital management practises will produce more free cash flow, which will raise the value of the company.

1.2. Profile of Tata Motors Limited

Tata Motors Group (Tata Motors) is a \$37 billion organisation. It is a well-known worldwide manufacturer of automobiles. A wide variety of cars, sport utility vehicles, trucks, buses, and military vehicles are included in its varied portfolio. One of India's biggest OEMs, Tata Motors provides a wide array of integrated, smart, and e-mobility solutions. Tata Motors, one of the top automakers in the world and a member of the \$128 billion Tata group, was established by Jamseth ji Tata in 1868. Tata Motors is one of the few companies in the world to provide its customers with a wide range of products, with millions of TML vehicles on the road around the globe. Since 1961, they have grown their global presence by exporting. The business thrives in several passenger vehicle segments and exports to nations like Nepal, Bhutan, Bangladesh, and Sri Lanka.

Tata Motors provides a broad range of commercial vehicles that are tailored to local conditions and uphold the best standards for quality, safety, environmental standards, and user comfort. The Tata Motors company now has a global network of over 8,800 touchpoints and is present in over 125 countries. The UK, Italy, India, and South Korea serve as R&D facilities for Tata Motors. The business, which has extensive international experience, provides a deep knowledge of customer expectations from various markets and is in a good position to meet changing global consumer and automotive norms.

2. Review of Literature

Some important relevant studies are mentioned that have been reviewed before the following study is taken up. **Sivaranjani & Kishori (2016)** clarify the various working capital management strategies that can be used to build a strong financial foundation for the business. The internal and external business environments should be taken into account when developing a working capital management strategy. Effective execution is also necessary for good performance. **Shajar & Farooqi (2016)** assess the impact of working capital management on the profitability of selected automobile companies (i.e., Tata Motors Ltd., Maruti Suzuki India Ltd., and Mahindra & Mahindra Ltd.) in this paper. It is found that only the debtor's turnover ratio in the case of Maruti Suzuki India Limited and the current ratio in the case of Tata Motors Limited are positively related to profitability, and their impact is also found to be significant. Also, Durgesh (2019), for a better understanding of how working capital management affects the profitability of specific BSE-listed companies, set out 53 companies included in the study sample. For five years, from 2011 to 2015, the study used secondary data. The results of the study show that all aspects of working capital, including receivable days, payable days, inventory holding periods, current ratio, and quick ratio, have a significant impact on profitability. Ahmad et al. (2021) investigated the connection between Maruti Suzuki's profitability and the inventory conversion period. In this study, Maruti Suzuki was investigated for five years, from 2014 to 2018. In this study, the impact of the inventory conversion duration on return on assets, gross profit margin, net profit margin, and inventory turnover ratio was examined using correlation. According to the study's findings, there is a strong correlation between profitability and the time it takes to convert inventory. Whereas Ojha (2019) attempted to present the findings of an inquiry into the relative contribution of working capital management, as determined by return on assets (ROA), and its constituent parts, to Pukar International Trading's profitability. In this essay, the impact of working capital management on a company's profitability in Nepal from 2015 to 2016 is examined. According to the study, profitability has a positive relationship with the current ratio but a negative relationship with average collection and payment periods. Also, Adhikari (2020) aims to close the knowledge gap about working capital management in manufacturing companies in Nepal. The impact of various working capital components is examined in this study. According to this study, the cash conversion cycle, payable deferral time, and inventory conversion period are all negatively correlated with the profitability of manufacturing enterprises, whereas the debt ratio, current ratio, and receivable conversion period are positively correlated. **Pasupati (2012)** attempts to examine managerial performance in about king capital in selected units of India's automobile sector. It can be concluded that Ashok Leyland Ltd., which manufactures commercial vehicles; Mahindra and Mahindra Ltd., which manufactures passenger cars and multiutility vehicles; and Bajaj Auto Ltd., which manufactures two- and threewheelers, all maintained adequate working capital throughout the study period. Sheela & Kanagavalli (2020) throw light on numerous analysis methodologies for Hindustan Aeronautics Limited's working capital management in India. Based on an examination of Hindustan Aeronautics Limited's financial statements, the report concluded that the company's overall operational stability, soundness, and financial performance have improved over time. They also

suggested that the company exert control over the cost of assembly and seek out all available resources to lower its production costs. Morshed (2020) measures the impact of rational working capital management on profitability to explain the connection between accounting and finance. Sixteen finance managers were interviewed using a semi-structured interviewing technique. According to the findings, accounting and finance go hand in hand since they provide the accountant with crucial knowledge and abilities, such as project evaluation, resource management for the company's funding, and working capital management. Bhuvaneswari (2020) examined working capital management and liquidity situations using ratio analysis and a statement of working capital changes. This study offers insight into Hindustan Unilever Limited's working capital management. It is concluded that the general working soundness and stability have increased over time and will continue to do so in the years to come. Farhan et al. (2021) assessed how working capital factors affect the financial success of Indian pharmaceutical enterprises. Additionally, it seeks to examine how small, medium, and big businesses use their working capital. The results reveal that small, medium, and large businesses manage working capital in quite different ways. In addition, it is discovered that the number of days for collections, payables, and inventory holding periods all have a favourable effect on the financial performance of Indian pharmaceutical enterprises, as indicated by return on assets and net operating margin. Habib & Mourad (2022) examined how well Gulf enterprises' working capital management (WCME) performed both before and during the coronavirus crisis before looking at how the crisis itself affected WCME. The findings show that the majority of businesses (almost 84%) choose a conservative strategy for their WCM. In contrast to the technical, size, and total factor productivity scores, which showed no statistical difference, the WCME data revealed a statistically significant distinction in the technical and pure efficiency ratings for businesses before and after the coronavirus outbreak. Abuhommous et al. (2022) looked into the potential nonlinear relationship between credit score and working capital. It also looks at how a company's credit rating relates to the three elements of working capital (inventory, accounts receivable, and accounts payable). Using data from American-listed companies between 1985 and 2017, they demonstrate that the credit rating is negatively impacted by the divergence from ideal working capital. The findings of this study are very significant because they show the significance of working capital management for a firm's credit rating and are relevant to legislators, managers, decision-makers, and credit-rating agencies.

3. Objectives of the Study

The main objectives of the study are as follows:

- To study the Working Capital Management of Tata Motors Limited.
- To evaluate the management efficiency of Tata Motors Limited.
- To analyse the liquidity, solvency, and profitability of Tata Motors Limited.
- To examine the relationship between the current ratio and the profitability ratios (return on assets, return on equity, and return on capital employed) of Tata Motors Limited.

4. Hypotheses of the Study

The hypotheses of the study are as follows :

- H₀₁ : There is no significant relationship between current assets and return on assets.
- H₁₁ : There is a significant relationship between current assets and return on assets.
- H₀₂ : There is no significant relationship between current assets and return on equity.
- H₁₂ : There is a significant relationship between current assets and return on equity.
- H_{03} : There is no significant relationship between current assets and the return on capital employed.
- H₁₃: There is a significant relationship between current assets and the return on capital employed.

5. Research Methodology

5.1. Nature of the Study

This study is descriptive as well as quantitative in nature. Descriptive in a way that in this study various components of Working Capital Management have been explored with about filling the objective of the study, and the qualitative in the sense that the study undertakes the financial audited report of Tata Motors Limited.

5.2. Sources of Data

This study is based on secondary data that is extracted from the company's websites, government publications, magazines, and national and international research papers.

5.3. Area of the Study

For the study, secondary data from Tata Motors Limited has been used. which is a leading global automobile manufacturer with a portfolio that covers a wide range of cars, SUVs, buses, trucks, pickups, and defence vehicles. The period of the study is from 2018 to 2022.

5.4. Data Analysis

The collected data has been analysed by trend analysis and ratio analysis. The testing of the hypothesis correlation matrix has been done by the authors themselves.

5.5. Limitations of the Study

- The study does not apply to the whole automobile industry of India as it is restricted only to Tata Motors Limited.
- This is a time-bounded study taken from the years 2018 to 2022.
- The computation and analysis are done by the authors themselves. So, there may be the possibility of calculation mistakes.

6. Data Analysis and Interpretation

Table-1 below shows the ratios of Tata Motors Limited from 2018 to 2022. Firstly, for calculating the liquidity and solvency ratios, researchers have taken the current ratio, quick ratio, debt-equity ratio, and long-term debt-equity ratio. Secondly, the efficiency ratios of the firm have been calculated with the help of inventory turnover ratios, debtor turnover ratios, investment turnover ratios, and asset turnover ratios. Lastly, the profitability ratios have been calculated from the return on capital employed, return on assets, and return on equity. The working capital turnover ratio has also been taken into account for the analysis of working capital management.

RATIO	2022	2021	2020	2019	2018
Liquidity & Solvency Ratios					
Current Ratio (CR)	0.36	0.51	0.46	0.54	0.57
Quick Ratio (QR)	0.49	0.55	0.53	0.51	0.44
Debt Equity Ratio (DER)	1.17	1.14	1.19	0.79	0.81
Long Term Debt Equity Ratio (LTDER)	0.71	0.86	0.84	0.63	0.65
Efficiency Ratios					
Inventory Turnover ratios (ITR)	12.71	6.63	11.46	14.84	10.52
Debtor Turnover Ratios (DTR)	22.51	14.84	16.8	20.56	20.98
Investment Turnover Ratio	1.09	0.74	1.14	1.74	10.52
Assets Turnover ratio (ATR)	1.13	0.75	1.11	1.82	1.54
Profitability Ratio					
Return on Capital Employed (ROCE)	0.92	0.35	-6.72	11.07	4.84
Return on Assets (ROA)	52.07	49.77	48.7	65.26	59.4
Return on Equity (ROE)	1.16	0.4	-8.18	12.18	5.29
Working Capital Turnover Ratio	-4.21	-2.94	-3.7	-7.38	-6.53

Table-1 : Tata Motors Limited Ratios

Source : Compiled by authors.



Chart-1 : Statement of Liquidity and Solvency Ratios

Source : Compiled by authors.

From Chart-1 above, it can be observed that the current ratio from 2018 to 2022 is far below the ideal current ratio, i.e., 2:1. The declining trend in the current ratio shows that the company didn't cover all its current debt, and the business's current assets are insufficient to satisfy its immediate obligations.

The quick ratio demonstrated that the company is not able to pay its short-term debts using its most liquid assets. As far as the debt-equity ratio is concerned, in the years 2018 and 2019, the company's debt-equity ratio didn't seem satisfactory and was less than 1, but in the years 2020 to 2022, the ratio was more than 1, which means the company is undoubtedly balanced. The long-term debt-to-equity ratio (LTDET) indicates the proportion of a company's assets that are funded by long-term debt, such as loans. The value of LTDET is highest in 2021, i.e., 0.86, and lowest in 2019, i.e., 0.63. The company hasn't relied much on borrowing to finance operations.



Chart-2 : Statement of Efficiency Ratios

Source : Compiled by authors.

Chart-2 above demonstrated the efficiency ratios. The inventory turnover ratio (ITR) is higher than the ideal ratio, which is 5, in the study period, which shows goods are sold faster and the ITR meets the company's target. The debtor turnover ratio (DTR) shows that the customers are making timely payments and the business is proficient in collecting. A higher figure of DTR also indicates improved cash flow, a more robust income statement, or even greater creditworthiness for a business.

The investment turnover ratio demonstrated that due to its difficulties in turning its debts and equity into profits, the business is less effective, as the ratio is far from the ideal, which should be 2.5, except in the year 2018, when the ratio is 10.52. This means that in the year 2018, the investment turnover ratio of the business effectively reinvests stockholders' investments to raise its worth. The asset turnover ratio (ATR) shows that the business uses its capital effectively, operates more efficiently than its rivals, and produces more revenue from its assets. But in the year 2019, the ATR is 0.75, which shows that the business may have excess production capacity or poor inventory management due to a low asset turnover ratio.



Chart-3 : Statement of Profitability Ratios

Source : Compiled by authors.

The above Chart-3 indicates that the Return on Capital Employed (ROCE) decreased from 0.92 to -6.72 in the year from 2018 to 2020. After that, it shows an upward trend of 11.07 in 2021 and a downward trend of 4.84 in 2022. In 2020, negative value shows that the company is not producing a high return on investment and is not using its money effectively. As for 2019 and 2018, the company's ROCE ratio performance is more than ideal, which means, for the benefit of shareholders, a bigger portion of profits can be reinvested in the business. Return on assets shows that the company is more profitable and efficient and is investing in assets efficiently. Return on Equity shows that from 20218 to 2019, the company was more efficient in generating returns on the investment of shareholders since its ratios were 5.29 and 12.18, respectively. But after that, the ROE ratio is negative and shows a downward trend.



Chart-4 : Statement of Working Capital Turnover Ratio

Source : Compiled by authors.

Chart-4 shows the working capital turnover ratio is negative from 2018 to 2022. Which means the company's current liabilities exceed its current assets. When a company makes a significant investment, such as buying more inventory, new merchandise, or machinery, negative working capital commonly occurs.

Ratios		Current Ratio	Return on Assets	Return on Equity	Return on Capital Employed
Current Ratio	Pearson Correlation	1	0.573	0.473	0.489
	Sig. (2-tailed)		0.312	0.422	0.403
	N	5	5	5	5
Return on Assets	Pearson Correlation	0.573	1	.921*	.933*
	Sig. (2-tailed)	0.312		0.027	0.021
	N	5	5	5	5
Return on	Pearson	0.473	.921*	1	.999***
Equity	Correlation				
	Sig. (2-tailed)	0.422	0.027		0.000
	Ν	5	5	5	5
Return on	Pearson	0.489	.933*	.999**	1
Capital	Correlation				
Employed					
	Sig. (2-tailed)	0.403	0.021	0.000	
	Ν	5	5	5	5
	*. Correlation i	s significan	nt at the 0.05 l	evel (2-tailed).	
	**. Correlation	is significa	nt at the 0.01	level (2-tailed).	

Table-2 : Correlation Matrix

Source : Compiled by authors by using SPSS.

The above table-2 shows the correlation matrix for the studied variables. For the correlation between the current ratio and return on assets, the p-value of the correlation test is 0.312, which is more than a 5% level of significance. Hence, we failed to reject the first null hypothesis (H01), which means there is no significant relationship between the current ratio and return on assets.

For the correlation between the current ratio and return on equity, the p-value of the correlation test is 0.422, which is more than a 5% level of significance. Hence, we failed to reject our second null hypothesis (H02), which implies there is no significant relationship between the current ratio and return on equity.

For the correlation between the current ratio and return on capital employed, the p-value of the correlation test is 0.403, which is more than a 5% level of significance. Hence, we failed to reject the third null hypothesis (H03), which means there is no significant relationship between the current ratio and the return on capital employed.

7. Conclusion

Tata Motors Limited plays a vital role in India's economy. That is to be found to become one of the world's most striking automobile markets for both producers and consumers. It is concluded that the company's liquidity and solvency ratios are not satisfactory, as the current ratio and liquid ratio are far from ideal. A company's debt and equity are perfectly balanced, and debtors and investors own an equal share of the company's assets. The company's managerial efficiency is higher and it utilises its inventory, assets, and investments more effectively. The business may have excess production capacity or poor inventory management, according to a low asset turnover ratio. The company's profitability ratio in relation to ROCE indicates that the company is not producing a high return on investment and is not using its money effectively. As the ROA and ROE show, a business is more successful at making a profit. Also, it concluded that Tata Motors Limited does not operate or manage its working capital significantly. It has been found that Tata Motors Limited didn't show any significant relationship between current assets and profitability ratios (return on assets, return on equity, and return on capital employed).

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Comparative Performance Evaluation of Small Cap Mutual Funds : Direct and Regular Schemes

VIKAS KUMAR AND VIVEK

Abstract : In this paper, the Performance of thirteen open-ended, equity small cap schemes related to thirteen private sector mutual funds are evaluated. The period of the study covers the period from 1st April 2016 to 31st March 2022. To evaluate the performance of the selected mutual fund schemes, monthly returns are compared with Benchmark- S&P BSE Small Cap Index return. Risk Free Rate has been taken as average fixed deposit rate of State bank of India. Further, various statistical tools like average, standard deviation, coefficient of determination, beta and the risk adjusted performance measures suggested by Sharpe (1966), Jenson (1968), and Treynor (1965) are employed to evaluate the performance for the above selected period.

Keywords: S&P BSE Small Cap Index, Small Cap Mutual Funds, Open-ended, Growth Option.

Introduction

Mutual Funds works on the principle of Do not put all eggs in one basket i.e. Diversification. Diversification is a device that reduces the risk because all stocks have different degree of risk i. e. they may not move in the same direction in the same proportion at the same time. Mutual funds provide opportunities for small and medium investors to participate in the capital market without assuming a very high degree of risk. Mutual fund issues units to the investors in accordance with amount of money invested by them. Investors of mutual funds are known as unit holders. The profits or losses are shared by the investors in proportion to their investment in that mutual fund. The mutual funds normally offer a number of schemes with different investment objectives which are launched from time to time.

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Review of Litearture

Mutual fund industry in India began in 1963 with the formation of Unit trust of India (UTI) and the existing of a mutual fund industry in India is for over more than 55 years, there have been only a few studies, which examined the performance of Indian mutual funds using standard methodology for Mid cap funds. a brief review of these studies is now presented below:

Sarkar [1992] critically examined mutual fund performance evaluation methodology. He opined that both Sharpe [1966] and Treynor [1965] performance measures rank mutual funds' performance in similar fashion though they differ in the measurement of risk parameter.

Shome [1994] reported that average rate of return of selected Indian mutual funds was marginally lower than that of the benchmark portfolio (BSE Sensex). However, he reported that the risk measure of the majority of funds was higher than that of the benchmark portfolio. This implies that the fund managers were taking larger risk but were generating lower returns.

Kale and Uma [1995] evaluated the performance of 77 mutual fund schemes managed by eight mutual funds. The rates of return were compared with the return of the BSE National Index over the sample period to evaluate the performance of the scheme with the market. The study also examined the accounting and disclosure policies followed by the above mutual funds.

Sahadevan and Raju [1996] have carried out their study on mutual funds. Their study has focus on data presentation on expenses and other related aspects, which were generally covered in annual reports of the mutual funds.

Sadhak [1997] tried to trace the historical background of mutual fund industry. It has presented accurately the marketing and investment strategies followed by mutual fund houses of India. It contained statistical information about growth of mutual fund industry in terms of funds available for investment and investors' number of accounts holding.

Jayadev M [1998] evaluated the performance of 62 mutual funds schemes using monthly NAV data for varying period 1987-1995. He reported superior performance for a large mass (30 out of 44) of the sample schemes when total risk was considered. However, in terms of systematic risk only 24 out of 44 schemes outperformed the benchmark portfolio. He also found that some of the Indian Mutual funds were not diversified properly.

Gupta and Sehgal [2000] has wider and comprehensive view. They evaluated investment performance of 80 mutual fund schemes of the Indian mutual fund market over the period 1992-96. In addition, they tested several related propositions regarding fund diversification, consistency of performance, parameter stationary over time, performance in relation to fund objectives and risk-return relationship and reported that mutual fund industry had performed reasonably well during the study period. However, there is a lack of adequate diversification. They also found evidence to support consistency of performance. Finally, a significant and positive risk return relationship was measured by the study when standard deviation was used a basis for risk measurement.

Mishra [2001] evaluated performance for the period from April 1992 to December 1996. The sample size was 24 public sector sponsored mutual funds. The performance was evaluated in terms of rate of return, , Sharpe, Treynor and Jenson's measures of performance. The study also considered beta's instability issues. Conclusion of the study was uncheerful performance of PSU mutual funds in India, in general.

Singh and Singh have highlighted the facts that mutual funds in India have not attained equal status as their counterparts in other developed countries. The study emphasized on the gradual and slow growth of mutual funds industry in India by giving an exclusive attention to the UTI as it was through to be the pioneers in the field of mutual funds in India. The offshore mutual funds, private mutual funds, money market funds, has been critically analyzed in this study.

Vikas Kumar [2010] Evaluated the performance of 20 mutual funds schemes managed by five mutual funds using monthly NAV for 10 year i.e. 120 months for the period from1st Jan 2000 to 31st Dec 2009. The rate of return was compared with the BSE National 100 index over the above period. The performance was evaluated in the terms of rate of return, systematic risk (i.e. Beta), Total risk (i.e. S.D.), coefficient of determination and risk adjusted performance suggested by Treynor (1965), Sharpe (1966) and Jensen (1968). The outcome shows that out of 20 schemes selected equity schemes shows better return as compared to debt and balanced schemes.

Shanmugham and Zabiulla (2011) : addressed the financial performance of mutual funds in the framework of risk and return dimensions. In order to measure financial performance of selected thirty mutual fund schemes investment performance measures, cluster analysis and correlation analysis are

used covering the period of forty-five months that span from April 2006 to December 2009. They concluded that Reliance diversified power fund performed better in terms of providing returns to the investors, eight of the sample funds were considered to be riskier as evidenced by their highest estimate of standard deviation and the sample mutual fund schemes are less volatile than the market portfolio.

Iqbal (2012) : made a comparative study of private sector mutual funds and public sector mutual funds to check whether private sector mutual funds are performing better and providing better results to investors or public sector mutual funds in India. He concluded with the help of empirical data that the private sector mutual fund Companies have shown very impressive growth in comparison to public sector mutual fund companies and it can be said that the private sector mutual funds have performed better and given good results with better NAV to the investors.

Joshi (2016) : tried to identify the important factors which motivate the small investors in Nagpur city of India who invest in Equity and equity linked saving schemes (ELSS) of mutual fund in terms of factors which discriminates between such investors and non-investors using Logistic Regression Model. He concluded that amongst the various factors motivating investors to invest in mutual funds, the returns on investment and lock in period are the two significant factors; amongst the various sources of information for the respondents, the internet and friends/relatives are the two significant factors and amongst the major factors hindering investment in mutual funds, high risk and inefficient investment advisors are the significant factors influencing the decision making of the investors in mutual fund which discriminates between investors and non-investors in mutual fund.

Reepu (2017) : attempted to know about Mutual Fund, its various schemes and analyse the different risk factors involved. He discussed that diversification and SIP allows investor to manage the risks, moreover, with the investment in mutual fund the investor can avail tax benefits too. Sponsor, trust, trustee, transfer agent, asset management company etc. forms key element of mutual fund structure.

Levi and Garag (2017) : performed comparative study of thirteen large cap and mid cap regular equity mutual fund, SIP and nifty index returns. The findings showed that mean returns of large cap regular equity mutual fund exceeded nifty index returns and the same thing held good for mid cap funds as well. SIP returns lay somewhere between regular mutual funds and nifty index returns.

From the multiple comparison tables, it is concluded that there were no significant differences between nifty index return and regular mutual fund return in addition to nifty index return and SIP return respectively.

Agarwal and Mirza (2017) : assessed the performance of Indian mutual fund schemes using Sharpe ratio, Treynor ratio, Jensen's Alpha and Value at Risk for a sample of 100 Indian mutual fund schemes for the period from January 2013 to June 2016. The sample comprises of 18 diversified equity schemes, 9 tax saving schemes, 17 large cap funds, 16 long term gilt, 8 long term income, 8 short term income funds, 11 small/mid cap funds and 12 ultra-short-term funds. They concluded that results of Sharpe ratio and Treynor ratio reflect that 90 percent of the schemes have performed better than their benchmarks which reflect that during the above study period selected funds' schemes have done fairly well and have outperformed the market.

Research Gap

In the above literature no studies have made an attempt to make a comparative analysis of Mutual fund returns of small cap funds using Benchmarks i.e., S&P BSE Small cap Index and also the Risk-free rate taken as average Interest rate of fixed deposit rate of state bank of India during the selected period of this study. In India retail investors hardly understand the performance measures tools like Sharpe, Treynor, Jenson models. Still very few studies have made an attempt to calculate the return on mutual funds which can be easily understandable by the retail investors.

Significance of the Study

The need for evaluating the performance of mutual fund schemes in India especially small cap funds to see whether the small cap mutual fund schemes are outperforming or underperforming than the benchmark and to see the competency of schemes to make out a strong case for investment. The present paper investigates the performance of open-ended, growth-oriented equity, small cap schemes. It enables an investor to access as to how much return has been generated by the portfolio manager and what risk level has been assumed in generating such returns. This study is expected to fill this gap. The present research work is expected to be useful especially to managers of mutual funds, academicians, present and future research scholars, present and potential investors, and also government and regulated bodies. This study shall guide the investors in planning and effecting their decisions regarding investments in

mutual funds. It will also act as a guide for new investors who is willing to invest in small cap mutual fund.

Objectives of the Study

- To evaluate the performance of sample small cap schemes.
- To compare schemes', return and risk with benchmark i.e. S&P BSE Small cap Index.
- To appraise the performance of mutual funds with regard to risk-return adjustment, the model suggested by Sharpe, Treynor and Jenson.

Limitations of the Study

For the purpose of performance evaluation, those schemes have been selected which are in operation during 6 years i.e. 1st April 2016 to 31st March 2022. Only open-ended, growth option equity schemes of Private Sector Mutual Funds have been considered for this purpose. Performance evaluation of all schemes is not possible due to unavailability of data.

Scope for Further Research

As evaluating the performance of Mutual Fund is an ongoing process and a never-ending task. This study has taken only open-ended schemes for its consideration and thus, a similar study can be done on Close-ended schemes. As in the present study an attempt has been made to compare the selected small cap schemes with one benchmark i.e. S&P BSE Small cap Index, so same can be made with various other benchmarks and different Risk-free returns which is taken as fixed deposit rate of state bank of India in the present study. For further research overall compare of small cap, mid cap and large cap mutual funds with short and long run point of view.

Research Mathedology

Benchmark Index

For this study, S&P BSE Small cap Index has been used as a proxy for market index. Hence it would cover the majority percentage of different scheme portfolios and therefore is expected to provide better performance benchmark.

Risk Free Rate

Risk free rate of return refers to that minimum return on investment that has no risk of losing the amount of investment over which it is earned. In this present study, it has been taken as Deposit rate of banks on the average rate from April-1, 2016 to March-31, 2022 marked as 0.005167 per month.

Period of Study

The growth-oriented schemes, which have been floated by the Private Sector Mutual Funds during the period 1st April, 2016 to 31st March, 2022 are considered for the purpose of the study. Monthly Net Asset Value (NAV) as declared by the relevant mutual funds during the above period has been used for this purpose.

Data

Study examines thirteen open-ended equity schemes (Direct Scheme) and thirteen open-ended equity schemes (Regular Scheme) with growth option being launched by Private Sector Mutual Funds. These schemes have been selected on the basis of regular data availability during the period of 1st April 2016 to 31st March 202\2. Monthly Net Asset Value (NAV) data have been used of the above period. NAV for the study is collected from AMFI (Association of Mutual Funds in India) and selected mutual funds' websites.

Statistical Tools

For the purpose of the performance evaluation various tools are used to measure the performance which are as Average Return, Standard Deviation, Beta, Sharpe, Treynor and Jenson.

Direct Scheme

Direct scheme is a scheme in which money is invested in mutual fund company directly by investors using mutual fund own website or application.

Regular Scheme

Regular scheme is a scheme in which money is invested in mutual fund company through broker.

Analysis and Interpretation

Table-1	5	List of	Sam	ple	Mutual	Funds	Schemes
			U uiii	P	mataai	i anao	0011011100

Name of the Equity Scheme Selected
Aditya Birla Sunlife Small Cap Fund
Axis Small Cap Fund
DSP Small Cap Fund
Franklin Templeton Mutual Fund
HDFC Small Cap Fund
ICICI Prudential Small Cap Fund
Kotak Small Cap Fund
L & T Emerging Business Fund
Nippon India Small Cap Fund
Quant Small Cap Fund
SBI Small Cap Fund
Sundaram Small Cap Fund
Union Small Cap Fund

Table-2 shows the average return earned by the various schemes. For calculation of average return earned by the schemes Growth in the value for each month over the previous month has been divided by the value of the previous month. Then the average of the full series has been taken.

Direct Scheme

In the sample schemes selected for the study, it is observed that Ten out of Thirteen schemes had shown the better return as compared to S&P BSE Small Cap Index (0.016325). Nippon India Small Cap fund (0.021082) has outperformed all the other sample schemes and the benchmarks, followed by SBI Small Cap fund (0.019488) and L&T Emerging Business fund (0.019418). Aditya Birla Sunlife Small Cap Fund (0.013916) has shown the worst performance in the sample schemes.

Regular Scheme

In the sample schemes selected for the study, it is observed that seven out of thirteen schemes had shown the better return as compared to **S&P BSE Small Cap Index** (0.016325). **Nippon India Small Cap fund** (0.019966) has outperformed all the other sample schemes and the benchmarks, followed by **L&T Emerging Business fund** (0.018585) and **SBI Small Cap fund** (0.018533). **Aditya Birla Sunlife Small Cap Fund** (0.013239) has shown the worst performance in the sample schemes.

Schemes	Average Return		
	Direct Scheme	Regular Scheme	
Aditya Birla Sunlife Small Cap Fund	0.013916	0.013239	
Axis Small Cap Fund	0.019175	0.015640	
DSP Small Cap Fund	0.016769	0.016162	
Franklin India Smaller Companies Fund	0.014692	0.013801	
HDFC Small Cap Fund	0.017723	0.016739	
ICICI Prudential Small Cap Fund	0.017326	0.016477	
Kotak Small Cap Fund	0.019411	0.018309	
L & T Emerging Business Fund	0.019418	0.018585	
Nippon India Small Cap Fund	0.021082	0.019966	
Quant Small Cap Fund	0.017812	0.017272	
SBI Small Cap Fund	0.019488	0.018533	
Sundaram Small Cap Fund	0.015097	0.014383	
Union S.mall Cap Fund	0.017811	0.015272	

Table-2 : Average Monthly Return Earned by the Schemes

Source : Compiled by the Authors.

Table-3 shows the standard deviation of selected schemes. It is the most common expression to measure risk of the fund return. Higher the value of standard deviation of the fund returns, greater will be the total risk carried by the fund.

Direct Scheme

It is observed that the maximum deviation of funds return is shown by **Union Small Cap Fund** (0.090226) followed by **Sundaram Small Cap Fund** (0.072282) and **Nippon Small Cap fund** (0.071329) whereas **Axis Small Cap Fund** (0.055294) was least risky scheme with lowest standard deviation on the other hand Standard Deviation of benchmark S&P BSE Small Cap Index is (0.069687). It could be seen here that ten out of thirteen schemes selected for study shows less standard deviation then S&P BSE Small Cap Index.

Regular Scheme

It is observed that the maximum deviation of funds return is shown by **Sundaram Small Cap Fund** (0.072456) followed by **Aditya Birla Sunlife Small Cap fund** (0.069715) and **Quant Small Cap Fund** (0.068348) whereas **Axis Small Cap Fund** (0.054496) was least risky scheme with lowest standard deviation on the other hand Standard Deviation of benchmark S&P BSE Small Cap Index is (0.069687). It could be seen here that Eleven out of thirteen schemes selected for study shows less standard deviation than S&P BSE Small Cap Index.

Schemes	Standard Deviation		
Schemes	Direct Scheme	Regular Scheme	
Aditya Birla Sunlife Small Cap Fund	0.069632	0.069715	
Axis Small Cap Fund	0.055294	0.054496	
DSP Small Cap Fund	0.066398	0.066331	
Franklin India Smaller Companies Fund	0.061766	0.061654	
HDFC Small Cap Fund	0.065601	0.065555	
ICICI Prudential Small Cap Fund	0.068021	0.067949	
Kotak Small Cap Fund	0.064415	0.066006	
L & T Emerging Business Fund	0.065043	0.065007	
Nippon India Small Cap Fund	0.071329	0.067733	
Quant Small Cap Fund	0.068592	0.068348	
SBI Small Cap Fund	0.061104	0.061195	
Sundaram Small Cap Fund	0.072282	0.072456	
Union Small Cap Fund	0.090261	0.061211	

Table-3 : Results of Standard Deviation of Select Small Cap Funds

Source : Compiled by the Authors.

Risk - Return Classification of Sample Schemes

In order to undertake further analysis, sample schemes have been classified into the following four categories on the basis of their return and risk characteristics:

- 1) High Return and High Risk : This category includes all those schemes whose returns as well as standard deviations are higher than that of the market.
- 2) High Return and Low Risk : This category comprises those schemes whose returns are more that the market but their standard deviations are lower than that of the market.
- **3)** Low Return and Low Risk : This category consists of schemes whose average returns are less than the average market return and their standard deviations are also lower than that of the market.
- 4) Low return and High Risk : The final category includes all those schemes whose returns have been found to be lower than that of the market but their standards deviations are higher than that of the market.

Categorizations of Schemes

Table 1.4 presents the risk return grid of Mutual Funds schemes

Direct Scheme

After classification of the sample schemes into risk return category

- 02 scheme falls in category 1st i.e. High Return High Risk
- Further **08 schemes** fall in 2nd category i.e. **High return and low risk**. These 10 schemes fulfil one basic objective of Mutual Fund i.e. High Return and Low Risk compared to the capital market.
- Next **02 schemes** fall in 3rd category i.e. **Low Return and Low Risk**, and also,
- 01 scheme falls in 4th category i.e. Low Return and High Risk.

Category-1	Category-2		
HIGH RETURN, HIGH RISK	HIGH RETURN, LOW RISK		
Union Small Cap Fund	Axis Small Cap Fund		
Nippon India Small Cap Fund	DSP Small Cap Fund		
	HDFC Small Cap Fund		
	ICICI Prudential Small Cap Fund		
	Kotak Small Cap Fund		
	L&T Emerging Business Fund		
	Quant Small Cap Fund		
	SBI Small Cap Fund		
Category-3	Category-4		
LOW RETURN, LOW RISK	LOW RETURN, HIGH RISK		
Aditya Birla Sunlife Small Cap Fund	Sundaram Small Cap Fund		
Franklin India Smaller Companies Fund			

Table-4 (a) : Risk Return Grid of Mutual Funds Scheme (Direct Schemes) compared to S&P BSE Small Cap Index

Source : Compiled by the Author.

Regular Scheme

After classification of the sample schemes into risk return category

- No scheme falls in category 1st i.e. High Return High Risk
- Further **07 schemes** fall in 2nd category i.e. **High return and low risk**. These 09 schemes fulfil one basic objective of Mutual Fund i.e. High Return and Low Risk compared to the capital market.
- Next **04 schemes** fall in 3rd category i.e. **Low Return and Low Risk**, and also,
- 02 scheme falls in 4th category i.e. Low Return and High Risk.

Category-1	Category-2						
HIGH RETURN, HIGH RISK	HIGH RETURN, LOW RISK						
No Scheme	HDFC Small Cap Fund						
	ICICI Prudential Small Cap Fund						
	Kotak Small Cap Fund						
	L&T Emerging Business Fund						
	Nippon India Small Cap Fund						
	Quant Small Cap Fund						
	SBI Small Cap Fund						
Category-3	Category-4						
LOW RETURN, LOW RISK	LOW RETURN, HIGH RISK						
Axis Small Cap Fund	Aditya Birla Sunlife Small Cap Fund						
DSP Small Cap Fund	Sundaram Small Cap Fund						
Franklin India Smaller Companies Fund							
Union Small Cap Fund							

Table- 1.4 (b) : Risk Return Grid of Mutual Funds Schemes(Regular Scheme) Compared to S&P BSE Small Cap Index

Source : Compiled by the Author.

Direct Scheme

Table 1.5 presents the systematic risk of the sample schemes. Considered for the purpose of this study all of the schemes have beta less than 1 (i.e. market beta) implying thereby that all these schemes selected for the study hold portfolios that were less risky than the market portfolio. The best beta value was shown by **Quant Small Cap Fund** (0.743892) and the worst was shown by **Sundaram Small Cap Fund** (1.006305).

Regular Scheme

Table-5 presents the systematic risk of the sample schemes. Considered for the purpose of this study all of the schemes have beta less than 1 (i.e. market beta) implying thereby that all these schemes selected for the study hold portfolios that were less risky than the market portfolio. The best beta value

was shown by **Axis Small Cap Fund** (0.691795) and the worst was shown by **Sundaram Small Cap Fund** (1.019505).

Schemes	BETA		
	Direct Scheme	Regular Scheme	
Aditya Birla Sunlife Small Cap Fund	0.969514	0.971840	
Axis Small Cap Fund	0.747334	0.691794	
DSP Small Cap Fund	0.929621	0.928842	
Franklin India Smaller Companies Fund	0.849716	0.849784	
HDFC Small Cap Fund	0.912879	0.912440	
ICICI Prudential Small Cap Fund	0.920463	0.919953	
Kotak Small Cap Fund	0.892126	0.904676	
L & T Emerging Business Fund	0.909751	0.909066	
Nippon India Small Cap Fund	0.974936	0.958485	
Quant Small Cap Fund	0.743892	0.742112	
SBI Small Cap Fund	0.835490	0.836139	
Sundaram Small Cap Fund	1.006305	1.019505	
Union Small Cap Fund	0.795011	0.845632	

Table-5 : Results of BETA of Select Small Cap Funds

Source : Compiled by the Author.

Direct Scheme

Table-6 depicts value of Sharpe's reward to variability ratio. It is an excess return earned over risk free return per unit of risk involved, i.e. per unit of standard deviation. Positive value of the index shows good performance it could be seen that 09 sample schemes have recorded better Sharpe index and 04 sample schemes have recorded lower Sharp index than the S&P BSE Small Cap Index (0.160117). **Aditya Birla Sunlife Small Cap Fund** have shown the worst sharp ratio (0.125645) and **Axis Small Cap Fund** (0.253341) have shown the best Sharpe ratio among the selected schemes. This indicates Nearly 69 percent schemes have outperformed the S&P BSE Small Cap index. This implies that the funds decision for diversified portfolio in a falling market has proved successful to some extent in earning higher excess returns per unit of risk as compared to the market.

Regular Scheme

Table-6 depicts value of Sharpe's reward to variability ratio. It is an excess return earned over risk free return per unit of risk involved, i.e. per unit of standard deviation. Positive value of the index shows good performance it could be seen that 07 sample schemes have recorded better Sharpe index and 06 sample schemes have recorded lower Sharpe index than the S&P BSE Small Cap Index (0.160117). **Aditya Birla Sunlife Small Cap Fund** have shown the worst sharp ratio (0.115795) and **Nippon India Small Cap Fund** (0.218500) have shown the best Sharpe ratio among the selected schemes. This indicates Nearly 77 percent schemes have outperformed the S&P BSE Small Cap index. This implies that the funds decision for diversified portfolio in a falling market has proved successful to some extent in earning higher excess returns per unit of risk as compared to the market. The Sharpe index is important from small investor point of view who seek diversification through mutual funds, i.e. mutual funds are supposed to protect small investors against vagaries of stock markets and the fund managers of these schemes has done well to protect them.

Schemes	Sharpe		
	Direct Scheme	Regular Scheme	
Aditya Birla Sunlife Small Cap Fund	0.0125645	0.115795	
Axis Small Cap Fund	0.253341	0.132191	
DSP Small Cap Fund	0.174739	0.165770	
Franklin India Smaller Companies Fund	0.154223	0.140049	
HDFC Small Cap Fund	0.191399	0.176532	
ICICI Prudential Small Cap Fund	0.178760	0.166461	
Kotak Small Cap Fund	0.221132	0.199104	
L & T Emerging Business Fund	0.219112	0.206412	
Nippon India Small Cap Fund	0.223126	0.218500	
Quant Small Cap Fund	0.184358	0.177108	
SBI Small Cap Fund	0.234374	0.218420	
Sundaram Small Cap Fund	0.137386	0.127198	
Union Small Cap Fund	0.140088	0.165097	

Table-6 : Sharpe of the Schemes

Source : Compiled by the Author.

Direct Scheme

Table-7 shows Treynor of the scheme, it is the excess return over risk free return per unit of systematic risk i.e. beta. Here, all the schemes recorded positive value indicating thereby that the schemes provided adequate returns as against the level of risk involved in the investment. **Axis Small Cap Fund** (0.018744) shows the best Treynor ratio among all the selected schemes followed by **SBI Small Cap Fund** (0.017141) and **Quant Small Cap Fund** (0.016999) whereas **Aditya Birla Sunlife Small Cap Fund** (0.009024) has shown the worst performance. A higher Treynor Index as compared to market indicates that investor who invested in mutual fund to form well diversified portfolio did receive adequate return per unit of systematic risk undertaken.

Regular Scheme

Table-7 shows Treynor of the scheme, it is the excess return over risk free return per unit of systematic risk i.e. beta. Here, all the schemes recorded positive value indicating thereby that the schemes provided adequate returns as against the level of risk involved in the investment. Quant Small Cap Fund (0.016311) shows the best Treynor ratio among all the selected schemes followed by SBI Small Cap Fund (0.015986) and Nippon India Small Cap Fund (0.015441) whereas Aditya Birla Sunlife Small Cap Fund (0.008307) has shown the worst performance. A higher Treynor Index as compared to market indicates that investor who invested in mutual fund to form well diversified portfolio did receive adequate return per unit of systematic risk undertaken.

Schemes	TREYNOR		
	Direct Scheme	Regular Scheme	
Aditya Birla Sunlife Small Cap Fund	0.009024	0.008307	
Axis Small Cap Fund	0.018744	0.015140	
DSP Small Cap Fund	0.012481	0.011838	
Franklin India Smaller Companies Fund	0.011211	0.010161	
HDFC Small Cap Fund	0.013754	0.012683	
ICICI Prudential Small Cap Fund	0.013210	0.012295	

Table-7	;	Treynor	of	the	Schemes
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(Contd...)

Kotak Small Cap Fund	0.015967	0.014527
L & T Emerging Business Fund	0.015665	0.014760
Nippon India Small Cap Fund	0.016325	0.015441
Quant Small Cap Fund	0.016999	0.016311
SBI Small Cap Fund	0.017141	0.015986
Sundaram Small Cap Fund	0.009868	0.009040
Union Small Cap Fund	0.015905	0.011951

Direct Scheme

Table-8 shows the Jenson's measures. It is the regression of excess return of the schemes with excess return of the market, acting as dependent and independent variables respectively. Higher positive value of alpha posted by the schemes indicates its better performance. The analysis of the table reveals that 11 schemes have positive Jenson's Measures and 02 schemes have negative value. Highest value of Jenson's Measure is shown in Axis Small Cap Fund (0.005669) followed by Nippon India Small Cap Fund (0.005037) and SBI Small Cap Fund (0.004999). Lowest Jenson's measure found in the case of Aditya Birla Sunlife Small Cap Fund (-0.002069). Higher value of Jenson's measures indicates good market timing ability of fund managers as regard investment in the securities.

Regular Scheme

Table-8 shows the Jenson's measures. It is the regression of excess return of the schemes with excess return of the market, acting as dependent and independent variables respectively. Higher positive value of alpha posted by the schemes indicates its better performance. The analysis of the table reveals that 10 schemes have positive Jenson's Measures and 03 schemes have negative value. Highest value of Jenson's Measure is shown in **Nippon India Small Cap Fund** (0.004105) followed by **SBI Small Cap Fund** (0.004037) and **Quant Small Cap Fund** (0.003824). Lowest Jenson's measure found again in the case of **Aditya Birla Sunlife Small Cap Fund** (-0.002771). Higher value of Jenson's measures indicates good market timing ability of fund managers as regard investment in the securities.

Schemes	JENSON			
	Direct Scheme	Regular Scheme		
Aditya Birla Sunlife Small Cap Fund	-0.002069	-0.002771		
Axis Small Cap Fund	0.005669	0.002755		
DSP Small Cap Fund	0.001230	0.000632		
Franklin India Small Cap Fund	0.000045	-0.000847		
HDFC Small Cap Fund	0.002370	0.001392		
ICICI Prudential Small Cap Fund	0.001889	0.001046		
Kotak Small Cap Fund	0.004290	0.003048		
L & T Emerging Business Fund	0.004101	0.003275		
Nippon India Small Cap Fund	0.005037	0.004105		
Quant Small Cap Fund	0.004345	0.003824		
SBI Small Cap Fund	0.004999	0.004037		
Sundaram Small Cap Fund	-0.001298	-0.002159		
Union Small Cap Fund	0.003774	0.000670		

Table-8 : Results of Jenson on Select Small Cap Funds

Table-9 shows the ranking of the scheme according to Average Return and Standard Deviation where the scheme with the highest value is ranked 1 in Average Return and rank 1 in Standard Deviation with the lowest value.

Table-9 : Ranking of the Schemes according to Average Return (AR) and Standard Deviation (SD)

Schemes	Direct S	Scheme	Regular Scheme		
	AR	SD	AR	SD	
Aditya Birla Sunlife Small Cap Fund	13	10	13	12	
Axis Small Cap Fund	05	01	09	01	
DSP Small Cap Fund	10	07	08	08	
Franklin India Smaller Companies Fund	12	03	12	04	

HDFC Small Cap Fund	08	06	06	06
ICICI Prudential Small Cap Fund	09	08	07	10
Kotak Small Cap Fund	04	04	04	07
L & T Emerging Business Fund	03	05	02	05
Nippon India Small Cap Fund	01	11	01	09
Quant Small Cap Fund	06	09	05	11
SBI Small Cap Fund	02	02	03	02
Sundaram Small Cap Fund	11	12	11	13
Union Small Cap Fund	07	13	10	03

Table-10 shows the ranking of the scheme according to Sharpe, Treynor and Jenson Measures, where the scheme with the highest value is ranked 1 in all the measures.

Table-10 (a) : Ranking of the Schemes according to Sharpe, Treynor and Jenson Measures

Ochomer	C)irect Schem	e
Schemes	Sharpe	Treynor	Jenson
Aditya Birla Sunlife Small Cap Fund	13	13	13
Axis Small Cap Fund	01	01	01
DSP Small Cap Fund	09	10	10
Franklin India Smaller Companies Fund	10	11	11
HDFC Small Cap Fund	06	08	08
ICICI Prudential Small Cap Fund	08	09	09
Kotak Small Cap Fund	04	05	05
L & T Emerging Business Fund	05	07	06
Nippon India Small Cap Fund	03	04	02
Quant Small Cap Fund	07	03	04
SBI Small Cap Fund	02	02	03
Sundaram Small Cap Fund	12	12	12
Union Small Cap Fund	11	06	07

Source : Compiled by the Author.

Schemes	R	egular Scher	ne
Schemes	Sharpe	Treynor	Jenson
Aditya Birla Sunlife Small Cap Fund	13	13	13
Axis Small Cap Fund	05	04	06
DSP Small Cap Fund	09	10	10
Franklin India Smaller Companies Fund	11	11	11
HDFC Small Cap Fund	07	07	07
ICICI Prudential Small Cap Fund	08	08	08
Kotak Small Cap Fund	04	06	05
L & T Emerging Business Fund	03	05	04
Nippon India Small Cap Fund	01	03	01
Quant Small Cap Fund	06	01	03
SBI Small Cap Fund	02	02	02
Sundaram Small Cap Fund	12	12	12
Union Small Cap Fund	10	09	09

Table-10 (b) : Ranking of the Schemes according to Sharpe,
Treynor and Jenson Measures

Table-11 shows the Overall Performance Ranking of the mutual funds is evaluated under different methods in terms of S&P BSE Small cap Index, it cannot be expressed that a single scheme will outperform others under all methods. When some schemes perform better under some methods and some other schemes perform better under some other methods, selecting a single scheme as the best scheme will become difficult. To overcome this, the overall performance ranking of the schemes that include Average Return, Standard Deviation, Sharpe, Treynor and Jenson. Schemes are ranked according to their performance, as the scheme with highest value is given Rank 1, except in Standard Deviation. Finally, the scheme with the lowest average rank becomes the best scheme.

5					
Schemes	Overall Performance Ranking (Direct Scheme)	Overall Performance Ranking (Regular Scheme)			
Aditya Birla Sunlife Small Cap Fund	13	13			
Axis Small Cap Fund	01	03			
DSP Small Cap Fund	11	11			
Franklin India Smaller Ciompanies Fund	12	12			
HDFC Small Cap Fund	07	07			
ICICI Prudential Small Cap Fund	09	08			
Kotak Small Cap Fund	03	04			
L & T Emerging Business Fund	04	02			
Nippon India Small Cap Fund	02	01			
Quant Small Cap Fund	05	05			
SBI Small Cap Fund	06	06			
Sundaram Small Cap Fund	08	09			
Union Small Cap Fund	10	10			

Table-11 : Overall Performance Ranking

Conclusion

Out of the total thirteen schemes studied, ten schemes (direct category) and seven schemes (regular category)showed an average return higher than in comparison to the market return. **Nippon India Small Cap Fund** had shown the best average return whereas **Aditya Birla Sunlife Small Cap Fund** showed the worst performance in both direct and regular scheme. **Axis Small Cap Fund** was the least risky and **Union Small Cap Fund** was the riskiest fund in direct scheme and **Axis Small Cap Fund** was the least risky and **Sundaram Small Cap Fund** was the riskiest fund in regular scheme. Based on the overall performance ranking of the schemes it can be seen that **Axis Small Cap Fund** in Direct Scheme and **Nippon India Small Cap Fund** in Regular Scheme has shown the best performance and has outperformed in all the other schemes and the benchmark taken for the study.

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Industry wise Herd behaviour in the Indian Stock Market with Special Reference to National Stock Exchange

CHARU SHARMA AND SHILPA LODHA

Abstract : Purpose of the article is to examine the presence of herd behaviour at sectoral level in the National Stock Exchange (NSE) of India.

Design The study is empirical in nature. The most popular model proposed by Chang et al. (2000) has been employed to detect herd formation in each sector. Seventeen major sectors except media and realty sectors have been considered along with NIFTY50 constituent companies consisting daily, weekly and monthly observations of closing prices of companies constituting sectoral indices and NIFTY50 for the period from 2006 to 2021.

Results revealed insignificant evidence of herd behaviour at sectoral level and found significant evidence of anti-herd behaviour especially in the daily return data. The results of the study assist investors to develop their trading strategies in the volatile market conditions.

Further researches may include more variables or conduct a study on specific index like large cap or small cap stocks and may also include SENSEX in the study for achieving better results.

Keywords : Herd behaviour, Cross Sectional Absolute Deviation, NSE, Sectorwise Herding.

I. Introduction

Most of the previous studies are found survey-based in India primarily detecting the behavioral biases that affect the investment decision by investors. Still, this is either insufficient or non-conclusive in explaining the impact of any precise behavioral bias on the Indian stock market. Therefore, the present study has

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tried to analyse the market-wide herd behaviour using NIFTY50 data and sectorwise data. For this purpose, the companies whose data is completely and consistently available for the whole period of study are selected. Nofsinger and Sias (1999) define herding as a group of investors trading in the same direction over a period of time. Herd behaviour can be explained in two different ways, i.e., rational and irrational. "Irrational herd can be explained as a tendency of investors irrationally ignoring their own analysis and information and conforming to the market consensus, even if they do not agree with that" (Christie & Huang, 1995). The reason to detect the herd behaviour from sector point of view is that the information dispersed at the sectoral level generally provide basis for asset managers' suggestions, financial analyst's analysis and investors' decisions (Demirer et al., 2010). Mispricing of securities may occur due to herd behaviour of investors which makes the stock markets inefficient. The remainder portion is organized in following sections. Section 2 presents review of literature. Section 3 describes the Research design and data. Section 4 presents methodology. Section 5 reports the empirical evidences of the presence of the herd behaviour at industry level in the Indian stock market and section 6 presents the summary and conclusions.

II. Review of Literature

Lakonishok, Shleifer, & Vishny (1992) recommended a quantitative approach to examine whether herd behaviour exhibited between pension fund managers and results found that there was no evidence of herd behaviour between pension fund managers. Later, Christie & Huang (1995) proposed a new method called Cross Sectional Standard Deviation(CSSD) as a measure of dispersion to examine herd behaviour by observing how individual stock returns change towards the return of the market in large price movements and the results failed to detect herd behaviour. Chang, Cheng, & Khorana (2000) developed a new method based on the Cross-Sectional Return Dispersion (CSAD) which an extended version of CSSD found no significant evidence of herd behaviour in developed markets. Rýza Demirer & Kutan (2006) investigated the herd behaviour at sector level in both Shanghai and Shenzhen stock exchange in China and found no evidence of herd behaviour at sector level. Many researchers around different countries tried to examine the presence of herd behaviour in different markets, for instance, commodities market (Klotzle et al., 2019; Babalos et al., 2015), cryptocurrency market (Kaiser & Stockl, 2019; Klotzle et al., 2019; Ballis & Drakos 2019, mutual fund (Cai et al., 2019; Deng et al., 2018). Many of the researchers conducted study on examining the presence of herd behaviour in the stock markets specifically during extreme market conditions (Adem 2020; Satish & Padmasree 2018; Deng et al., 2018; Zheng et al., 2017; Mobarek et al., 2014; Jlassi & Bensaida, 2014; Abbi et al., 2014; Lan, 2014; Al-Shboul, 2013; Kostakis et al., 2011; Bowe & Domuta, 2004; Hwang & Salmon, 2004). Some researchers found that United States stock market is free from herd formation (Chang et al., 2000); (Chiang & Zheng, 2010). Significant evidence of herd behaviour was found in South Korean and Taiwanese stock markets (Chang et al., 2000); Dubai, Kuwait, Qatar and Saudi Arabian stock markets (Balcilar et al., 2014); Indian and Chinese stock markets (Lao & Singh, 2011); Asian markets (Chiang & Zheng, 2010). Some researcher found significant evidence of herd behaviour in the stock market during extreme market movements (Tan et al. 2008); (Caparrelli et al., 2004).

III. Research Design

The present study is empirical in nature. Under this study, the presence of herd behaviour in the Indian stock market has been investigated.

Sample and Data Collection

In order to examine the existence of herd behaviour in the Indian Stock Market with special reference to National Stock Exchange, data of closing prices of companies constituting sectors of NSE has been extracted from PROWESS database. The time period has been considered from 2006 to 2021 for the study and the data has been extracted on September 29, 2022.

This period has been considered due to wide fluctuations observed during this time-period because of sub-prime crisis as well as economic and political events took place in the country and around the globe. However, the list of firms for each sector as well as the name of the sectors is obtained from National Stock Exchange official website. Thus, to test the herd behaviour in the Indian stock market stock return data and sector- wise return data both has been used. Out of 17 sectors, two sectors are eliminated from the study due to non-availability of the data namely Media and Realty sectors.

Hypotheses

 H_0 : Herd behaviour does not exist in the Indian stock market with special reference to sectors of National Stock Exchange.

IV. Methodology for detecting Herd Behaviour in the Indian Stock Market

Reviewed literatures suggested two extensively used measures to detect herd behaviour. One model is prosed by Christie and Huang (1995) and another one is proposed by Chang, Cheng and Khorana (2000). Christie and Huang (1995) proposed cross sectional standard dispersion (CSSD) model and Chang et al. (2000) proposed cross sectional absolute deviation (CSAD) model which is a modified model of Christie and Huang (1995) method. It has been noticed in the findings of Lux (1995), Lux and Marchesi (1999), (Mertzanis and Allam, 2018) that herd behaviour is capable of introducing non-linear dynamics in the market and CSSD tends to be sensitive to outliers. Therefore, to overcome this concerned issue, Chang et al. (2000) proposed CSAD model which is also followed by present study as follows :

$$CSAD_{t} = \frac{1}{N} \sum_{i=1}^{N} |R_{i,t} - R_{m}|$$
Equation (1)

where $CSAD_t$ indicates the distance from the market average return, how much of the individual stock returns are dispersed around the average return, N defines the total number of stocks in the NIFTY50 index, $R_{i,t}$ denotes the return of stock i on day t and the $R_{m,t}$ is the cross-sectional average market return at day t. Presence of herd behaviour has been examined using modified regression model following Lee et al. (2013) study as per following equation :

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R$$
 Equation (2)

where, $|R_{m,t}|$ is the absolute market return at day t, used to account for the magnitude only and not the direction of the stock market; $R^{2}_{m,t}$ is the squared value of the equally weighted portfolio and captures the non-linear relationship that would arise because of the herding behaviour in the market. It is based on the rationale that under normal conditions, it is anticipated that the return dispersion and market volatility shares a linear relationship. However, during periods of relatively large price movements in which market participants are more likely to herd around indicators such as the average consensus of all market opinions, it becomes more likely that the relation between CSAD and the average market return tend to be nonlinear. Thus, a nonlinear market return, $R^{2}_{m,t}$ has been included in the test equations. According to Chang et al. (2000), a significant negative non-linear coefficient β_{2} confirms the presence of herd behaviour since

it reflects the phenomenon that during periods of extreme market movements, a negative, nonlinear relationship between return dispersion and $R^2_{m,t}$ exists; otherwise, a statistically positive β_2 represents no evidence of herd behaviour in the market.

Regression coefficients have been estimated separately for positive and negative market returns to investigate the asymmetry in bullish and bearish market conditions, precisely, using the following models :

 $CSAD_{t}^{Up} = \alpha + \beta_{1}^{Up} \left| R_{m,t}^{Up} \right| + \beta$ Equation (3)

$$CSAD_{t}^{Down} = \alpha + \beta_{1}^{Down} \left| R_{m,}^{Dc} \right|$$
Equation (4)

Where, $CSAD_t^{Up}$ and $CSAD_t^{Down}$ are the Cross Sectional Absolute Deviation at day *t* corresponding to returns during rising and declining market respectively. $CSAD^{Up}$ is calculated when $R_{m,t} > 0$ and $CSAD^{Down}$ is calculated when $R_{m,t} < 0$. $R_{m,t}^{Up}$ and $R_{m,t}^{Down}$ denotes equal weighted portfolio returns during bull and bear market condition on *t* and $(R_{m,t}^{Up})^2 (R_{m,t}^{Down})^2$ is the squared value of the equal-weighted portfolio to examine the non-linearity in market returns during rising market declining market.

V. Analysis and Interpretation

Sector wise detection of herd behaviour

Table-1 presents a summarized result of regression equation for the specified sectors during the whole period of study for daily, weekly and monthly data. The CSAD model included 17 sectors data of NIFTY to test the presence of herd behaviour towards market consensus. According to the CSAD model a negative and statistically significant coefficient of squared market return (β_2) confirms the existence of herd behaviour in the market.

The empirical findings of Table-IV clearly shows that the probability value of F-statistics (0.000) for regression equation is valid and statistically significant at 1% and 5% level of significance for all the three data frequencies. The values

Name of Sectors	Type of Data	β1	β2	F - statistics	Adjusted R ²
	Daily	0.0695 (0.000)	0.0594 (0.000)	2110.352 (0.000)	0.5156
AUTO	Weekly	-0.0239 (0.6233)	0.0405 (0.000)	235.80054 (0.000)	0.3605
	Monthly	0.2129 (0.042)	0.0008 (0.822)	13.5565 (0.000)	0.1167
	Daily	-0.1498 (0.000)	0.0772 (0.000)	4597.300 (0.000)	0.6987
BANK	Weekly	-0.3016 (0.000)	0.0601 (0.000)	366.8400 (0.000)	0.4676
	Monthly	0.2462 (0.064)	0.0043 (0.245)	21.5534 (0.000)	0.1779
CONSUMER DURABLES	Daily	0.2494 (0.000)	0.0459 (0.000)	8923.837 (0.000)	0.8182
	Weekly	0.0401 (0.267)	0.0343 (0.000)	1554.524 (0.000)	0.7886
	Monthly	0.0014 (0.992)	0.0217 (0.000)	74.7976 (0.000)	0.4372
	Daily	-0.0258 (0.0868)	0.0690 (0.000)	5245.334 (0.000)	0.7257
FINANCIAL SERVICES	Weekly	-0.1674 (0.0048)	0.0523 (0.000)	398.6543 (0.000)	0.4884
	Monthly	0.6125 (0.000)	-0.0064 (0.104)	27.1384 (0.000)	0.2158
	Daily	0.1716 (0.000)	0.0746 (0.000)	8102.773 (0.000)	0.8034
FAST MOVING CONSUMER GOODS	Weekly	00261 (0.532)	0.0649 (0.000)	1027.716 (0.000)	0.7114
	Monthly	-0.0745 (0.644)	0.0436 (0.000)	60.0316 (0.000)	0.3832
	Daily	0.0342 (0.0478)	0.0739 (0.000)	3421.477 (0.000)	0.6331
FINANCIAL SERVICES 25/50	Weekly	0.1630 (0.000)	0.0305 (0.000)	254.898 (0.000)	0.3787
20/00	Monthly	0.5949 (0.000)	-0.0071* (0.035)	30.7142 (0.000)	0.2382

Table-1 : Regression Results According to CSAD Model for the Whole Period

(Contd...)

		0.1574	0.0604	3834,145	
	Daily	(0.000)	(0.000)	(0.000)	0.6592
FINANCIAL SERVICES EX-		0.0647	0.0387	381.768	
BANK	Weekly	(0.219)	(0.000)	(0.000)	0.4776
DAIM		0.5493	-0.0041	42.7195	
	Monthly	(0.000)	(0.161)	(0.000)	0.3051
		0.0387	0.1103	4404.061	
	Daily	(0.033)	(0.000)	(0.000)	0.6896
		0.1485	0.0477	338.5351	
HEALTHCARE	Weekly	(0.015)	(0.000)	(0.000)	0.4476
		0.3595	0.0026	21.2173	0.1754
	Monthly	(0.018)	(0.674)	(0.000)	0.1751
		-0.1638	0.1049	2430.228	
	Daily	(0.000)	(0.000)	(0.000)	0.5507
INFORMATION		0.2334	0.0219	135.0371	
TECHNOLOGY	Weekly	(0.000)	(0.000)	(0.000)	0.2435
		0.4267	-0.0043	21.7926	
	Monthly	(0.001)	(0.491)	(0.000)	0.1796
		-0.0469	0.0526	4308.166	
	Daily	(0.000)	(0.000)	(0.000)	0.6849
METAL		-0.2254	0.0420	364.8219	0.4662
	Weekly	(0.000)	(0.000)	(0.000)	
		0.1971	0.0021	17.3174	0.1466
	Monthly	(0.081)	(0.415)	(0.000)	
	D '1	0.1104	0.0634	3238.746	0.6000
	Daily	(0.000)	(0.000)	(0.000)	0.6203
	XX7 11	-0.0042	0.0472	400.3085	0.4005
OIL & GAS	Weekly	(0.935)	(0.000)	(0.000)	0.4895
	Manuth	0.2581	0.0059	29.4442	0.2304
	Monthly	(0.052)	(0.240)	(0.000)	0.2304
	Daily	0.0559	0.1116	5780.600	0.7446
	Daily	(0.001)	(0.000)	(0.000)	0.7440
	Weekly	0.3110	-0.0637**	79.7704	0.1590
PHARMA	weekiy	(0.001)	(0.000)	(0.000)	0.1390
		0.4498	0.0048	34.8925	
	Monthly	(0.006)	(0.511)	(0.000)	0.2629
		-0.1146	0.0673	5991.664	
	Daily	-0.1140 (0.000)	(0.000)	(0.000)	0.7514
		-0.1942	0.0441	608.8650	
PRIVATE BANK	Weekly	-0.1942 (0.000)	(0.000)	(0.000)	0.5934
		0.2786	0.0042	32.5162	
	Monthly	(0.025)	(0.168)	(0.000)	0.2491
		(0.023)	(0.100)	(0.000)	

	Daily	0.0014	0.0404	1895.675	0.4887
	Daily	(0.913)	(0.000)	(0.000)	0.4007
PUBLIC SERVICE	Waalday	-0.1880	0.0349	264.1535	0.3872
UNDERTAKING BANK	Weekly	(0.000)	(0.000)	(0.000)	0.3872
	Manufal	0.0835	0.0044	11.9479	0.1022
	Monthly	(0.494)	(0.306)	(0.000)	0.1033
	D 1	0.0709	0.0819	2673.353	0.5740
	Daily	(0.000)	(0.000)	(0.000)	0.5742
MIDSMALL FINANCIAL	W1-1	0.0810	0.0419	440.1244	0.5122
SERVICES	Weekly	(0.103)	(0.000)	(0.000)	0.5132
	Manufala	0.3805	-0.0016	29.9478	0.2335
	Monthly	(0.000)	(0.540)	(0.000)	
	Daily	0.0528	0.1043	3801.792	0.6573
	Daily	(0.003)	(0.000)	(0.000)	
MIDSMALL	Waalda	0.0242	0.0561	311.3591	0.4070
HEALTHCARE	Weekly	(0.667)	(0.000)	(0.000)	0.4270
	Monthly	0.2599	0.0068	23.8189	0.1937
	wontiny	(0.078)	(0.297)	(0.000)	0.1957
	Daily	0.0885	0.0648	105.872	0.4474
MIDSMALL	Daily	(0.000)	(0.000)	(0.000)	0.4474
INFORMATION	Weekly	0.3938	0.0011	131.5464	0.2387
TECHNOLOGY AND TELECOM	weekiy	(0.000)	(0.729)	(0.000)	0.2307
	Monthly	0.2902	-0.0019	19.2464	0.1611
	within	(0.000)	(0.426)	(0.000)	0.1011

Source : Eviews Output

* and ** means statistically significant at 5% and 1% level respectively.

of adjusted R² are higher in the daily data followed by weekly and monthly data respectively signifying the appropriateness of the regression model. The main focus of Table-IV is on the coefficient of squared market return (β_2) because the CCK (2000) model says that herd behaviour is present in the market when the coefficient β_2 is negative and statistically significant at 1% and 5% level of significance. The results showed that the coefficient of β_2 is positive and statistically significance for all the sectors in the daily data which implies anti-herd behaviour in the daily market movement during the whole period. These sectoral based findings are consistent with the individual stock return based findings. This implies that the investors do not follow herd take investment decisions rationally and do not follow the other investors. In the weekly data also except Pharma and Midsmall IT & Telecom sectors the coefficient β_2 is positive and statistically significant which

also supports anti-herd behaviour in the Indian stock market. The coefficient of β_2 found negative and significant for the pharma sector in the weekly observations which infers that investment decisions in the pharmaceuticals industry are rational and do not follow market consensus as far as weekly data is concerned. At the same time, in the monthly data only FMCG sectors have positive and statistically significant β_2 coefficient which implies that investors follow their own belief and information while investing in FMCG sector in the monthly observations. The coefficient β_1 implies magnitude of change in the value of CSAD_t for every increase in the value of absolute market return. It has also been observed that the coefficient β_2 is higher in the daily data than weekly and monthly data so it can be interpreted that anti-herd behaviour is prominently high in the daily frequency data during the whole period of study. As most of the sectors do not exhibit the existence of herd behaviour (except Pharma and Financial Services 25/50) so the null hypothesis cannot be rejected. Thus, the Indian stock market is found efficient industry wise and the results are similar to the individual return data.

Table-2 presents the summarized result of regression equation for all the specified sectors during the bull market conditions for daily, weekly and monthly data. The empirical findings clearly show that the probability value of F-statistics (0.000) for regression equation is valid and statistically significant at 1% and 5% level of significance for all the three data frequencies. The values of adjusted R² are higher in the daily data followed by weekly and monthly data respectively signifying the appropriateness of the regression model. The main focus of Table-V is on the coefficient of squared market return (β_2) because the CCK (2000) model says that herd behaviour is present in the market when the coefficient β_2 is negative and statistically significant at 1% and 5% level of significance. Thus, any change in squared market return makes the value of CSAD decrease by the magnitude of β_2 when herd behaviour exists. This can be said that a significant decrease in the value of CSAD refers that investment decisions taken by investors are close to market return movements or investors imitate the market consensus.

The coefficient β_2 is negative and statistically significant for the Automobile, Information Technology and Oil & Gas sectors only for the daily return data. However, the β_2 coefficient is significantly negative at both 1% and 5% level of significance and the β_2 coefficient for Automobile and Information Technology is negatively significant at 5% level only. When it comes to weekly data, the β_2 coefficient has found to be statistically significant and positive for the Auto and

Name of Sectors	Type of Data	β1	β2	F - statistics	Adjusted R ²		
	Daily	0.3659 (0.000)	-0.0071 (0.037)	410.1091 (0.000)	0.2786		
Αυτο	Weekly	0.0332	0.0169	157.3564	0.2729		
-	Monthly	(0.000) -0.0418	(0.000) 0.0069	(0.000) 4.2437	0.0572		
		(0.693) 0.2261	(0.140) 0.0036	(0.000) 311.0932			
-	Daily	(0.000)	(0.161)	(0.000)	0.2301		
BANK	Weekly	0.1974 (0.000)	0.0005 (0.863)	63.7989 (0.000)	0.2152		
-	Monthly	-0.0917 (0.410)	0.0047 (0.220)	0.9898 (0.000)	-0.0002		
	Daily	0.4634	-0.0068	484.4276	0.3079		
CONSUME R	Weekly	(0.000) 0.3422	(0.245) -0.0058	(0.000) 52.4612	0.1763		
DURABLE S	Monthly	(0.000) 0.1786	(0.103) 0.0006	(0.000) 12.3997	0.1543		
		(0.0197) 0.2873	(0.808) 0.0032	(0.000) 380.1942			
FINANCIA	Daily	(0.000)	(0.322)	(0.000)	0.2632		
L SERVICES	Weekly	0.2701 (0.000)	-0.0025 (0.467)	71.7728 (0.000)	0.2307		
SERVICES	Monthly	0.2359 (0.006)	-0.0032 (0.287)	10.055 (0.000)	0.1424		
FAST	Daily	0.3612 (0.000)	0.0140 (0.057)	371.4723 (0.000)	0.2561		
MOVING CONSUME	Weekly	0.3103 (0.000)	-0.0114 (0.312)	35.2048 (0.000)	0.1271		
R GOODS	Monthly	0.0392 (0.763)	0.0058 (0.558)	2.4762 (0.000)	0.0255		
FINANCIA	Daily	0.3142 (0.000)	0.0037 (0.308)	409.5662 (0.000)	0.2749		
L SERVICES	Weekly	0.2688 (0.000)	0.0015 (0.719)	88.8931 (0.000)	0.2743		
25/50	Monthly	0.2073 (0.014)	0.0003 (0.932)	19.9203 (0.000)	0.2459		
FINANCIA	Daily	0.4044 (0.000)	0.0081 (0.108)	548.0619 (0.000)	0.3378		
L SERVICES	Weekly	0.2648 (0.000)	-0.0050 (0.226)	46.7115 (0.000)	0.1605		
EX- BANK	Monthly	0.2029 (0.026)	0.0006 (0.865)	18.3237 (0.000)	0.2315		

Table-2 : Regression Results According to CSAD Model During Bull Market Conditions

(Contd...)

		0.3134	0.0079	340.0826	
	Daily	(0.000)	(0.158)	(0.000)	0.2400
HEALTHC		0.2648	-0.0050	46.7115	
ARE	Weekly	(0.000)	(0.226)	(0.000)	0.1605
A KILL		-0.0111	0.0071	3.9915*	
	Monthly	(0.918)	(0.186)	(0.0218)	0.0520
		0.3006	-0.0074	295.3380	
INFORMA	Daily	(0.000)	(0.047)	(0.000)	0.2187
TION		0.1462	0.0058	24.3377	
TECHNOL	Weekly	(0.035)	(0.467)	(0.000)	0.0919
0CV		-0.0571	0.0111	9.8035	
001	Monthly	(0.577)	(0.031)	(0.000)	0.1424
		0.2426	5.4333	284.9421	
	Daily	(0.000)	(0.9859)	(0.000)	0.2141
-		0.1226	0.0056	42.3520	
METAL	Weekly	(0.016)	(0.127)	(0.000)	0.1591
-		0.1651	-0.0026	3.1255	
	Monthly	(0.055)	(0.307)	(0.048)	0.0404
		0.3720	-0.0125	317.5335	
	Daily	(0.000)	(0.000)	(0.000)	0.2339
OIL &		0.2759	-0.0007	62.8617	
	GAS Weekly	(0.000)	(0.885)	(0.000)	0.2202
GAS		-0.0150	0.0077	3.2967	
	Monthly	(0.913)	(0.253)	(0.041)	0.0452
	-	0.3551	0.0052	397.0852	
	Daily				.2700
-	-	(0.000)	(0.370)	(0.000)	
PHARMA	Weekly	0.9992 (0.000)	3.8888	6140	0.9999
-	-	0.1338	(0.439) 0.0012	(0.000) 4.5075	
	Monthly				0.0594
		(0.229)	(0.8457)	(0.013)	
	Daily	0.2776	-0.0033	305.063	0.2252
		(0.000)	(0.220)	(0.000)	
PRIVATE	Weekly	0.1626	0.0041	65.3406	0.2125
BANK	5	(0.000)	(0.1459)	(0.000)	
	Monthly	0.0067	0.0027	3.4702	0.0415
		(0.929)	(0.279)	(0.034)	
	Daily	0.2306	-0.0011	399.2105	0.2892
PUBLIC	2	(0.000)	(0.292)	(0.000)	
SERVICE	Weekly	0.0946	0.0071	98.6355	0.3258
UNDERTAKI		(0.008)	(0.000)	(0.000)	0.0200
NG BANK	Monthly	0.1153	0.0004	9.6472	0.1707
Monu	monuny	(0.180)	(0.888)	(0.000)	0.1707

(Contd...)

MIDSMALL FINANCIAL SERVICES	Daily	0.3731 (0.000)	0.0028 (0.536)	403.7158 (0.000)	0.2752
	Weekly	0.3302 (0.000)	0.0005 (0.884)	114.3100 (0.000)	0.3405
	Monthly	0.0922 (0.366)	0.0032 (0.427)	8.7879 (0.000)	0.1271
MIDSMALL HEALTHCA RE	Daily	0.4187 (0.000)	0.0086 (0.206)	575.4673 (0.000)	0.3483
	Weekly	0.3059 (0.000)	-0.0047 (0.381)	63.8833 (0.000)	0.2100
	Monthly	-0.1395 (0.2949)	0.0149 (0.025)	5.7712 (0.004)	0.0791
MIDSMALL INFORMATI ON TECHNOLO GY AND TELECOM	Daily	0.4496 (0.000)	-0.0045 (0.454)	478.5390 (0.000)	0.3106
	Weekly	0.3143 (0.000)	-0.0013 (0.8257)	62.4690 (0.000)	0.2077
	Monthly	0.0338 (0.705)	0.0006 (0.772)	0.0837 (0.919)	-0.0244

Source: Eviews * and ** means statistically significant at 5% and 1% level respectively.

PSU sector only. The β_2 coefficient is not statistically significant for rest of the sectors so in respect of weekly observations, it can be infer that Auto and PSU sectors are free from herd behaviour or the investment decisions in these sectors have been rational. At the same time, the β_2 coefficient of monthly data has found to be positive and statistically significant for the IT and Midsmalll Healthcare sectors only at 5% level and insignificant for the rest of the sectors. Thus it can be inferred that the investment decisions in these two sectors have been rational in the monthly frequency data. The coefficient β_1 implies magnitude of change in the value of CSAD_t for every increase in the value of absolute market return. It has also been observed that coefficient β_1 is positive and statistically significant in the daily and weekly data for all the sectors but positively significant for consumer durables, Financial Services, Financial Services 25/50 and Financial Services Ex-Bank sector only in the monthly data which means that value of CSAD_t increases with the magnitude of β_1 coefficient of absolute market return. Thus, the results of bull market data are consistent with the results of whole period data and bear market data that the herd behaviour does not exist in the Indian stock market. The results are inconsistent with the findings of (Lee et al., 2013; Tan et al., 2008). Hence, null hypothesis cannot be rejected and it can be concluded that the investors in India are well informed and do not follow the market consensus.
Name of Sectors	Type of Data	β1	β2	F - statistics	Adjusted R ²
	Daily	0.0088 (0.712)	0.0686 (0.000)	1480.547 (0.000)	0.6161
AUTO	Weekly	-0.1481 (0.085)	0.0568 (0.000)	158.9467 (0.000)	0.4552
	Monthly	0.5417 (0.006)	-0.0072 (0.216)	9.4666 (0.000)	0.1711
	Daily	-0.1776 (0.000)	0.0829 (0.000)	3422.916 (0.000)	0.7838
BANK	Weekly	-0.4839 (0.000)	0.0817 (0.000)	275.5385 (0.000)	0.5948
	Monthly	0.6830 (0.003)	-0.0025 (0.670)	18.1258 (0.000)	0.2872
	Daily	0.2515 (0.000)	0.0462 (0.000)	5844.970 (0.000)	0.8672
CONSUMER DURABLES	Weekly	0.1011 (0.099)	0.0337 (0.000)	1000.225 (0.000)	0.8506 0.4929
	Monthly	0.0558 (0.876)	0.0243 (0.010)	32.1106 (0.000)	
	Daily	-0.0294 (0.239)	0.0712 (0.000)	3484.610 (0.000)	0.7911
FINANCIAL SERVICES	Weekly	-0.1944 (0.085)	0.0597 (0.000)	233.217 (0.000)	0.5633
	Monthly	1.0364 (0.000)	-0.0142* (0.033)	17.6086 (0.000)	0.2934
	Daily	0.1638 (0.000)	0.0754 (0.000)	5285.852 (0.000)	0.8537
FAST MOVING CONSUMER GOODS	Weekly	0.1378 (0.060)	0.0606 (0.000)	620.0343 (0.000)	0.7737
		0.3887 (0.218)	0.0272 (0.072)	31.2075 (0.000)	0.4429
	Daily	0.0474 (0.104)	0.07673 (0.000)	2153.116 (0.000)	0.7042
FINANCIAL SERVICES 25/50	RVICES Weekly	0.3298 (0.003)	0.0267 (0.000)	132.9977 (0.000)	0.4184
20,00	Monthly	1.0260 (0.000)	-0.0163** (0.007)	15.8068 (0.000)	0.2886

Table-3 : Regression Results According to CSAD Model During Bear Market Conditions

(Contd...)

	Daily	0.1209 (0.000)	0.0633 (0.000)	2360.506 (0.000)	0.7219
FINANCIAL SERVICES		0.0649	0.0425	199.1127	
EX- BANK	Weekly	(0.516)	(0.0423	(0.000)	0.5232
EA- DANK		1.0000	-0.0126*	24.1811	
	Monthly	(0.000)	(0.011)	(0.000)	0.3852
		0.0751	0.1113	2833.364	
	Daily	(0.012)	(0.000)	(0.000)	0.7572
		0.2763	0.0511	215.8036	
HEALTHCARE	Weekly	(0.014)	(0.000)	(0.000)	0.5482
		0.9018	-0.0133	15.644	
	Monthly	(0.001)	(0.198)	(0.000)	-0.2679
		-0.2586	0.1296	2150.488	
	Daily	(0.000)	(0.000)	(0.000)	0.6980
IONFORMATION		0.5440	0.0075	84.5666	
TECHNOLOGY	Weekly	(0.000)	(0.327)	(0.000)	0.3106
TECHNOLOGI		1.0446	-0.0252*	19.3348	
	Monthly	(0.000)	(0.014)	(0.000)	0.3064
		-0.0603	0.0544	2917.910	
	Daily	(0.003)	(0.000)	(0.000)	0.7564
		-0.2224	0.0454	233.5911	
METAL	Weekly	(0.008)	(0.000)	(0.000)	0.5408
		0.4496	-0.0014	11.4981	
	Monthly	(0.040)	(0.7523)	(0.000)	0.1926
		0.1617	0.0649	2281.900	
	Daily	(0.000)	(0.000)	(0.000)	0.7071
		0.0484	0.0489	245.0812	
OIL & GAS	Weekly	(0.586)	(0.000)	(0.000)	0.5534
		0.6838	-0.0060	22.1563	
	Monthly	(0.002)	(0.435)	(0.000)	0.3150
		0.0699	0.1137	3902.082	
	Daily	(0.011)	(0.000)	(0.000)	0.8106
		-1.0000	-8.1000**	5.8111	
PHARMA	Weekly	(0.000)	(0.000)	(0.000)	1.0000
	Monthly	1.1153	-0.0166	23.9446	
		(0.000)	(0.192)	(0.000)	0.3704
		-0.1559	0.0714	4379.548	
	Daily	(0.000)	(0.000)	(0.000)	0.8239
		-0.1817	0.0469	348.1875	
PRIVATE BANK	ATE BANK Weekly	(0.037)	(0.000)	(0.000)	0.6617
		0.6877	-0.0022	18.8094	
Mont		(0.005)	(0.683)	(0.000)	0.3219
		(0.000)	(0.005)	(0.000)	

	Daily	-0.1694	0.0703	3077.906	0.7542
	Duity	(0.000)	(0.000)	(0.000)	0.7542
PUBLIC SERVICE	Waalda	-0.5385	0.0716	331.8463	0.6072
UNDERTAKING BANK	Weekly	(0.000)	(0.000)	(0.000)	0.0072
	Manufala	-0.0348	0.0122	8.0236	0.1179
	Monthly	(0.871)	(0.135)	(0.000)	
		0.0452	0.0878	1649.588	0.6416
	Daily	(0.164)	(0.000)	(0.000)	
MIDSMALL FINANCIAL	We also	0.0018	0.0555	300.2158	0.6026
SERVICES	Weekly	(0.982)	(0.000)	(0.000)	0.6036
	Nr. 44	0.6787	-0.0073	18.5081	0.2992
	Monthly	(0.000)	(0.077)	(0.000)	0.2992
	Daily	-0.0516	0.1155	2394.080	0.7253
		(0.081)	(0.000)	(0.000)	
MIDSMALL		0.0255	0.0658	187.062	0.5089
HEALTHCARE	Weekly	(0.801)	(0.000)	(0.000)	
	Monthly	0.7644	-0.0082	16.9168	0.2000
	Monthly	(0.005)	(0.462)	(0.000)	0.2898
	_0.0529	0.0779	972.8629	0.5133	
MIDSMALL	Daily	(0.113)	(0.000)	(0.000)	0.3133
INFORMATION	Weekly	0.5407	-0.0042	64.4798	0.2591
TECHNOLOGY AND TELECOM		(0.000)	(0.420)	(0.000)	0.2371
	Monthly	0.4196	-0.0054	7.4834	0.1441
		(0.009)	(0.179)	(0.001)	0.1441

Source: Eviews

* mean significant at 5% and ** mean significant at 1% level.

Table-3 above shows the summarized regression results applying CSAD model when the market is in declining state for daily, weekly and monthly data. The empirical findings show that the probability of F-statistics (0.000) is statistically significant and valid at 1% and 5% level of significance for daily, weekly and monthly data signifying the validity of the regression model. The values of adjusted R² are higher in the daily data followed by weekly and monthly data respectively signifying the appropriateness of the regression model. The main focus of Table-VI is on the coefficient of squared market return (β_2) because the CCK (2000) model says that herd behaviour is present in the market when the coefficient β_2 is negative and statistically significant at 1% and 5% level of significance. Thus, any change in squared market return makes the value of CSAD decrease by the magnitude of β_2 when herd behaviour exists. The results showed that the coefficient of β_2 is positive and statistically significant at both 5% and 1% level of significance for all the sectors in the daily data which implies

anti-herd behaviour in the daily market movement when the market is declining. This signifies that the investors take investment decisions rationally and do not follow the other investors. In the weekly data also except two sectors (Pharma, Midsmall IT and Telecom) the coefficient β_2 is positive and statistically significant which also supports anti- herd behaviour in the Indian stock market. At the same time, in the monthly data except five sectors (Financial Services, Financial Services 25/50, Financial Services Ex-Bank, IT and Pharma) the p-value of others' β_2 coefficient is not statistically significant whether it be positive or negative. The regression results of Financial Services 25/50 and Pharma sector exhibit the existence of herd behaviour at both 5% and 1% levels of significance. However, the results of Financial Services, Financial Services Ex-Bank and IT sectors found negative and statistically significant at 5% level only. The coefficient β_1 implies magnitude of change in the value of CSADt^{DOWN} for every increase in the value of absolute market return during bear market conditions. The coefficient β_1 has found to be positive and significant for majority sectors. It has also been observed that the coefficient β_2 is higher in daily data than weekly and monthly data so it can be concluded that anti-herd behaviour is more prevalent in the daily frequency data during declining movement of the market. As the majority of sectors do not exhibit the existence of herd behaviour, so the null hypothesis cannot be rejected. It can be concluded that Indian stock market is efficient during bear phase for the study period 2006 to 2021 and investors take investment decision rationally.

VI. Conclusion

The existence of herd behaviour towards the market consensus has been investigated using sector wise individual stock return data. In addition, sectorwise herd behaviour has been tested using daily, weekly and monthly data for both individual stock return and sectoral index returns. In order to test the herd behaviour CSAD model has been applied.

The CSAD model which is a non-linear model exhibited the non-existence of herd behaviour in the Indian stock market for the whole period as well as when the market is in bull and bear phase, especially in the daily data. When it comes to weekly data Pharma sector has shown the existence of herd behaviour in whole period and bear phase. While Financial Services 25/50 sector has displayed the existence of herd behaviour for the monthly observations. The results are consistent with Kanojia et al. (2020), Satish and Padmasree (2018) and Prosad et al. (2012), Demirer and Kutan (2006), Kumar et al. (2016), Dutta et al. (2016) and Ganesh et al. (2016), who recently tested the herd behaviour in the Indian stock

market and concluded that Indian equity market is usually free from sectoral herd behaviour even when some level of herd behaviour has been depicted. But the empirical findings contradict with the findings of Lao and Singh (2011), Yang et al. (2015), Ramadan (2015), Caparrelli et al. (2004), Balcilar et al. (2014), Kapusuzoglu (2011), and Yasir (2018) who found that the herd behaviour exist in the stock market especially in the extreme market conditions. Even if the magnitude of the coefficient of anti-herd behaviour decreases in the weekly and monthly data, there are statistically significant findings which show that herd behaviour was not present in the weekly and monthly data. Therefore, the findings support the validity of rational asset pricing models.

Behavioural finance is still evolving in emerging markets as studies have majorly focused on developed markets. This research will surely be advantageous for those investors who want to understand and study on the psychology of Indian investors and for the regulatory authorities which can take remedial measures for this specific behavioural bias. Future researches may include the other stock markets in India for more advanced results and also check the impact of stock markets of other countries on the herd behaviour of Indian stock market.

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Insights from International Transfer Pricing through Systematic Review and Bibliometric Analysis

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Abstract : This study attempts to gather and analyze the available literature on the topic in order to convey the current status of Transfer Pricing issues through systematic literature review and bibliographic analysis. This evaluation sheds light on the prominent authors, region, organizations, sources, and publications by using bibliometric data from 128 research publications across the world. Web of science database was utilized for the literature collection over the period of 33 years. It was revealed that centrality of transfer pricing revolves around the tax avoidance and our analysis shows that TP should be utilized strategically in planning, manufacturing, and income generating, rather than as a technique of tax evasion.

Keywords: Systematic Review, Bibliometric Analysis, Transfer Pricing, Multinational Corporation, Tax Compliance, Tax Management Strategy.

1. Introduction

At the very outset, transfer pricing can be defined as transfer pricing is the process of setting the price at which an enterprise transfers physical goods and intangible property or provides services to an associated enterprise (OECD, 1979). Multinational corporations setting their transfer prices have been a hot topic for decades because it ignores the market forces while setting the prices for intra-firm transactions (Benari 2009). According to Richardson, Taylor, and Lanis (2013), multinational corporations may engage in intra-firm trade by including price payments in order to aid tax evasion via fictitious inter-company transfer pricing. Transfer pricing has evolved as a strategy to shift the resources

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of an MNC to its entities setup in various foreign countries (Copithorne, L.W. 1971). Worldwide, a large number of the MNCs have registered their branches in tax havens to obtain tax benefits. The existence of tax havens is perhaps one of the incentives that decide for a company to become multinational. The abuse of transfer pricing has become a global issue as it results in the erosion of the country's tax base and profit shifting (Sebele, 2021). Manipulation of prices between the related parties on the non-market basis as against the arm lengths price resulted in reduced organization's tax liability by shifting a significant portion of their earnings into low tax countries. This tax minimization strategy has played a vital role in the over-reporting and under-reporting of payments in a particular economy resulting in the misallocation of resources across time and space. MNCs practicing the transfer pricing, have addressed to several nontax objectives also, such as economic objectives to attain the efficiency in the allocation of costs and resources, avoiding exchange rate volatility Devi and Survarani (2020), and organizational objectives in achieving the internal management and international orientation, management control, risk management, fund management. (Pendse, 2012; Cravens, 1997; Lin and chang, 2010).

Accordingly, this review has been taken up to capture the existing literature on transfer pricing systematically because the previous review on the title has several limitations; for example, Grabski's (1985) review on transfer pricing was limited to 9 years only (1975-1983). Dr Subha Kant Padhi's (2019) study did not employ the systematic review technique as the author tries to clarify the numerous theoretical models created to handle the challenges of transfer pricing. Furthermore, Delina Herdian Septiani's (2021) review on transfer pricing included only 36 articles and was limited to only five years (2016-2021). Therefore, this paper develops a network of transfer pricing literature through systematic review wherein the current status of transfer pricing can be traced along with future research agenda. More importantly, this review also includes the bibliometric analysis to identify the essential authors, countries, and journals, which may prove essential and helpful to scholars, managers, and policymakers in tracking the stock of transfer pricing and developing an informed understanding of the topic and its progress over time. This paper attempts to answer the following research questions.

- 1. What does existing research inform us about transfer pricing?
- 2. How many publications are there for the title of this research during last 4 decades?

- 3. Who are the most influential authors?
- 4. Where are the most articles published country-wise and journal wise?
- 5. What is the rise in publications over time?
- 6. What is the future agenda to be explored on transfer pricing?

The rest of this review is organized as follows. First, we provide a review of the transfer pricing literature. The bibliometric approach employed in this review is then described. After that, we will show the findings of a bibliometric analysis and finally, we present a research plan for the future to broaden the scope of TP.

2. Literature Review

In the globalized world, MNCs have begun to operate worldwide, and Transfer pricing emerged as a mechanism for multinational corporations (MNCs) to relocate their revenue from high-tax countries to low-tax jurisdictions to reduce their tax obligation (Bhat 2009). According to Copithorne, L.W. (1971), the application of corporate taxes and various management efforts might drive transfer prices. The talks proceeded, and (S.lall 1973) attempted to identify the numerous possible causes, such as effective tax rates, tariff rates, and currency rates, that require an MNC to move profits through transfer pricing. (Grubert & Mutti, 1991) analyzed the ability to shift profits from high-tax countries to lowtax countries and indicated that taxes and tariffs play an essential role in determining multinational operations. (Harris 1993) hypothesizes that a decrease in the U.S tax rate from 46% to 34% incentivizes the MNCs to shift income into the U.S through transfer pricing. Likewise (Jacob, 1996) found that transfer pricing as the mechanism for income shifting. Clausing (2001) establishes a clear relationship between the tax rates and intra-firm trade; results indicate that the U.S has an unfavorable intra-firm trade balance with low-tax countries. Similarly (Overesch, 2006) Identified transfer pricing as a special profit-shifting channel. Pradeep Gupta (2012) observed that the differential in corporate tax rates across countries and variations in custom duty across various products encourage the MNCs to manipulate the transfer pricing between the affiliated firms to minimize the taxable income of the whole group. (Egger & Seidel, 2013) found the increased share and volume of bilateral intra-firm trade (5.5%) when corporate tax rates differ between home and host country. (Vicard 2014) provided direct evidence of profit shifting to low tax countries through transfer pricing. There are some studies in which different objectives have been associated with transfer pricing other than tax motivations. For example, Donnenfed et al. (1995), shows that internal factors like coordination and monitoring between headquarters and subsidiaries have their bearing on transfer pricing. (Cravens, 1997) found that MNEs consider several factors, such as internal management and international orientation and tax management, when deciding on transfer pricing. Likewise, Lin and Chang (2010) explored internal and external motivations for transfer pricing manipulations; the study results indicated that tax minimization is no longer the focus objective of transfer pricing manipulation. (Pendse, 2012) finds a strong impact of various non-tax purposes (management control, risk management, fund management) on transfer pricing decisions of MNCs. Several firm-level characteristics also impact transfer pricing (Grant Richardson et al., 2013), showing that firm size, profitability, leverage, intangible assets, and multinationality are significantly positively associated with transfer pricing aggressiveness.

The extensive literature documented both internal and external factors that MNCs genuinely consider while setting their transfer price for intra-firm transactions in goods, services, and intangibles. The existence of tax differentials between nations allows MNCs to reduce their worldwide tax burden by shifting money from high tax states to low tax nations via manipulation of transfer pricing. This manipulation of transfer prices is done to bypass regulatory limitations and take advantage of variations in tax rates between countries. It is highly recognized that tax liability minimization is the primary goal of transfer pricing practices; however, using the non-arm's length pricing in international transfer pricing is not restricted to taxability management. There are diverse and varied determinants for transfer pricing, including coordination between subsidiary and parents, strategic management, control management, intangibles, leverage, size of firms, Multinationality, and risk management.

A bibliometric review of TP research is conducted to explain the TP literature further. It has emerged to be the modern approach for examining and interpreting vast amounts of data. It allows us to explore the evolution of a particular discipline while also offering light on developing topics in that field. However, its use in business research is still very young and, in many cases, inadequate. As a result, we want to provide an overview of the bibliometric methodology and step-by-step process. The review's precise methodology and procedures are discussed in the following sections.

3. Methodology

In early 2022, a simple search on the subject using the keyword "Transfer Pricing" yielded 413 publications included in the literature review process. The search technique had many types of research with varying periods, conceptual and methodological features, and four phases of filtration were employed to get the final findings, namely Filtration of databases, Scholarly filtration, Filtration by subject, and Language filtration.

3.1. Database Search

Web of science being the world's oldest database was selected for the study. The database is most widely used and authoritative database of research publications and citations (Caroline Birkle 2020) and its richness of bibliometric information for publication.

3.2. Scholarly Filtration

To reduce the irrelevant material and achieve knowledge diversity on the topic, only journal papers and conference proceedings were used, since they are often appraised based on innovation and are submitted to rigorous peer review, which assists us in extracting quality insights. In case of book chapters, notes, newsletters etc., the scholarly filtration excluded 17 articles and retained 191 articles for further analysis.

3.3. Subject Filtration

Subject filtration includes the broader area of Economics, Business finance, Management, Operations research, management science, and Business. These subjects categorized by web of science contain the transfer pricing at its broadest and are relevant to the business. This filtration has been done in accordance with (Paul. et al.2021). In subject filtration, 132 articles were retained that belonged to the subjects mentioned above, and 59 articles were removed.

3.4. Language Filtration

Language filtration was done to remove the articles written in a non-English language. Language filtration has been done in line with (Mukherji, et al. 2021)



Figure-1 : Search and Filtration Strategy for Bibliometric Analysis

As a result, 80 items were removed due to academic, language, and subject filters. The remaining 128 papers that passed the screening procedure are now being prepared for bibliometric evaluation. In this review, the TP literature was examined bibliometrically, (See Fig. 2). We performed several bibliometric-based analyses on 128 publications that made it through the screening procedure during the web of science bibliometric search. We concentrated on publishing TP research articles, worldwide citation, and social network analysis, as well as significant contributors (authors, nationalities, and institutions). Furthermore, we used the VOS viewer to gain a better understanding of the critical contributors and publications by analyzing co-authorship based on authors and countries, along with citation analysis.



Figure-2 : Analysis Structure for Bibliometric Analysis

3.1. Publication Trend

Publication trend based on the year wise publication of articles reveals an asymmetric pattern of increase or decrease in transfer pricing publications over time see, figure-3. The highest number of studies appeared for 2014 to 2020. The overall trend shows an increasing focus on the transfer pricing articles over the years.



Figure-3 : Year Wise Publication Trend

3.2. Publication Subjects

In this section, an analysis of significant fields contributing to transfer pricing has been conducted. Only five subjects have been taken relevant to the centrality of transfer pricing as a business strategy. Economic subject has a significant contribution and constitutes the central part of transfer pricing research (see fig, 4.) because transfer pricing as a concept involves the pricing of goods and services, which is the subject of economy. After economics, Business Finance has a significant amount of literature contained on transfer pricing (55 publications) because of the fact transfer pricing involves trade between two related parties where it is carried through various transactions like the transfer of goods and services and providing finance at concessional rates etc. after that management subject consists of the 35 publications on transfer pricing because transfer pricing has some organizational objectives apart from taxation and finance objectives like coordination, cooperation and motivational objectives between the units of an entity. The other subjects that constitute a significant amount of transfer pricing literature are operations research and business, with 20 and 10 publications, respectively.

3.3. Influential Authors

The distribution of articles according to authors is attempted to identify the leading authors contributing to the literature of TP. Analysis show that only four authors (Matsui K, Pfeiffer T, Reichelstein S and Schjelderup G) have authored 3 articles for each and all the rest authors have authored the similar number of publications see (fig, 5).



Figure-4 : Publication Subjects





3.4. Publication Outlet

The segregation of articles based on the journals shows that 'European Journal of Operational Research' is host to the maximum number of articles counted as 10, followed by 'Journal of Taxation', which contains nine articles of TP. This is followed by 'Accounting Review, Contemporary Accounting Research, and

National Tax Journal', which contains eight, seven and seven articles respectively see, (fig 6). Most of these journals are Australian Business Deans Council (ABDC) Category and the Association of Business Schools (ABS) category, which signifies that transfer pricing research being an international issue, finds its place quickly in premium journals. Also, publisher analysis has been carried out, which reveals that 30.46% of the sample articles were published by Elsevier see (Table-1). Followed by Wiley for 10.15% publication then 7.81% was published by Springer Nature providing the enough evidence that approx. 75% of sample articles on TP were published by leading publishers.



Figure-6 : Publication of Articles based on Journals

Table-1 : Publisher Analyses

Publisher	Count	Percentage
Elsevier	39	30.46
Wiley	13	10.15
Springer Nature	10	7.81
American Accounting Association	8	6.25
Warren Gorham Lamont Inc	8	6.25
NATL TAX ASSN	6	4.68
Taylor & Francis	6	4.68
Emerald Group Publishing	4	3.12
Routledge	3	2.33

3.5. Country Publication

Distribution of articles according to country wise identifies the countries having contributed significantly to TP research. Country-wise analysis shows that the USA (66 articles) is the largest contributor to TP research contributing about 51%, followed by Canada (11) contributing about 8.59%, to TP research, see (fig.7). Other countries that are significant contributors are Germany 6.25%, Japan 6.25%, Norway 5.469%, Austria 4.688%, Denmark 3.906%, and South Korea 3.906%.



Figure-7 : Country Wise Analysis

3.6. Co-Authorship Analysis

Co-authorship analysis has been conducted to identify the authors that have linked up for the productivity of TP research. Our sample shows that at least two authors co-authored 23 articles see (Table-2). Co-authorship analysis explains the type and scope of partnerships between co-authors (Kumar et al., 2021) and the regional contribution to knowledge generation on TP research. Our review establishes that Matsui and Kenji have collaborated for the maximum number of documents, three, then Croker, Je and Birnkranth have collaborated for two papers. Mescal and Devan also collaborated on two articles. Likewise, Klassen and Kenneth co-authored two documents, while others who collaborated on two documents are Johnson and Nicole Bastian, Rossing and Christian Plesner, Park and Kunsoo etc. Reichelstein received a maximum number of citations(121) followed by the Park, Kun Soo (59), then Vaysman, I (58), Klassen, Kenneth j (52), Mescall, devan(52), Rossing, Christian Pesner(42) are the authors who have received a significant amount of citations for their articles may be due to fact of collaboration as interchanging of ideas contributes to knowledge generation.

Co-authorship based on regions shows the countries having a significant amount of documents TP and their connectivity with other countries see (fig 8). The criteria set for this analysis is that countries have the minimum number of papers and citations of 3 and 30, respectively. Our analysis shows that the USA hosts the maximum number of documents (50), with 1374 citations collaborating with Austria and Netherlands. Then Canada has ten papers with 277 citations having main connectivity with China, Portugal and South Korea. Also, Japan has eight documents with 55 citations and connectivity with Germany and Norway while collaborating for TP research. England also is the producer of 8 documents with 80 citations having connectivity with Denmark and Scotland. Germany has seven documents with 65 citations, Norway has seven documents with 90 citations, South Korea has five documents with 74 citations, Austria has six documents with 100 citations, Denmark has five documents with 105 citations, and the Netherlands has three documents with 186 citations etc.

Authors	Documents	Citations	Link Strength
Birnkrant, hj	2	2	2
Buckley, pj	2	8	2
Bucks, dr	2		0
Croker, je	2	2	2
Emmanuel, clive	2	2	0
Gresik, thomas a	2	2	0
Hughes, jf	2	8	2
Johnson, nicole bastin	2	30	1
Klassen, kenneth j.	2	52	2
Matsui, kenji	3	26	0
Mescall, devan	2	52	2
Okoshi, hirofumi"	2	3	0

Table-2 : Co-Authorship Analysis

(Contd...)

Park, kun soo	2	59	0
Pfeiffer, Thomas	2	33	1
Pinho, carlos	2	26	0
Reichelstein, s	2	121	0
Ronen, j	2	14	0
Rossing, christian plen	2	42	0
Schjelderup, g	2	22	1
Srinidhi, b	2	43	0
Vaysman, i"	2	58	0
Weichenrieder, aj	2	25	1





3.7. Keyword Co-occurrence Analysis

A keyword co-occurrence analysis was performed in VOS viewer utilizing all terms from 128 articles to identify the subjects that might reflect concerns in TP

research over time. The concept underpinning this study implies that keywords reflect the article's content (Kumar et al., 2021). Our keyword analysis shows several trends in TP literature over time see (fig 9). Research on TP from 2008 to 2010 was centralized around decentralization, allocation of investment and cost, multinational firms, incentives, taxes etc. because transfer pricing was used more as a strategy to bring efficiency through divisionalization and incentives generated from different countries through tax rates were embarked upon to save on taxes by allocating cost and revenues among subsidiaries. Then from 2010 to 2014, the focus was on international transfer pricing, rules, arm's length principle, model development, impact on economies etc., because countries began to frame and adopt more strict transfer pricing regulations in their tax laws to plug the tax loss of their respective jurisdictions.



Figure-9 : Keyword Co-occurrence Linkage

3.8. Citation Analysis

Citation analysis has been conducted to identify the most cited article, and this analysis shows that Clausing, ka (2003) has the highest number of citations for the article titled Tax Motivated Transfer Pricing And US Intra-Firm Trade Prices, followed by Bertelsman,EJ; Beetsma,rmwj with 164 citations see (Table-3).

Rank	Title of study	Author	Citations	Year
1	Tax Motivated Transfer Pricing And US Intra Firm Trade Prices	Clausing, ka	194	2003
2	Why Pay More? Corporate Tax Avoidance Through Transfer Pricing In OECD Countries.	Bartelsman,ej; Beetsma, rmwj	164	2003
3	Taxes And Transfer Pricing: Income Shifting And The Volume Of Intra Firm Transfers.	Jacob,j	85	1996
4	Tax Reforms And Evidence Of Transfer Pricing	Swenson. dl	83	2001
5	Strategic Transfer Pricing	Alles,m; Dater,s	79	1998
6	Integrating Manegrial And Tax Objectives In Transfer Pricing	Baldenius,t;Melumad ,nd; Riechelstein,s	70	2004
7	Specific Investment Under Negotiated Transfer Pricing- An Efficiency Result	Edlin, as; Reichelstein, s	51	1995
8	Strategic Transfer Pricing In A Marketing Operations Interface With Quality Level And Advertising Dependent By Goodwill	Liu,guowei; Zhang,jianxiong; Tang,wansheng	46	2015
9	Transfer Pricing By Multinational Firms; New Evidence From Foreign Ownership	Cristea,ancad; Nguyen,Daniel x	44	2016
10	Transfer Pricing: Strategies,Practices And Tax Minimization	Klassen,Kenneth j; Lisowsky,petro; Mescall, devan	42	2017
11	Negotiated Transfer Pricing And Divisional Vs Firm-Wide Performance Evaluation	Anctil; Dutta	38	1999
12	A Model Of Negotiated Transfer Pricing	vaysman	37	1998

Table-3 : Citation Analysis Based on Title and Authors

Note: top 12 papers selected on the basis of global citations.

Network visualization has been done to show the linkage between these authors see Figure-10.





4. Results and Discussion

The current literature was reviewed to map the bibliometric aspects and knowledge structure of Transfer Pricing. The bibliometric study generally sheds light on the most prominent authors, nations, journals, subjects, and citations, from 1989 to 2021 (32 years). Different types of analysis that we performed, like co-authorship, citation, keyword co-occurrence, and network analysis etc, helped us draw the following inferences.

- ✓ Research on transfer pricing has received significant importance over time with changing concerns.
- ✓ Highest number of publications appeared after 2014, and the maximum number of publications appeared on the subject of economics.
- ✓ The Maximum numbers of articles were written by Matsui K, Pfeiffer T, Reichelstein S and Schjelderup G, and the highest cited (194) article appeared for clausing, entitled 'tax-motivated transfer pricing and US intra firm trade prices'.

- ✓ European journal of operations research is home to the maximum number (10) of transfer pricing research, followed by the journal of taxation (8). At the same time, Elsevier appeared to be the largest publisher (39 articles) of TP research, followed by Wiley (10).
- ✓ USA is the most significant contributor to TP research contributing about 51% of TP research and 1374 citations having central collaboration with Austria and the Netherlands. Followed by Canada (11), contributing about 8.59% with 277 citations having main connectivity with the people's republic of china, Portugal and South Korea.
- ✓ 23 documents were co-authored based on the criteria of authors who coauthored at least two documents, and Matsui, and Kenji have evolved as co-authors of 3 documents with 26 citations.
- ✓ There has been a shift in research content on transfer pricing over time, divisionalization, resource allocation, coordination and internationalization from 2008 to 2010 and tax compliance, rules, models, arms' length principle etc., from 2010 onwards.Most cited author linkages were found for clausing, ka (194 citations) with Jacob and Klassen followed by Bertelsman (164) citations whose primary linkages were found with Cristea and Swenson.

5. Conclusion and Future Direction

The expansion of globalization and industrialization brought about the emergence of multinational corporations (MNCs), which have experienced a remarkable increase in intra-company trade volume and level due to efforts to expand transactions. Additionally, MNCs have employed transfer pricing tactics to maximize profitability and satisfy stakeholders. Discrepancies in tax rates and regulations across different countries are seen as a key motivator for transfer pricing. This practice has a direct impact on an enterprise's cost, revenue, and overall profitability, making it crucial for their success.

Using a systematic review approach, we were able to analyze the intellectual structure of Transfer Pricing (TP) and conduct bibliometric evaluations to identify its current use in research. Our review indicates that TP is predominantly used as a strategy to avoid taxes, causing a depletion of tax revenues in high-tax countries, particularly in developing nations, by transferring funds to lower-tax countries. The problem of transfer pricing poses a significant challenge for both multinational enterprises (MNEs) and tax authorities..

Our literature review revealed that although tax avoidance is the primary driver behind Transfer Pricing, various non-tax factors also play a crucial role in determining intra-firm trade flows. Research conducted by Hardi Kusuma (2017) and Ronan Merle et al. (2019) demonstrates the impact of non-tax variables, including factors such as size, leverage, intangibility, organizational culture, divisional leadership morale, political environment, and corporate governance. Further exploration of these factors is necessary to understand how transfer pricing practices react to changes in these variables. Also, the majority of the countries began to adopt the Arm's Length principle, Advance Pricing Agreements, Safe Harbour Rules etc, to avoid the transfer pricing disputes in their regions and prevent their tax base, but there is a dearth of literature on how these developments in TP legislation has impacted the transfer pricing practices of the MNCs, therefore, a comprehensive review on these spurs the gap for future research in the area.

Our bibliometric review found that much of the work on transfer pricing has been conducted in developed nations like the USA. It is highly recommended to take up the transfer pricing research in developing countries, particularly India, as developing nations usually have different economic and fiscal conditions than developed nations. We believe that the changing business environment, both locally and internationally, will keep the area of TP fascinating for researchers, practitioners, and policymakers. Moreover, there is a need for increased collaboration across regions for transfer pricing research.

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An Examination of Investment Decision-Making Behavior during Pre-Covid-19 Pandemic and New Normal with Reference to Tricity (Chandigarh, Panchkula, and Mohali)

PARMOD KUMAR AND RAJNI SALUJA

Abstract : COVID-19 pandemic's impact on the global economy, this approach is now more critical than ever. Investors' preferences shifted dramatically during previous crises, which had a direct impact on investors investing decisions and the value of businesses. The study aims to investigate the global pandemic's effect on investors investing decisions in Tricity (Chandigarh, Panchkula, and Mohali). The study employed a random sample technique, and the primary data was acquired, which was completed by 225 people. SPSS software ascertains mean, standard deviation, and ANOVA analysis. The findings indicate a significant impact of covid-19 on the investors investing decisions and demographic, as well as the psychological factors of the investors also impact their investing decisions.

Keywords: Covid -19, Tricity, Global Economy, Investors' Preferences, Pandemic.

1. Introduction

COVID-19 pandemic's impact on the global economy, this strategy is now more critical than ever. Investors' preferences shifted dramatically during previous crises, which had a direct impact on stock prices and the value of businesses. The selection of the period for the investigation was not without its significance.

The technique is now more important than ever because the COVID-19 pandemic influences the global economy. Company values have fluctuated in prior crises as investors' preferences moved dramatically.

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Putting money into anything with the expectation of earning a return at a later date is known as an investment. In today's world, there are many uses for money. Several options exist for people who want to put their money somewhere, such as "gold/silver, insurance, public provident funds, equity shares, mutual funds, gold/silver, real estate, and national pension schemes." The investments that individuals feel the safest and most confident making are in bank savings and public provident funds, whereas the ones that people feel are the most successful are stock investments. Throughout the past several years, India's economy has been performing exceptionally well for the nation. The focus of this study is on how investors act when they have a lot of different investment options.

When a new and contagious disease named COVID-19 first appeared in Wuhan, China, in the early 2020s, it had a devastating impact on the economies of several countries. The economic crisis triggered by the Coronavirus is distinct from previous financial crises in terms of its cause, scope, and intensity (Ding et al., 2020). That is why experts worldwide are starting to pay attention to how much money is being made from this COVID-19 outbreak.

"The Securities and Exchange Board of India" (SEBI) and other regulatory bodies in India have simplified the process of investing in mutual funds and initial public offers (IPOs) through the use of "unified payment interfaces" (UPIs) to encourage this phenomenon (SEBI, 2020). Investors typically have a variety of reasons for participating in a particular investment opportunity. After COVID-19, it is more important than ever to understand the motivations of investors so that positive investment trends can continue. Investor preferences can be influenced by a variety of factors, including age and gender, according to several studies.

As of the end of December 2019, China had reported many cases of COVID-19, which was later found to be a unique member of the coronavirus family. The global stock market was the first casualty of this pandemic. In early February 2020, Iraq became the third country to report a case affecting all commercial and financial activity. Even the most secure economies of developed nations have been rattled by this outbreak (Sun et al., 2021). However, it revealed the long-standing inequities in financial regulation. Globally, it had a detrimental impact on financial markets due to countries' efforts to curb it.

Regarding regulating the current global crisis, investors' positive behavior and financial market regulation by the regulatory body was among the most crucial factors (Lee, 2020). The emerging coronavirus pandemic, SARS-CoV-2, has
produced unprecedented economic disruptions (Arfah et al., 2020). There are at least two key variations this time around. First and foremost, its effects on the economy have been bigger than those of any other natural catastrophe in the past four decades. The global economy has reached a standstill due to the viral containment measures. Several policy instruments and methods are employed by governments around the world in the event of a fiscal crisis. Tools and techniques that can help include human safety, fiscal policy, macro prudence, and monetary policy.

Because to COVID-19, the past several weeks have been challenging for the economy of the entire world and the financial markets. Even while there are still chances to profit from the present pandemic, most investors are facing portfolios painted in red due to the Coronavirus spreading to every continent except Antarctica. During economic booms, traditional investing tactics have been well-investigated and documented. Despite this, there are just a few studies on investing during an epidemic.

1.1. Low-Risk Investment During the COVID-19 Pandemic

Government Securities Fund

Investing in government securities funds is advantageous on a fundamental level because the government ensures the return of investor cash. The Reserve Bank of India provides Gilt mutual fund schemes on the government's behalf. These investments are often kept to maturity and have a long-term horizon. Because of its liquidity and tax advantages, it outperforms other debt investments regarding after-tax returns.

Index Fund

An index fund attempts to mimic a financial market index by holding various stocks and bonds. An index fund, rather than a specific stock or bond, allows you to participate in the whole market. Mostly, they are low-risk investments that provide superior total returns to other mutual funds. Having a cheaper administration charge than actively managed funds, passively mutual funds also have an added benefit.

Liquid Mutual Funds

Investing in fixed-income assets like Treasury bills, treasury bonds, and commercial paper is what liquid mutual funds do best. The short maturity time of these open-ended plans makes them an excellent short-term investment

alternative because they provide a modest rate of return (3-6 months). Withdrawals from liquid funds can be completed within 24 hours following the end of the working day if there is no lock-in period. Liquid funds benefit from not imposing a penalty upon withdrawal or breakage. It is a smart strategy to invest spare cash because it broadens your investment horizons.

> Post office Monthly scheme

The post office's monthly investment plan is a great option for people looking for a long-term investment. Only a 5-year lock-in term and an upper limit (INR 4.5 lacs) prevent an individual from investing in this outstanding investment, which boasts significant interest and monthly payouts. Most cannot compete with India's modest monthly income plan from the Indian post office for safety, promptness of payment, and a low-risk financial commitment.

> Gold

Non-corrosive metal has served as the gold standard for economies around the world since ancient times. As a low-risk investment, Gold's price is less affected by market fluctuations and corrects itself more quickly. Investments in Gold can provide a safety net and a sense of security, even for those who take on a lot of risk with their money. Global lockdowns have served to raise Gold's price. In addition to gold ETFs and national gold bonds, there are numerous ways to invest in gold mutual funds and ETFs. Regardless of how diversified or selective an individual's investment strategy may be, each has unique qualities that make it suitable for all investors.

1.2. An Overview of the Investment Avenues

In India, there are a variety of investing options. The following are summaries of the various investment options:

Marketable investment

"Equity shares," "Preference shares," "Convertible debentures," "Nonconvertible debentures," "bonds of public sector entities," "savings certificates," "Government securities," and other forms of debt are all examples of marketable investments. They may be exchanged for money as well. Most people who wish to invest their money often put it into public stocks and bonds.

> Non-Marketable Investment

"Bank deposits" and "insurance policies" are illiquid investments. Fixed deposits, such as the "National Saving Certificate (NSC)," the "Kisan Vikas Patra

(KVC)," private firm shares, etc., are also included. Many people have investments they can't get rid of because they aren't marketable. Regarding frequency and significance, regular and permanent deposits at post offices and savings banks are at the top.

Mutual fund

Instead of buying financial assets on their own, people can invest in mutual funds. Mutual funds give investors a way to spread out the risk of their money by investing in various types of assets. People who work for fund managers decide where to invest, how much to invest, and when to sell so that the mutual fund's scheme can make money for its investors, which is what they do.

1.3. Empirical Studies on Investors' Investing Decision of Tricity

An economy and an organization's financial well-being depend on it. This is especially true when investing in the stock market, where there is much ambiguity regarding future outcomes. In the world of traditional finance, investors are seen as rational. Securities are always priced properly and equitably by rational investors who have uniform expectations in terms of securities, Fama's (1965) efficient market hypothesis theory. In the realm of finance, behavioral finance is a new paradigm. It aims to comprehend and foresee the systemic financial market implications for mental decision-making. It uses economic and psychological factors to help people make better financial decisions (Olsen, 1998). Traditional financial theories are unable to explain and manage numerous market abnormalities. Behavioral finance theories can be used to solve these abnormalities.

According to Statman (2011), most people's investment decisions are impacted by other people's choices. To offer a sense of what investors want, let's suppose they want to make a lot of money, retire comfortably, and do well in their native country. By doing this, we can better understand what causes price swings in the financial markets. Because of this insight, active stock market investors have expanded outside the realm of the dominant investment banks.

2. Literature of Review

Bieliaieva et al. (2020) analyzed the current business state and showed that internal disruptions within companies might cause a crisis earlier than for the entire country or world economy. Rather than focusing on short-term solutions, their article focuses on the long-term consequences of crisis management on a

company's sales and earnings. The pandemic necessitated firms to adapt quickly to current trends, such as e-commerce, to avoid being shut down. It was also notable that the cost of a crisis extends far beyond the scope of individuals and families and into the realms of nations and even the entire planet.

Gormsen & Koijen (2020) examined how investors' expectations of economic improvement beyond the confines of the current crisis and subsequent governmental responses might be calculated using information from the accumulating equities market and payout futures.

Okhuese (2020) concluded that until a vaccination against COVID-19 was developed, the number of people afflicted may continue to rise. As a result, coronavirus infections and deaths have risen due to increased economic illiquidity and general deterioration. Restrictive laws and lockdowns have contributed significantly to financial market stability, as has a general drop in public opinion regarding the disease.

Ramelli, S., & Wagner, A. F. (2020) tested the effect of the "COVID-19 pandemic" on corporate "stock prices" in the United States. They determined that the epidemic led to extraordinarily negative and erratic aggregate market reactions. Significantly lower cumulative abnormal returns were found for firms with greater exposure to China and a higher share of international revenues.

Senthamizhselvi, A & Vedantam, SR (2018) stated that "Bank deposits," "insurance," "PPF," "NSC," "Post office," "Gold," and "Chit funds" all have a big impact on investment decisions, especially when people investing in highor low-risk options. This helps people make better decisions when they are investing.

Mak, KY & Lp, WH (2017) analyzed the study of investors' financial investing behavior and discovered that elements including socioeconomic status, psychological make-up, and demographics like gender, marital status, and prior investment experience all had an impact on investors' choices. This requires financial service providers to establish appropriate strategic plans that consider different investors' preferences.

Maini (2017) explained that unpredictable market prices were a major factor in the decisions of individual investors. Most of the decisions made by the Tehran Stock Exchange were based on politics and emotions because there were not enough financial experts.

Raman et al. (2017) stated that Individual investors who need to think more about how to improve their investment choices were the goal of the study. Investors choose the right path based on their commonality, level of confidence, and the stages of their lives.

Bakar & Yi (2016) added that Investors overestimated their market knowledge because they thought they had much experience. They were more concerned about protecting their principal investment than making money than they were about making money. They also thought that the psychological factors that affect their decision-making depended on the gender of the investors.

Katabi, **R. & Dimoso**, **R. (2016)** conducted a study in Tanzanian; investment decision strategies were influenced by elements such as the industry in which the firm operates, increased sales, commercial business, number of staff, and the form of business.

Riyazahmed & Saravanaraj (2016) analyzed that investor qualities such as herd mentality and mental accounting have a key role in determining investment preferences, as do other behavioral factors. Sheepishness is when an investor follows the crowd's lead in purchasing or selling a stock. An investor's subjective valuation of an amount of money based on factors such as its origin and intended use is an example of a cognitive bias known as "mental accounting."

Abdallah & Hilu (2015) found that determinants explain the impact of the degree of income and regularity of income of individual investors on their financial behavior. Three potential independent variables that could influence investor risk attitude include investors' judgments of information asymmetry, investor perceptions, and overconfidence. The study also highlights aspects affecting financial behavior and builds a similar investment pattern.

Horn et al., (2015) Although genuine alternatives have been extensively covered, it is surprising that they would not be used more frequently. Only 7% of the top corporations in Norway, Denmark, and Sweden employ real options, whereas 74% use NPV, according to a recent poll of 1500 CFOs. Real options concepts and their complexity seem to be the fundamental barriers to execution.

Lee et al. (2015) compared investor preferences for short-term vs. long-term investments in a comparative study. Short and long-term investments were the focus of the study. Investing in financial assets with the expectation of generating gains shortly or selling them for a large profit would be known as short-term investing.

Nurullah, M. & Kengatharan, L. (2015b) suggested that the population comprised 285 publicly traded companies in Dhaka, Bangladesh (DSE). The data collection questionnaire was adapted from a previous foundational study in the field. Companies with the highest market capitalization were sent surveys. For this reason, the DSE100-indexed companies were selected. Through email, the company's CFO and director of finance received surveys. Using the official DSE website and the company's websites, email addresses were obtained. Only seven companies responded to the initial call for participation. Emails were addressed to all remaining companies, and the Chartered Accountants Association assisted in this effort and received 46 responses from 100 companies, or 46% of them.

Vijaykumar (2015) emphasized the importance of tax advantages and ease of acquisition while deciding on an investment path. An investment opportunity's "ease of purchase" relates to how simple it is to through the legal, regulatory, and administrative hoops necessary to make the acquisition.

Bhargavi (2014) revealed Investor trends and perceptions across the generations, as well as gender. Risk preferences and unwillingness to make risky judgments were lower in female and elderly investors. Males and young investors were also involved in making various investing decisions.

Goyal and Sharma (2014) found that a person's investment preference is greatly influenced by their familiarity with various investment options. Personal attributes have a considerable impact on an investor's investing choice in addition to knowledge.

Jagongo A. et al. (2014) revealed that many factors influenced an individual investor's choice of a company to invest in, including the company's standing and reputation in its industry, the share price, anticipated investor dividends, expected corporate earnings, and profit statements, and economic effects of the investments.

Jain (2014) showed that women, particularly, place high importance on predictability and security in their investments. Even if they differ in age and income, salaried investors prefer long-term investment options that are highly secure and rewarding regardless of their work or marital status.

Sireesha, P. & Laxmi, S. (2013) identified which investment avenues would be most popular with investors based on demographics. According to the findings, respondents' investment intentions were heavily influenced by their gender,

age, and social circle. Investors, on the other hand, were found to be cautious and less anxious.

Chakraborty, S. (2012) analyzed those Women and men investors differ in their savings goals, investment behaviors, and tastes. According to the findings, a variety of demographic criteria, such as ages, professions, and levels of income, had sway over investors' desire to save money. Women investors were shown to be more risk-averse than males but also tend to save more money when their income rises.

Dhar, P. & Dey, B. (2012) conducted psychological perceptions of investors' investment behaviors examined in a study including 82 participants. Researchers found that people who were optimistic and male investors preferred long-term investments in the study. Individuals' investing intentions were found to be heavily influenced by their level of trust in financial institutions.

Hossain & Nasrin (2012) According to a Bangladesh study, Investor retention is heavily influenced by a company's specific attributes and prestige, asset value, accounting records, company growth, media exposure, ownership structure, and the influence of individuals, as well as personal financial needs. These were the eight most significant factors. According to one study, elevated risk makes investments more in injustices to increase their rewards.

Khamees et al. (2010) conducted DCF (Discounted cash flow) and non-DCF approaches that were found to be used equally by the Jordan Industrial Corporation for appraising investment projects. The most common approach would be the PI, followed by the PBP, according to the finding. According to the survey results, respondents do not rely solely on one method. This study did not show that DCF or non-DCF cash flow methods were preferable to the other approaches, despite the data indicating that the PI technique was the most frequently employed, followed by the PBP (Payback period) method.

Singh & Jha (2009) discovered mutual funds' capacity to produce returns, liquidity, and security; investors were unaware of systematic investing programs (SIPs). Aging and earnings have an impact on investor preferences for mutual funds. While age had a considerable impact on mutual fund knowledge, neither gender had a significant impact. Investors between the ages of 20 and 30 preferred mutual funds.

3. Research Objectives

- 1. To study the effect of the global pandemic affecting investors investing decisions in Chandigarh, Panchkula, and Mohali.
- 2. To determine the association between the age group and income on the amount invested before or during Covid 19 outbreaks.
- 3. To investigate the psychological factors affecting investors' investing decisions in Chandigarh, Panchkula, and Mohali.

4. Research Hypothesis

• **H1**: 'There is a significant impact of the global pandemic (covid-19) on Investors' Decision Making in Chandigarh, Panchkula, and Mohali'.

H0: 'There is no significant impact of the global pandemic (covid-19) on Investors' Decision Making in Chandigarh, Panchkula, and Mohali'.

• **H2**: 'There is a significant association between the age group and income on the amount invested before or during Covid-19 outbreaks.'

H0 : 'There is no significant association between the age group and income on the amount invested before or during Covid-19 outbreaks.'

• **H3**: 'There is a significant impact of psychological factors on Investors' Decision Making in Chandigarh, Panchkula, and Mohali.'

H0 : 'There is no significant impact of psychological factors on Investors' Decision Making in Chandigarh, Panchkula, and Mohali.'

5. Research Methodology

Research technique refers to the framework that researchers utilize in their investigation. The primary data was acquired using a five-point Likert scale questionnaire with closed-ended questions. It suggests that the questions' answers were placed beforehand. These "five points (5 points for strong agreement, 4 points for agreement, 3 points for neutral (neither agree nor disagree), 2 points for disagreement, and 1 point for extreme disagreement)" also serve as scores for choosing the correct response. The self-administered questionnaires include two parts: one concentrates on demographic information and the other on behavioral factors, and each variable has its own set of closed-ended questions. The questionnaire was sent to 225 individuals who frequently

participate in the stock market, whether they are small/part-time investors or full-time investors. These investors were selected through a convenient sampling technique. The study area's major emphasis is the city of Chandigarh, Panchkula, and Mohali. The investor's data were then evaluated using various statistical methods and approaches. Excel from Microsoft and SPSS (Statistical Package for Social Science) from IBM were used. These tools also used statistical tests, such as Mean, Standard Deviation, Correlation, and Regression, to examine the results.





6. Result

Table-1 displays the demographic characteristics of the sample population according to gender, age, level of education, monthly income, investment type, and sample size. Table 1 shows that "out of 225 respondents, 71.10% are male and 28.90% are female; 20.90% are between the ages of 18 and 25; 38.20% are between the ages of 26 and 32; 29.80% are between the ages of 33 and 40; and 11.10% are at least 40 years old."

Objective-1 : To study the effect of the global pandemic affecting investors investing decisions in Chandigarh, Panchkula, and Mohali.

S No.	Demographic	Category	Ν	%
5110	Characteristics	Curegory	11	70
1.	Gender	Male	160	71.10%
1.	Genuer	Female	65	28.90%
		18-25 years	47	20.90%
2.	A go Crown	26-32 years	86	38.20%
۷.	Age Group	33-40 years	67	29.80%
		Above 40 years	25	11.10%
		High school or lower	65	28.90%
		Intermediate	72	32%
3.	Education	Graduation	38	16.90%
		Masters	25	11.10%
		PHD	25	11.10%
		Less than 20000	29	12.90%
		20000-40000	72	32.00%
4	Monthly income	40001- 60000	84	37.30%
		More than 60000	40	17.80%
5.	Turna of investor	Full time	68	30.20%
5.	Type of investor	Part-time	157	69.80%
		less than 3 years	43	19.10%
		3-5 years	99	44.00%
6.	Investment Experience	6-8 years	60	26.70%
		More than 8 years	23	10.20%

 Table-1 : Demographic Characteristics of the Respondents

Source : Compiled by the Author.

Model Summary								
Adjusted R Std. Error of								
Model	R	R Square	Square	the Estimate				
1 .140 ^a .019 .015 2.75715								
a. Predictors: (Constant), Global Pandemic								

Table-2 shows that the R-value, which stands for the simple correlation, is 0.140, showing a very high correlation level and indicating how much of the overall variance in "Investing choice" can be accounted for by the independent variable.

ANOVA ^a										
		Sum of								
Model		Squares	df	Mean Square	F	Sig.				
1	Regression	33.691	1	33.691	4.432	.036 ^t				
	Residual	1695.224	223	7.602						
	Total	1728.916	224							
a. Dependent Variable: Investing decision										
b. Pre	dictors: (Const	ant), Global Pa	ndemic							

The regression equation's goodness-of-fit to the data is reported in the ANOVA table, which can be seen in Table-3. The regression model in this table predicts the dependent variable with high accuracy. It is concluded that there is a significant impact of the Global Pandemic on Investing decisions of investors as the significant value is smaller than 0.05.

Table-4 : Coefficients

Coefficients ^a											
		Unstandardized		Standardized							
		Coefficients		Coefficients							
Model	l	В	Std. Error	Beta	t	Sig.					
1	(Constant)	15.544	1.052		14.773	.000					
	Global	.152	.072	.140	2.105	.036					
	Pandemic										
a. Dep	a. Dependent Variable: Investing decision										

The Coefficients Table-4 provides the necessary information regarding how effectively the independent variables impact the dependent variables. According to Table 4, the Global Pandemic greatly impacts investors' investing decisions as the significance value is smaller than 0.05.

Objective-2 : To determine the association between the age group and income on the amount invested before or during Covid-19 outbreaks.

•	Age	group
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	Descriptives										
Global Pandemic											
Global Pandemic	;										
					95% Con	fidence					
					Interval fo	or Mean					
			Std.		Lower	Upper					
	Ν	Mean	Deviation	Std. Error	Bound	Bound	Minimum	Maximum			
18-25 years	47	13.6383	2.32590	.33927	12.9554	14.3212	9.00	18.00			
26-32 years	86	14.1860	2.54610	.27455	13.6402	14.7319	9.00	19.00			
33-40 years	67	14.9851	2.56723	.31364	14.3589	15.6113	8.00	20.00			
Above 40 years	25	14.1600	2.59294	.51859	13.0897	15.2303	9.00	18.00			
Total	225	14.3067	2.54411	.16961	13.9724	14.6409	8.00	20.00			

Table-5 : Descriptives

Table-5 shows the Descriptive statistics regarding the data ("i.e., mean, standard deviation, and 95% confidence intervals for the dependent variable"). The mean of all the age groups (i.e., 18–25 years, 26–32 years, 33–40 years, and Over 40 years) ranged between 13.6383 to 14.9851.

Table-6	:	ANOVA	
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ANOVA										
Global Pandemic										
	Sum of									
	Squares	df	Mean Square	F	Sig.					
Between	53.621	3	17.874	2.829	.039					
Groups										
Within Groups	1396.219	221	6.318							
Total	1449.840	224								

154

Table-6 displays the ANOVA findings, which may indicate a statistically significant difference between the groups or no difference at all. The p-value of 0.039 is much lower than the threshold of 0.05. Consequently, there is a statistically significant variation in the median time needed to solve the spreadsheet issue based on age and investment amount before and after the Covid - 19 pandemic.

			Da	-				
			De	scriptives				
Global Pandemic								
					95% Coi	nfidence		
					Interval for Mean			
			Std.	Std.	Lower	Upper		
	Ν	Mean	Deviation	Error	Bound	Bound	Minimum	Maximum
Less than 20000	29	14.1724	2.17237	.40340	13.3461	14.9987	10.00	17.00
20000-40000	72	14.9583	2.59163	.30543	14.3493	15.5673	8.00	19.00
40001- 60000	84	13.7619	2.57710	.28118	13.2026	14.3212	9.00	19.00
More than 60000	40	14.3750	2.44622	.38678	13.5927	15.1573	9.00	20.00
Total	225	14.3067	2.54411	.16961	13.9724	14.6409	8.00	20.00

• Income

Table-7 shows the Descriptive statistics regarding the data ("i.e., mean, standard deviation, and 95% confidence intervals for the dependent variable"). The mean of all the income (i.e., Less than 20000, 20000-40000, 40001- 60000, and more than 60000) ranged between 13.7619 to 14.9583.

Table-8 : ANOVA								
ANOVA								
Global Pandemic								
	Sum of							
	Squares	df	Mean Square	F	Sig.			
Between	56.214	3	18.738	2.971	.033			
Groups								
Within Groups	1393.626	221	6.306					
Total	1449.840	224						

Table-8 displays the ANOVA findings, which may indicate a statistically significant difference between the groups or no difference at all. The p-value of

0.033 is much lower than the threshold of 0.05. Consequently, there is a statistically significant variation in the median time needed to solve the spreadsheet issue based on income and investment amount before and after the Covid-19 pandemic.

Objective-3 : To investigate the psychological factors affecting investors' investing decisions in Chandigarh, Panchkula, and Mohali.

		Model S	ummary	
			Adjusted R	Std. Error of
Model	R	R Square	Square	the Estimate
1	.136 ^a	.019	.014	2.75848
a. Predi	ctors: (Cor	istant), Psyc	chological facto	rs

Table-9 : Model Summary

Table-9 shows that the R-value, which stands for the simple correlation, is 0.136, showing a very high correlation level and indicating how much of the overall variance in "Investing choice" can be accounted for by the independent variable.

			ANOVA ^a				
		Sum of					
Mode	el	Squares	df	Mean Square	F	Sig.	
1	Regression	32.058	1	32.058	4.213	.041 ^t	
Residual 1696.857 223 7.609							
Total 1728.916 224							
a. De	pendent Variab	le: Investing de	cision				
b. Pre	edictors: (Const	ant), Psycholog	ical factor	S			

Table-10 : ANOVA

The regression equation's goodness-of-fit to the data is reported in the ANOVA table, which can be seen in Table-10. The regression model in this table predicts the dependent variable with high accuracy. It is concluded that there is a significant impact of psychological factors on Investing decision of investors as the significant value is smaller than 0.05

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		Co	efficients ^a			
		Unstand	lardized	Standardized		
		Coeffi	cients	Coefficients		
Mode	el	В	Std. Error	Beta	t	Sig.
1 (Constant)		15.672	1.017		15.417	.000
Psychological		.147	.072	.136	2.053	.041
	factors					
a. De	pendent Variable: Inves	sting decision				

Table-11 : Coefficients

The Coefficients Table-11 provides the necessary information regarding how effectively the independent variables impact the dependent variables. According to Table 4, the psychological factors greatly impact the Investing decision of investors as the significance value is smaller than 0.05.

7. Conclusion

The COVID-19 epidemic has had a major financial impact. The vast population and the struggling economy, particularly the "financial sector", have unsettled social estrangement & lockdown. Investors' confidence in "mutual funds" & the "stock market" has been hit due to government actions like lockdowns and crashes. Today's investors tend to be more "risk-averse" than in the past, preferring the security and steadiness of low-risk investments. Investors should also be familiar with Gold exchange-traded funds, stock market entry and exit points, and mutual fund schemes. According to a study, older investors may rely on their financial knowledge rather than a financial advisor to help them with their investments. "Mutual fund" groups & "policymakers" should also organize financial literacy initiatives in smaller communities, as evidenced by this study. Investors' demographic characteristics (i.e., Income and Age) and psychological aspects such as (Overconfidence, Conservatism, Herding, and Availability Bias) also greatly affect investors' investment choices, as does the worldwide pandemic (Covid-19). The entire debate of this research work was compiled to disperse information about the "Indian stock market" and its processes, determinants, and consequences from the perspective of the Psychological and personal (demographic) approach, as this provides a crucial means by which to comprehend the relationship between the global pandemic and long-term investment value.

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A Study on Growth and Performance of Automobile Industry in India : Its Comparison in Pre Covid and in Covid

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Abstract : The Automobile Industry is recognised as a core sector for any economy. Automobile industry in India contributes to 49% of India's manufacturing GDP. The Indian Automobile industry after surpassing Germany in terms of sales in 2020 became the 5th largest in the world. This study is based on secondary data which is collected from all the relevant sources. This study compares automobile production, Sales (Domestic, Exports) between FY 2015-19 (Pre Covid) to FY 2019-22 (In Covid) through the appropriate statistical tools like CAGR, AAGR and Correlation Coefficient. This study found that Automobile production, Sales was continuously increasing in pre covid but due to covid-19 pandemic this was drastically affected. However, in FY 2021-22, again it has shown some positive response in production and exports. This study also found that there is a positive high degree of correlation between FDI inflows in the Automobile industry and in Automobile production.

Keywords : Automobile Industry, Coronavirus, Covid-19 Pandemic, Domestic Sales, Exports, FDI.

1. Introduction :

India is one of the fastest growing economies in the world. India in 2022 became the world's 5th largest economy in terms of nominal GDP and third largest in terms of GDP Purchasing Power Parity (PPP). Automobile industry plays a key role in the growth of the Indian economy. Nirmala Sitharaman, Finance Minister of India asserted that India will become 3rd largest in the world in the next 10-15 years (livemint, 2022). She has asserted this when India has surpassed the UK economy to become the 5th largest economy in the world. Narendra Modi, Prime Minister of India, said that India will become a 5 trillion-dollar economy by 2025-2026. And this is all possible due to the automobile industry. According

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to cogoport.com the auto industry contributes to 49% in India's manufacturing GDP. India is the world's largest manufacturer of tractors. Similarly, India is a 2nd largest bus maker and 3rd largest in the manufacture of heavy trucks. According to fdi.finance, India is the largest two and three-wheeler vehicle manufacturer in the world. (fdi.finance, n.d.)

Automobile sector in India is divided into 4 different segments such as

- 1. Commercial Vehicles
- 2. Passenger Vehicles
- 3. Two Wheelers
- 4. Three Wheelers

As all other sectors depend on the automobile sector for their growth. The Government of India including all state governments invests huge amounts of money, changing policies for the growth of the automobile sector E.g., New electric vehicles.

2. Literature Review :

Melwani and Sitlani (2017) used time series analysis to analyse the export performance to forecast automobile trends. It was observed from their study that export in all the automobile segments has increased. Chattopadhyay and Mukherjee (2019) in his study, with the help of automobile production, automobile exports, domestic sales, FDI in automobile industry concluded that the Indian automobile sector is playing a key role for growth of an Indian economy. Chawla and Singh (2019) conducted a study to analyse the segment wise growth of the automobile industry. Throughout their research, they have used data from FY 2008-09 to FY 2018-19. This study concluded that automobile industry growth has declined due to decline in growth of passenger vehicles. Manickkavasagam and Radhika (2019) examined the growth and performance of the Indian automobile industry. Throughout their study 5 Year's data have been collected from FY 2012-13 to 2017-18 to find out automobile production, domestic sales, and export statistics of different manufacturing companies and to find out the percentage of their contribution in the automobile industry. It was observed by their study that the Indian automobile industry is expected to reach Rs. 16.16 - 18.18 trillion by 2026. Chandrasekar and Palanivelu (2018) analysed trends and growth of the Indian automobile industry. It was observed by their study that the export growth rate of all types of vehicles was more than the production growth rate of those vehicles. Rani and Ghosh (2020) conducted a study on Foreign Direct Investment in India. Their study analysed the FDI inflows in India and their contribution to different sectors. It was observed by the study that FDI inflows in India are rising and Mauritius being the top investing nation for India. Miglani (2019) conducted a study on growth of the Indian automobile industry. This study analyses the government roles and policies for the expansion of automobiles and its components. It is observed from the studies that government policies are helping in the expansion of the automobile industry. Vandana Singh (2017) conducted a study to analyse the Automobile industry as a multiplier effect for the growth of the economy. It was observed by the study that India automobile industries resulted in a strong multiplier effect for the growth of an Indian economy.

Several studies had already been done related to Indian automobile industry, their production, their sales either domestic or export but they all lack comparison of Indian automobile production, domestic sale, automobile exports in India before covid-19 pandemic and in covid-19 pandemic.

3. Objectives of the Study :

- 1. To Compare automobile production in India, before covid 19 pandemic and In Covid 19 pandemic.
- 2. To Compare automobile sales (Domestic sales and exports) in India, before covid 19 pandemic and in covid 19 pandemic.
- 3. To study FDI inflows in the automobile industry in India and its correlation with total automobile production output before covid 19 pandemic.

4. Hypothesis for the Study :

H0: There is no significant relation between FDI inflows in the Indian automobile industry and total automobile production output.

H1: There is a significant relation between FDI inflows in the Indian automobile industry and total automobile production output.

5. Research Methodology :

5.1. Sources of Data :

Throughout this study, secondary data has been collected from various annual reports, research articles and websites. The required data for this study has been

collected from the Department of Industrial Policy and Promotion (DIPP), Society of Indian Automobile Manufacturer (SIAM), India Brand Equity Foundation (IBEF).

5.2. Period of the Study :

For Comparison of Automobile production and Automobile Sales (domestic sales as well as export) in India, a period of 7 Financial years has been taken. In which FY 2015-16 to 2018-19 for pre covid and FY 2019-20 to 2021-22 for in Covid has been taken.

To study the correlation between the FDI inflows in the automobile industry in India and total production, a period of 9 financial years has been taken from the FY 2010-11 to 2018-19

5.3. Statistical Tools:

Throughout the Research study, Financial year data is analysed with the help of Compound Annual Growth Rate (CAGR), Average Annual Growth Rate (AAGR) and Correlation coefficient. For Comparison between pre covid and in Covid, tables are used in the study.

Calculation of Annual Growth Rate = [(New Investment Value - Old Investment Value) / Old Investment value * 100]

Calculation of AAGR = (Sum of all Annual Growth Rate / Numbers of Years).

Calculation of CAGR = [(Final Investment Value / Initial Investment Value)^ (1 / Number of Years) -1]

6. Results and Findings :

6.1 Comparison of Indian Automobile Production : Before covid and In Covid

Indian automobile production Since LPG is increasing continuously but this could not continue due to covid-19 pandemic. The Automobile Sector is a key Sector for any economy and all other industries /sectors depend on this only for their growth. According to SIAM , India's automobile production in Financial Year (FY) 2010-11 is 1789 2409, In Financial Year (FY) 2015-16 is 24016068 which has increased to 30909 486 but, Due to covid-19 pandemic this has decreased to 22929169 in Financial Year 2021-2022. Table-1 shows the automobile production in commercial and passenger vehicles, two and three wheelers and its grand total. This all has been accompanied with their Annual growth rate over their previous year. Some key findings of above table are :

al Growth Rate
, Annual
of Numbers,
Terms of
Production in Terms of Numbe
Automobile
e-1 : Indian
Table-1

CommerceGrowthAnnualAnnualialRateFasengerRateTwoGrowthGrowthGrandialRate(%)Vehicles(%)WheelersRate (%)ThreeGrowthGrandY66692.38016709.7119937395.86783721-16.1025329383Y86692.3405069.7119937395.86783721-16.1025329383Y86692.38016709.7119937395.86783721-16.1025329383Y86923405079.7119937395.86783721-16.1025329383Y869210218130.432909486Y11,12.40524199772419068Y11,12.405240948Y11,12.405 </th <th></th> <th></th> <th>Annual</th> <th></th> <th>Annual</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>			Annual		Annual						
ial Rate Passenger Rate Two Growth Three Growth		Commerc	Growth		Growth		Annual		Annual		Annual
Vehicles (%) Vehicles (%) Wheelers Rate (%) Total 786692 3465045 18830227 934104 24010608 780692 3465045 18830227 933129 586 783721 2401068 810253 2.99 3801670 9.71 19933739 5.86 783721 16.10 2330333 $8,95,448$ 10.51 4020267 5.72 2315438 16.16 1022181 30.43 2909436 $11,12,405$ 24237 5.21 6.249977 5.81 16.26833 24.13 3099436 $11,12,405$ 24237 6.249977 5.81 126833 24.13 3099436 $11,12,405$ 24237 6.249977 5.81 126833 24.13 3099436 $11,12,405$ 5.12 6.249977 5.81 12.882% 8.86% $11,258$ $5.12,96$ 5.12 5.17% 10.776 5.340% 5.340%		ial	Rate	Passenger	Rate	Two	Growth	Three	Growth	Grand	Growth
786692 3465045 18830227 934104 24016068 810253 2.99 3801670 9.71 19933739 5.86 783721 -16.10 25329383 8,95,448 10.51 4020267 5.75 23154838 16.16 1022181 30.43 29092734 11,12,405 24,23 4028471 0.20 24499777 5.81 12.68833 24.13 3090486 11,12,405 24,23 4028471 0.20 24499777 5.81 12.68833 24.13 3090486 11,12,405 24,23 4028471 0.20 24499777 5.81 10.278% 8.86% 12.58% 5.15% 9.17% 10.75% 8.86% 8.78% 12.24% 5.15% 9.17% 10.75% 10.71 26347198 15.6755 -31.97 3424564 -14.99 21032927 -14.15 1132982 -10.71 26347198 156725 -31.97 362280 10.32927 -14.15 1132982 20.71 <td>Year</td> <td>Vehicles</td> <td>(%)</td> <td>Vehicles</td> <td>(%)</td> <td>Wheelers</td> <td>Rate (%)</td> <td>Wheelers</td> <td>Rate (%)</td> <td>Total</td> <td>Rate (%)</td>	Year	Vehicles	(%)	Vehicles	(%)	Wheelers	Rate (%)	Wheelers	Rate (%)	Total	Rate (%)
810253 2.99 3801670 9.71 19933739 5.86 783721 -16.10 25329383 8.95,448 10.51 4020267 5.75 23154838 16.16 1022181 30.43 2092734 11,12,405 24.23 4028471 0.20 2449977 5.81 1268833 24.13 3090486 11,12,405 24.23 6.0 2.24.9977 5.81 12.68833 24.13 3090486 11,12,405 5.15% 5.15% 9.28% 10.75% 8.86% 8.6% 12.58% 5.15% 9.17% 13282 10.75% 8.78% 12.24% 5.15% 9.17% 132982 10.75% 8.78% 12.24% 5.15% 9.17% 132982 10.75% 8.78% 756525 31.97 344994 -12.76 132982 10.71 26347198 75649 805280 14.16 12.76 1132982 10.71 26347198 75649 805280 14.16	2015-16	786692		3465045		18830227		934104		24016068	
8,95,448 10.51 4020267 5.75 23154838 16.16 1022181 30.43 29092734 $11,12,405$ 24.23 4028471 0.20 24499777 5.81 1268833 24.13 30909486 $11,12,405$ 24.23 4028471 0.20 2449977 5.81 $12.82%$ $8.86%$ $12.58%$ $5.22%$ $9.17%$ $9.17%$ $10.75%$ $8.86%$ $12.58%$ $5.15%$ $9.17%$ $9.17%$ $10.75%$ $8.78%$ $12.24%$ $5.15%$ $9.17%$ $9.17%$ $10.75%$ $8.78%$ $12.24%$ $5.15%$ $9.17%$ $9.17%$ $9.17%$ $8.78%$ 756725 -31.97 3424564 14.93 21032927 -14.15 1132982 -10.71 26347198 756725 -31.97 3424564 -14.15 1132982 -10.71 26347198 624939 -17.42 362280 10.58 18349941 -12.76	2016-17	810253	2.99	3801670	9.71	19933739	5.86	783721	-16.10	25329383	5.47
11.12.405 24.23 4028471 0.20 24499777 5.81 1268833 24.13 30909486 12.58% 5.22% 9.28% 12.82% 8.86% 8.86% 12.58% 5.15% 9.17% 10.75% 8.86% 8.86% 12.58% 5.15% 9.17% 9.17% 10.75% 8.78% 8.78% 75672 31.97 3424564 14.99 21032927 14.15 1132982 -10.71 26347198 756725 31.97 3424564 14.99 21032927 -14.15 1132982 -10.71 26347198 756725 31.97 362280 10.58 18349941 -12.76 614613 -45.75 22651773 805527 28.90 3650698 19.22 17714856 -3.46 78.0% -9.19% 4.83% 3.35% 3.25% -8.23% -18.20% -6.71% -6.71% -6.71%	2017-18	8,95,448	10.51	4020267	5.75	23154838	16.16	1022181	30.43	29092734	14.86
	2018-19		24.23	4028471	0.20	24499777	5.81	1268833	24.13	30909486	6.24
12.24% 5.15% 9.17% 10.75% 8.78% 12.24% 5.15% 5.15% 9.17% 8.78% NOW NOW IN COVID 19 PANDEMIC 8.78% 8.78% 756725 -31.97 3424564 -14.99 21032927 -14.15 1132982 -10.71 26347198 624939 -17.42 3062280 -10.58 18349941 -12.76 614613 -45.75 22651773 805527 28.90 3650698 19.22 17714856 -3.46 758088 23.34 22929169 -6.83% -8.33\% -10.12% -10.12% -11.04% -9.19% 3.17% 3.25% -8.23% -18.20% -6.71%	AAGR	12.58	3 %	5.22 %		9.2	3 %	12.8	2 %	8.86	%
NOW, IN COVID 19 PANDEMIC 756725 -31.97 3424564 -14.99 21032927 -14.15 1132982 -10.71 26347198 624939 -17.42 3062280 -10.58 18349941 -12.76 614613 -45.75 22651773 805527 28.90 3650698 19.22 17714856 -3.46 758088 23.34 22929169 -6.83 % -2.12% -10.12% -10.12% -11.04% -9.19% 3.17% 3.25% -8.23% -18.20% -6.71%	CAGR	12.24	4%	5.15%		9.1	7%	10.7	5%	8.78	%
756725 -31.97 3424564 -14.99 210332927 -14.15 1132982 -10.71 26347198 624939 -17.42 3062280 -10.58 18349941 -12.76 614613 -45.75 22651773 805527 28.90 3650698 19.22 17714856 -3.46 758088 23.34 22929169 $-6.83%$ $-2.12%$ $-10.12%$ $-10.12%$ $-11.04%$ $-11.04%$ $-9.19%$ $3.17%$ $3.25%$ $-8.23%$ $-8.23%$ $-18.20%$ $-6.71%$					NOW,	IN COVID 1	9 PANDEMI	U			
624939 -17.42 3062280 -10.58 18349941 -12.76 614613 -45.75 22651773 805527 28.90 3650698 19.22 17714856 -3.46 758088 23.34 22929169 -6.83 % -2.12% -10.12% -11.04% -9.19% 3.17% 3.25% -8.23% -8.23% -18.20% -6.71%	2019-20	756725	-31.97	3424564	-14.99	21032927	-14.15	1132982	-10.71	26347198	-14.76
805527 28.90 3650698 19.22 17714856 -3.46 758088 23.34 22929169 -6.83 % -2.12% -10.12% -11.04% -9.19% 3.17% 3.25% -8.23% -8.23% -6.71% -6.71%	2020-21	624939	-17.42	3062280	-10.58	18349941	-12.76	614613	-45.75	22651773	-14.03
-6.83 % - 2.12% -10.12% -11.04% 3.17% 3.25% -8.23% -18.20%	2021-22	805527	28.90	3650698	19.22	17714856	-3.46	758088	23.34	22929169	1.22
3.17% 3.25% -8.23% -18.20%	AAGR	-6.83	%	- 2.12%		-10.	12%	-11.6)4%	-9.10	%
	CAGR	3.17	%	3.25%		-8.2	3%	-18.2	\$0%	-6.7	%

Aditya Pratap Singh and Raj Bihari Lal Srivastava

- Average Annual Growth Rate (AAGR) of Automobile production is 8.86% in the Financial Year 2015-19 (Pre Covid) but this is decreased to -9.19% (Negative growth rate) in Financial Year 2019-22 (In Covid).
- Compound Annual Growth Rate of automobile production is 8.78% over the Financial Year 2015-19 (Pre Covid) but this decreased to -6.71% (Negative growth rate) over the Financial Year 2019-22 (In covid).
- Commercial vehicle segment with 12.24% CAGR is the fastest growing segment before Covid-19 pandemic. But in Covid-19 pandemic, Passenger vehicle segment with 3.25% CAGR is the fastest growing segment.
- Three-Wheeler segment with 10.75% CAGR is the second fastest growing segment before Covid 19 pandemic but this segment was drastically affected resulting in a Negative CAGR growth rate of -18.20%

6.2. Comparison of Indian Automobile Exports : Before Covid and In Covid

Export of any country decides the health of an economy. Export in economy shows the financial position of an economy such as Balance of Payment position. Export in any country plays a very important role to earn Foreign Exchanges.

Above table compare the in India Automobile export in terms of numbers, Annual growth rate AAGR, CAGR in pre Covid period from Financial Year 2015-16 to 2018-19 and In Covid period from the Financial Year 2019-20 to 2021-22. Some key findings of above comparison as follow :

- Average Annual Growth Rate (AAGR) being 8.70% over the Financial Year 2015-19 in Pre Covid-19 pandemic and 8.51% in Financial Year 2019-22 (In Covid).
- Average Annual Growth Rate (AAGR) of three-wheeler is 18.79% is the largest growth rate in pre Covid followed by two-wheeler with 10.37%.
- Compound Annual Growth Rate (CAGR) being 8.27% over the financial year 2015-19 (Before Covid pandemic) and it is 8.78% in the Financial Year 2019-22 (In Covid).
- Compound Annual Growth Rate (CAGR) of Three-wheeler is the fastest growing segment in pre Covid with 11.97% whereas Commercial vehicles is the fastest growing segment with 23.64%.

Annual Annual		Table-2 :	Indian A	utomobile	export i	e-2 : Indian Automobile Export in Terms of Numbers, Annual Growth Rate	of Numb(ers, Annu	ial Grow	th Rate	
Commercial Growth Passenger Growth Two Growth Three Growth Grand Gr Vehicles Rate(%) Vehicles Rate(%) Wheelers Rate(%) Total Rate 103124 653053 2482876 Wheelers Rate(%) Wheelers Rate(%) Total Rate 103124 653053 2482876 404441 3643494 3643494 108271 4.99 758727 16.18 2340277 -5.74 271894 -32.77 3479169 96865 -10.53 748366 -1.37 2815003 20.29 381002 40.13 4041236 8 99333 3.17 676192 -9.64 32.80841 16.55 567683 49.00 4624649 8 -0.79<% 1.177% 10.37% 88.79% 18.79% 8 8 -0.79<% 1.1.76% 9.73% 11.97% 11.97% 8 8 7 8 8 7			Annual		Annual		Annual		Annual		Annual
Vehicles Rate(%) Vehicles Rate(%) Wheelers Rate(%) Wheelers Rate(%) Total Rate		Commercial	Growth	Passenger	Growth	Two	Growth	Three	Growth	Grand	Growth
103124 653053 2482876 404441 3643494 108271 4.99 758727 16.18 2340277 -5.74 271894 -32.77 3479169 96865 -10.53 748366 -1.37 2815003 20.29 381002 40.13 4041236 99933 3.17 676192 -9.64 3280841 16.55 567683 49.00 4624649 -0.79 % 1.72% 10.37% 3197% 18.79% 8 8 -1.04% 1.17% 9.73% 10.37% 267683 49.00 4624649 -0.79 % 1.17% 9.73% 10.37% 18.79% 8 8 -1.04% 1.17% 9.73% 20.29 381002 41.136 8 -1.04% 1.17% 9.73% 11.97% 18.79% 8 8 -1.04% 1.17% 9.73% 11.97% 11.97% 8 8 -1.04% 3.534 -16.64 404397 -38.282786	Year	Vehicles	Rate(%)	Vehicles	Rate(%)	Wheelers	Rate(%)	Wheelers	Rate(%)	Total	Rate(%)
	2015-16	103124		653053		2482876		404441		3643494	
96865 -10.53 748366 -1.37 2815003 20.29 381002 40.13 4041236 99933 3.17 676192 -9.64 3280841 16.55 567683 49.00 4624649 -0.79% 1.72% 10.37% 10.37% 18.79% 8 -0.79% 1.72% 10.37% 10.37% 18.79% 8 -1.04% 1.72% 10.37% 10.37% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 8 -1.04% 1.17% 9.73% 11.97% 8 8 -1.04% 1.17% 9.73% 11.97% 8 8 -1.04% 1.17% 573% 9.73% 11.664 473553 8 50334 -16.64 4043018 35.34 499730 27.16 5612920 9.05% 83.37 57787 501651 -11.66 413018 -2.04% 8 8 9.05% 83.37 499730 </td <td>2016-17</td> <td>108271</td> <td>4.99</td> <td>758727</td> <td>16.18</td> <td>2340277</td> <td>-5.74</td> <td>271894</td> <td>-32.77</td> <td>3479169</td> <td>-4.51</td>	2016-17	108271	4.99	758727	16.18	2340277	-5.74	271894	-32.77	3479169	-4.51
99933 3.17 676192 -9.64 3280841 16.55 567683 49.00 4624649 -0.79 % 1.72% 1.72% 10.37% 18.79% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 9.73% 11.97% 8.73% -0.0379 -39.58 662118 -2.08 3519405 7.27 501651 -11.63 4743553 50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 -21.66 4130518 -21.66 4130518 -2.04% $8.53.24$ 499730 27.16 5612920 9.05% 9.05% 0.63% 11.96% -2.04% -2.04% 8 $8.53.24\%$ -2.04% $8.53.24$ -2.04% $8.53.24$ 9.05% -6.58% -6.58% -6.58% -2.04% -0.19% $8.50.20$ $8.50.20$ $8000000000000000000000000000000000000$	2017-18	96865	-10.53	748366	-1.37	2815003	20.29	381002	40.13	4041236	16.16
-0.79 % 1.72% 10.37% 18.79% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 NOW, IN COVID 19 PANDEMIC NOW 11.97% 8 60379 -39.58 662118 -2.08 3519405 7.27 501651 -11.63 4743553 50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 - 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 9.05% 0.63% 11.96% -2.04% 8 2.04% 8 23.64% -6.58% 12.36% -0.19% -0.19% 8 8	2018-19	99933	3.17	676192	-9.64	3280841	16.55	567683	49.00	4624649	14.44
-1.04% 1.17% 9.73% 11.97% 8 -1.04% 1.17% 9.73% 11.97% 8 -1.04% NOW, IN COVID 19 PANDEMIC NOW, IN COVID 19 PANDEMIC 4743553 -0379 -39.58 662118 -2.08 3519405 7.27 501651 -11.63 4743553 50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 - 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 9.05% 0.63% 11.96% -2.04% 8 8 35.34 499730 27.16 5612920 23.64% -6.58% 12.36% -0.19% -0.19% 8 8 8 500TECE: Society of Indian Automobile Manufactures (SIAM) -0.19% -0.19% 8 8	AAGR	-0.79	%	1.72	2%	10.3	7%	18.7	9%		8.70%
NOW, IN COVID 19 PANDEMIC 60379 -39.58 662118 -2.08 3519405 7.27 501651 -11.63 4743553 50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 - 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 92596 0.63% 11.96% -2.04% 8 8 -3.04% 8 8 23.64% -6.58% 12.36% -0.19% -0.19% 8 8	CAGR	-1.04	%	1.15	7%	9.73	%	11.9	7%		8.27%
60379 -39.58 662118 -2.08 3519405 7.27 501651 -11.63 4743553 50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 - 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 9.05% 0.63% 11.96% -2.04% 8 8 -3.04% 8 8 23.64% -6.58% 12.36% 12.36% -0.19% 8 8				NC	ow, in co		ANDEMIC				
50334 -16.64 404397 -38.92 3282786 -6.72 393001 -21.66 4130518 - 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 9.05% 0.63% 11.96% -2.04% 8 8 23.64% -6.58% 12.36% -0.19% 8 8 Source : Society of Indian Automobile Manufacturers (SIAM) -0.19% 8 1	2019-20	60379	-39.58	662118	-2.08	3519405	7.27	501651	-11.63	4743553	2.57
92297 83.37 577875 42.90 4443018 35.34 499730 27.16 5612920 9.05% 0.63% 11.96% -2.04% 8 23.64% -6.58% 12.36% -0.19% 8 Source : Society of Indian Automobile Manufacturers (SIAM)	2020-21	50334	-16.64	404397	-38.92	3282786	-6.72	393001	-21.66	4130518	-12.92
9.05% 0.63% 11.96% -2.04% 23.64% -6.58% 12.36% -0.19% Source : Society of Indian Automobile Manufacturers (SIAM) -0.19% -0.19%	2021-22	92297	83.37	577875	42.90	4443018	35.34	499730	27.16	5612920	35.89
23.64% -6.58% 12.36% -0.19% Source : Society of Indian Automobile Manufacturers (SIAM)	AAGR	9.05%	%	0.63	3%	11.9	6%	-2.0	4%		8.51%
	CAGR	23.64	%	-6.5	8%	12.3	6%	-0.1	0%6		8.78%
		Source : So	ociety of h	ndian Autor	mobile Ma	nufacturers	(SIAM)				

• Commercial vehicles were showing Negative CAGR before Covid 19 pandemic with - 1.04% but in Covid 19 pandemic, this segment with growth rate of 23.64% (Positive Growth Rate) was fastest and highest growth among all other Segments.

6.3. Comparison of Indian Automobile Domestic Sales : Before Covid and In Covid

Table-3 above depicts automobile domestic sales of Commercial vehicles, Passenger vehicles, Two and Three-wheeler, Grand total in terms of numbers annual growth rate in Pre Covid and In Covid. Some key findings of above comparisons is as follow :

- Average Annual Growth Rate (AAGR) was 8.74% in the financial year 2015-19 (Before Covid 19 pandemic) whereas AAGR for financial 2019-22 showed a negative growth rate of -12.49% (In Covid).
- Compound Annual Growth Rate (CAGR) was 8.67% in the financial year 2015-19 (Before Covid 19 pandemic) whereas the CAGR for financial 2019-22 showed a negative growth rate of -9.84% (In Covid).
- Commercial vehicles are the fastest growing segment in the financial year 2015-19 followed by Three wheelers in both the terms AAGR and CAGR. AAGR with 13.9 % and CAGR with 13.68%.
- Three wheelers showed the highest Negative growth rate both in terms of AAGR and CAGR in the financial year 2019-22 (In Covid). AAGR with negative growth rate of -18.58% and CAGR with negative growth rate of -35.99%.

6.4. Total Foreign Direct Investment (FDI) Inflows in India

According to the PIB, press release, India with US dollar 83.57 billion in FY 2021-22 recorded the highest ever annual Foreign Direct Investment inflows . India inflows in FY 2021-22 is 20 times more than Financial year 2003-04 when FDI inflow was only 4.3 billion only. According to the report, FDI equity inflow in FY 2021-22 rose by 76% in the manufacturing sector. According to the report, FDI inflows from March 2020 to March 2022 Rose by 23% as compared to Feb 2018 to Feb 2020. Karnataka being the top receipt state in India with 38% FDI followed by Maharashtra with 26% and Delhi with 14%.

CommercialGrowthPassengerYearVehiclesRate(%)Vehicles 2015 - 85704 $Rate(%)$ Vehicles 2015 - 685704 719208 2016 - 685704 719208 17 714082 4.14 3047582 2016 - 714082 4.14 3047582 2017 - 714082 4.14 3047582 2017 - 714082 4.14 3047582 2017 - 714082 4.14 3047582 2018 - 1007311 17.55 3377389 $4AGR$ $13.9%$ $13.9%$ 773519 2019 - 17593 -28.76 2773519 2020 - 717593 -28.76 2773519 2020 - 2020 - 20.77 2711457 2021 - 2020 - 20.77 2711457 2021 - 2020 - 20.77 2711457	iger Growth les Rate(%) 208 582 9.26	Two Wheelers 16455851					Immility
Vehicles Rate(%) V 685704 685704 14 685704 4.14 17 856916 20.00 13.9% 1007311 17.55 13.68% 717593 -28.76 17 568559 -20.77 568559	Rate 2 8	Wheelers 16455851	Growth	Three	Growth	Grand	Growth
685704 685704 714082 4.14 856916 20.00 1007311 17.55 13.9% 13.68% 717593 -28.76 568559 -20.77		16455851	Rate(%)	Wheelers	Rate(%)	Total	Rate(%)
685704 714082 4.14 856916 20.00 1007311 17.55 13.0%6 13.68%6 717593 -28.76 568559 -20.77		16455851					
714082 4.14 856916 20.00 856911 17.55 1007311 17.55 1 13.9% 1 717593 2 28.76 7 268559 568559 -20.77				538208		20468971	
714082 4.14 856916 20.00 856911 17.55 1007311 17.55 1 13.9% 1 717593 568559 -20.77							
856916 20.00 1007311 17.55 13.9% 13.68% 717593 -28.76 568559 -20.77		17589738	6.89	511879	-4.89	21863281	6.81
856916 20.00 1007311 17.55 2 13.9% 13.68% 717593 -28.76 568559 -20.77							
1007311 17.55 13.9% 13.68% 13.68% 13.68% 13.68% 58859 -20.77	3581 7.91	20200117	14.84	635698	24.19	24981312	14.26
1007311 17.55 R 13.9% R 13.68% 717593 -28.76 568559 -20.77							
13.9% 13.68% 717593 -28.76 568559 -20.77	7389 2.70	21179847	4.85	701005	10.27	26265552	5.14
13.68% 13.68% 717593 -28.76 568559 -20.77	6.62%		8.86%		9.86%		8.74%
717593 -28.76 568559 -20.77	6.59%		8.78%		9.21%		8.67%
717593 -28.76 568559 -20.77	NOW, IN COVID 19 PANDEMIC	OVID 19 PA	NDEMIC				
717593 -28.76 568559 -20.77							
568559 -20.77	-17.88 -17.88	17416432	-17.77	637065	-9.12	21544609	-17.97
568559 -20.77							
2021-	457 -2.24	15120783	-13.18	219446	-65.55	18620245	-13.57
22 716566 26.03 3069499	13.20	13466412	-10.94	260995	18.93	17513472	-5.94
AAGR -7.83%	-2.30%		-13.96%		-18.58%		-12.49%
CAGR -0.07%	5.20%		-12.07%		-35.99%		-9.84%

		PERCENTAGE		PERCENTAGE		PERCENIAGE		PERCENTAGE		PERCENIAGE
FINACIAL		GROWTH		GROWTH		GROWTH		GROWTH		GROWTH
(EAR (1st	YEAR (1st EQUITY	OVER	EQUITY	OVER		OVER		OVER	TOTAL	OVER
pril - 31st	April - 31st INFLOWS	PREVIUS	CAPITAL	PREVIOS	REINVESTED	PREVIOUS	OTHER	PREVIOUS	FDI	PREVIOUS
March)	(Y)	YEAR	(B)	YEAR	EARNINGS	YEAR	CAPITAL	YEAR	INFLOWS	YEAR
2010-11	21376		874		11939		658		34847	
2011-12	34833	62.95	1022	16.93	8206	-31.27	2495	279.18	46556	33.60
2012-13	21825	-37.34	1059	3.62	9880	20.40	1534	-38.52	34298	-26.33
2013-14	24299	11.34	975	-7.93	8978	-9.13	1794	16.95	36046	5.10
2014-15	30933	27.30	978	0.31	9988	11.25	3249	81.10	45148	25.25
2015-16	40001	29.31	1111	13.60	10413	4.26	4034	24.16	55559	23.06
2016-17	43478	8.69	1223	10.08	12343	18.53	3176	-21.27	60220	8.39
2017-18	44857	3.17	664	-45.71	12542	1.61	2911	-8.34	60974	1.25
2018-19	44366	-1.09	689	3.77	13672	9.01	3274	12.47	62001	1.68
				NO	NOW, IN COVID 19 PANDEMIC	ANDEMIC				
2019-20	49977	12.65	1757	155.01	14175	3.68	8482	159.07	74391	19.98
2020-21	59636	19.33	1787	1.71	16216	14.40	4082	-51.87	81721	9.85
CAGR	10	0.80%	7.	7.41%	3.11	3.11%	5	20.02%		8.90%

Table-4 : FDI Inflows in Terms of - US\$ in Millions and Annual Growth Rate

Note :

(A) RBI Automatic/FIPB Route / Acquisition Route

(B) Equity capital of the unincorporated bodies

Above table shows total FDI inflows in India with annual growth rate and Compound Annual Growth Rate (CAGR) over the Financial Year 2010-11 to 2020-21.

6.5. FDI Inflows in Automobile Sector from Total FDI inflows in India :

T ¹	Total FDI Inflows in	% Growth over Previous	Total FDI Inflows in automobile	% Growth over the previous	Share of FD inflow in Automobile industry to total FDI
Financial Year	India (Cr)	year	Industry (Cr)	year	inflows
2010-11	97320	60 60	5864		6.03
2011-12	165146	69.69	4347	-25.87	2.63
2012-13	121907	-26.18	8384	92.87	6.88
2013-14	147518	21.01	9027	7.67	6.12
2014-15	181682	23.16	16760	85.67	9.22
2015-16	262322	44.39	16437	-1.93	6.27
2016-17	291696	11.20	10824	-34.15	3.71
2017-18	288889	-0.96	13461	24.36	4.66
2018-19	309867	7.26	18309	36.02	5.91
	1866347		103413		-
Total					
CAGR	15	.58%	15.29	%	

Table-5 : Comparison of FDI Inflows in Automobile Sector from Total FDI Inflows – in Terms of Crores and Annual Growth Rate

Source : Society of Indian Automobile Manufacturers (SIAM)

Above table represents FDI inflows in the automobile Industry in Crores for the Financial Year 2010-11 to 2018-19, a period of 9 Financial Years and percentage growth of its previous year . Above table also depicts the share of FDI inflows in the automobile industry to total FDI inflows in India. Some key findings of above table is as follows :

• Total FDI inflows in the automobile industry is Rs.103413 crores from Financial year 2010-11 to 2018-19.

- In 9 Financial years of study , FDI growth rate over previous years in the automobile industry was maximum in 2012-13 with 92.87% followed by 85.67% in 2014-15, followed by 36.02% in FY 2018-19.
- Compound Annual Growth Rate (CAGR) was 15.29% in FDI inflows in the automobile Industry from the Financial year 2010-11 to 2018-19.
- 6.6. Correlation Analysis between FDI inflows in Automobile Industry and Total Automobile Production Output.

	FDI inflows in	Total No. of Vehicles
	Automobile industry	Production in Crores
Financial Year	in Crores (X)	(Y)
2010-11	5864	1789
2011-12	4347	2038
2012-13	8384	2064
2013-14	9027	2150
2014-15	16760	2335
2015-16	16437	2401
2016-17	10824	2532
2017-18	13461	2909
2018-19	18309	3091
Correlation		
Coefficient	0.764	670149

Table-6 : Correlation Coefficient to find Relation between FDI Inflows in Automobile Industry and Total Automobile Production Output

Table-6 above, shows the Correlation coefficient between Foreign Direct Investment (FDI) inflows in the automobile industry and total number of automobile production. In the above table (X) is taken for FDI inflows in the automobile industry and (Y) is taken as the total number of Automobile production output. Above figures are in Crores. For Correlation Coefficient r is taken. After applying Correlation coefficient for X and Y, the correlation Coefficient r is 0.7646. This shows that there is a positive high degree of Correlation Coefficient between FDI inflow in the automobile industry and the total number of automobile production output.

Above calculation is shown in the Appendix. Above result resulted in **Rejection** of Null Hypothesis and acceptance of Alternate Hypothesis.

Conclusion:

- The present study analysed Automobile production (Commercial vehicles, passenger vehicles, two wheelers and three wheelers) in terms of numbers, Annual Growth Rate, AAGR and CAGR in Pre Covid and In Covid. This is observed from the table-1 that the AAGR of automobile production is positive AAGR of 8.86 % in pre covid. Whereas it is negative AAGR of -9.19% in covid-19 pandemic. Similarly, CAGR for same period is 8.79% before Covid 19 pandemic and its negative CAGR with -6.71 % in covid-19 pandemic.
- The present study analysed Automobile Exports (Commercial vehicles, passenger vehicles, two wheelers and three wheelers) in terms of numbers, Annual Growth Rate, AAGR and CAGR in Pre Covid and In Covid. This is observed from table-2 that the AAGR of automobile production is positive AAGR with 8.70% for pre covid period. Whereas it is 8.51% in covid-19 pandemic. But, the CAGR for pre covid is only 8.27% which is less than 8.78% of Covid 19 pandemic period and this is due to excessive export in 2021-22.
- The present study analysed Automobile domestic sales (Commercial vehicles, passenger vehicles, two wheelers and three wheelers) in terms of numbers, Annual Growth Rate, AAGR and CAGR in Pre Covid and In Covid. This is observed from table-3 that the AAGR of automobile production is positive AAGR of 8.74% in pre covid. But due to Covid 19 pandemic, people lost their jobs which has affected their earning as well as their savings and due to this AAGR for in Covid period is negative growth

rate of -12.49% . Similarly, CAGR is 8.67% for pre covid pandemic and it is negative CAGR growth rate in covid-19 pandemic with -9.84%.

- The present study also analyses the FDI inflows from all sectors and their annual growth rate over previous years. This is shown in table-4 above. Similarly, table-5 analyses FDI inflows in the automobile industry and percent growth over previous year.
- The present study also analyses the FDI inflow in automobile industry and total number of Automobile production output through Correlation coefficient. It was observed from the table 6 calculation that both have a high degree of positive correlation of 0.7646.

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APPENDIX :

Table-6 : Calculation

CORRELATION ANALYSIS –

	FDI inflows in Automobile	Total No. of Vehicles Production			
Financial	industry in	in Crores		?	?
Year	Crores (X)	(Y)	XY	X ²	\mathbf{Y}^{2}
2010-11	5864	1789	10490696	34386496	3200521
2011-12	4347	2038	8859186	18896409	4153444
2012-13	8384	2064	17304576	70291456	4260096
2013-14	9027	2150	19408050	81486729	4622500
2014-15	16760	2335	39134600	280897600	5452225
2015-16	16437	2401	39465237	270174969	5764801
2016-17	10824	2532	27406368	117158976	6411024
2017-18	13461	2909	39158049	181198521	8462281
2018-19	18309	3091	56593119	335219481	9554281
Total	103413	21309	257819881	1389710637	51881173

 $\bar{\mathbf{x}} = 103413 / 9 = 11490.33$

$$\bar{y} = 21309 / 9 = 2367.67$$

$$\mathbf{r} = (\mathbf{n} (\sum xy) - (\sum x)(\sum y)) / (\sqrt{[\mathbf{n} \sum x^2 - (\sum x)^2]} [\mathbf{n} \sum y^2 - (\sum y)^2))$$

r = 0.764670149

Maternal Healthcare Financing and Utilization in Kashmir : An Empirical Evidence

NUSRATH JAN AND MOHIUD DIN SANGMI

Abstract : This study attempts to evaluate the working of Maternal Healthcare Financing Schemes which have been designed for women of reproductive age in India. However, the study has been restricted to Jammu and Kashmir UT only. A Multistage Stratified Sampling technique has been used for the survey, following a well-structured and pretested Interview Schedule. The study has employed Quasi-Experimental Design which requires comparing a Treatment Group of beneficiaries who have availed benefits of the schemes to the Comparison Group of non-beneficiaries. The impact assessment on each indicator of Maternal Healthcare Utilization has been made by comparing two independent groups of respondents using Independent Samples Test. The results indicate significant and positive differences between the two groups under each indicator of Maternal Healthcare Utilization – Antenatal Care (ANC), Delivery Care (DC) and Postnatal Care (PNC). Moreover, the degree and intensity of impact has been computed with the help of Effect Size (r). The primeimpact has been shown on delivery care mainly attributed to cash assistance provided under Janani Suraksha Yojana. Yet, the findings reveal that there are still gaps among respondents regarding awareness of the availability of cashless services in government institutions. The loopholes are especially noticeable when it comes to free and cashless benefits provided under Janani Shishu Suraksha Karyakram.

Keywords : Maternal Healthcare Financing, Antenatal Care, Delivery Care, Postnatal Care, Quasi-Experimental Research Design.

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1. Introduction

Motherhood is one of the most cherished and critical stages in a woman's life. It is a period when she demands more attention, support and nutrition. However, the path to a safe motherhood is not easy for every woman around the world. It is estimated that nearly 536,000 women (or one woman in every minute) die annually due to maternity complications and approximately all these deaths (99 percent) occur in developing countries (United Nations, 2009; Pandey et al., 2011). South Asia and Sub-Saharan Africa together account for almost 85 percent of all maternal deaths in the world (United Nations, 2009). Due to the fact that lives of millions of mothers in the reproductive age group can be saved via the use of maternal healthcare, maternal health has become a worldwide public health concern (Gyimah et al., 2006). Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period (WHO, 2022). Maternal Healthcare Utilization refers to the use of Antenatal Care (ANC), Institutionalized Delivery Care (DC) and Postnatal Care (PNC) so as to provide the continuum of care for maternal, new-born and child health. In the spectrum of maternal health, prenatal care, institutional delivery (including skilled birth attendance) and postnatal care are important milestones required to achieve optimum maternal and child health. Antenatal Care also called as pre-natal care, is the 'care before birth' to promote the well- being of mother along with her child and is essential to reduce maternal morbidity and mortality, low births, and pre-natal mortality (WHO, 2005). Delivery Care refers to care provided to women during delivery. It ensures that the woman is assisted by a skilled birth attendant i.e., someone with midwifery skills such as a doctor, a nurse or a professional midwife during delivery (Lim et al., 2010). Postnatal care often known as postpartum care outlines the care given to a woman after delivery. Utilization of institution based Antenatal Care, Delivery Care, and Postnatal Carecontinues to be low, especially in remote and scattered habitations (Peters et al. 2002; International Institute for Population Sciences 2007). In most economically developing nations, low utilisation of maternal healthcare is a major concern, and India is no exception. Despite improvements in boosting maternal healthcare availability, the majority of women in India still lack complete access to healthcare. Low ANC utilisation, combined with severely low-skilled delivery and PNC use, is well recognised as one of the key predictors of a high maternal mortality ratio in India. Therefore, utilization of maternal healthcare has now become global and national priority and a prerequisite for attaining Sustainable Development Goals (SDGs), since one of the SDGs is to reduce global maternal
mortality to less than 70 per 100,000 live births by 2030, to achieve universal health coverage for sexual and reproductive health (SDGs- Maternity Worldwide). Realising the significance of Maternal Healthcare in the modern times, India has recently dabbled in this field aggressively and undertook massive investments in maternal and child health through various public health interventions. Several projects have been implemented by Government of India at the national level and by the respective State Governments at the sub-national levels in the last two decades (Singh and Vellakkal, 2021). The various interventions/schemes in Public Health are described as : -

- (i) Janani Suraksha Yojana (JSY)
- (ii) Janani Shishu Suraksha Karyakram (JSSK)

JSY is a Conditional Cash Transfer Scheme which aims to provide financial assistance to expectant mothers to encourage use of maternal healthcare during pre-natal, delivery and post-partum period. The scheme has been implemented with the objective of reducing maternal and neo-natal mortality by promoting institutional delivery among poor expectant women. ASHA, an accredited social health activist, has been identified as a plausible interface between the government and disadvantaged expectant women by the Yojana (National Health Portal, 2015). In 2011, Government of India launched Janani Shishu Suraksha Karyakram (JSSK) to provide free and cashless services to expectant women for both Caesarean Section and normal delivery and new borns up-to thirty days in government health institutions. Besides, the scheme provides various free entitlements including free diagnostics, medicines, provision of blood and transport facility without any user fees (MoH&FW, 2011). These initiatives are part of a broader policy aimed at achieving Universal Health Care (UHC)in India. Various policy documents outlining India's health vision have emphasised that achieving UHC is a priority (HLEG, 2011).

Previous studies have assessed women's utilization of a single maternal health service, particularly skilled birth delivery (Prinja et al., 2015; Randive et al., 2013; 2014) but none considered the complete utilization of all three services and its impact on overall maternal health outcomes. Moreover, none of the studies addressing this issue have been conducted in the Union Territory of Jammu and Kashmir so far. Therefore, the present study is aimed to fill this gap in the existing literature and make a modest contribution in the field.

2. Review of Literature:

One of the elements contributing to increased maternal and newborn mortality and morbidity is low usage of maternal healthcare services. Poor people, according to available literature, rarely use free public health care (UNDP, 2004). In Bangladesh, the low utilisation of maternal health services is attributed to supply-side issues and demand-side constraints. Non-availability of maternity and newborn health services, pharmaceuticals, and consumables, discrimination against impoverished women, and the imposition of unofficial user fees are all supply-side challenges. Demand-side hurdles include cultural and social belief systems, social taboo associated with pregnancy and child birth, distance from home to nearest health centre, lack of information on sources of care, lack of awareness of the benefit of maternal health services, and high access costs (direct and indirect) (Ensor, 2004; Ahmad and Khan, 2011).

Numerous research studies have sought to evaluate the impact of Maternal Healthcare Financing Schemes in various contexts. Some of them have discovered that the programs have a positive impact on maternal healthcare utilisation, as well as the other way around. Lagarde and colleagues conducted a systematic review to evaluate the impact of conditional cash transfer schemes (targeting poor and disadvantaged sections, primarily pregnant and lactating mothers, infants, and children) in low- and middle-income countries in terms of improving health outcomes and access to healthcare services. The study concludes that conditional cash transfers can help people use health services and improve their health outcomes, while the size and importance of the effect varies. CCTs' impact and success, however, can be influenced by a range of factors on both the demand and supply sides (Lagarde et al., 2009). Another study from Argentina indicated that the Plan Nacer Program had a favourable impact on low-income mothers by improving access to comprehensive maternity and child health services (Cortez and Romero, 2013). According to Ahmed and Khan (2011), the introduction of a maternal health voucher scheme in Bangladesh increased demand for prenatal, delivery, and postnatal care services, particularly among poor women in the community, and hence the intervention had a beneficial influence on health-care utilisation. A demand-side financing program, however, may not be effective in the absence of local health service capacity, according to the study, unless significant development of the health facility's service delivery capacity occurs. As per Nguyen et al. (2012), a study conducted in Bangladesh on 2208 women of which comprising 1104 as Treatment Group and 1104 as Control Group, the voucher plan had a beneficial influence on maternal service utilisation. As a result, the recipients were more likely to use skilled practitioners'

support forprenatal, delivery, and postnatal care. In their study, Axelson et al. (2009) discovered that the program has a considerable impact on the use of health services among the impoverished Vietnamese people. Several studies conducted in Indian context have also demonstrated that demand side financing programs such as JSY and JSSK have a favourable impact on access to and utilisation of maternal health care services (Gopalan and Durairaj, 2012; Randive et al., 2013; Randive et al., 2014; Prinja et al., 2015; Mohanty and Kastor, 2017; Sen et al., 2020). Various research studies, however, have found a negative or no effect on utilization (Mondal et al. 2015; Powell Jackson et al., 2015). The present unexplored study, henceforth, is a humble attempt to validate these findings and get insights on unclear impact of Maternal Healthcare Financing Schemes in raising maternal utilisation among marginalised women. Moreover, numerous studies suggest that demand side financing schemes have dramatically increased institutional births (Lim et al., 2010; Rahman and Pallikadavath, 2018; Ali et al., 2019). The studies, however, have been unable to determine whether Maternal Healthcare Financing Schemes help to improve prenatal and postnatal care (Powell-Jackson et al., 2015; Brauw and Peterman, 2020). Therefore, the current study may attempt to fill this vacuum in the literature by taking all the three maternal healthcare services into consideration.

3. Objectives and Hypotheses

3.1. Objectives :

The purpose of the study is to examine impact of Maternal Healthcare Financing Schemes on Maternal Healthcare Utilization. To address this issue, the following objectives have been put forth:

- to evaluate the impact of Maternal Healthcare Financing Schemes on utilization of Antenatal Care;
- to assess the impact of Maternal Healthcare Financing Schemes on utilization of Delivery Care; and
- to examine the impact of Maternal Healthcare Financing Schemes on utilization of Postnatal Care.

3.2. Hypotheses :

To achieve the above-mentioned objectives, following hypotheses have beenset:

H1. Maternal Healthcare Financing Schemes have a significant impact on utilization of Antenatal Care.

H2. Maternal Healthcare Financing Schemes significantly influence utilization of Delivery Care.

H3. There is a significant difference between Treatment Group and Comparison Group with regard to utilization of Postnatal Care.

4. Sample Selection and Methodology

4.1. Study Design and Data Collection :

The present study has been conducted in Kashmir Division of Union Territory, Jammu and Kashmir, India. Kashmir valley is the north most region of the Indian subcontinent, characterized by its harsh weather conditions, remains cut-off from the rest of country for a long period during winters which further adds to the sufferings of poor people. For assessing the impact using Non-experimental Design, a problem of selection bias arises which can be mitigated with the help of using Quasi-Experimental Design (Weber and Ahmad, 2014; Tariq and Sangmi, 2020). Therefore, to evaluate the impact of Maternal Healthcare Financing Schemes on Maternal Utilization, the Quasi-Experimental Survey Design has been employed, whereby matching of a Treatment Group with the Comparison Group is made. The Treatment group consists of 50 participants and the Comparison Group comprises 50 respondents. In total, the study has 100 respondents, the selection of the sample is based on the information of beneficiaries enrolled undertwo schemes (JSY and JSSK) supplied by the Office of the Mission Director, Jammu and Kashmir National Health Mission to the researchers. With the support of ASHAs, each non-participant respondent for comparison is chosen from the same vicinity as a participant respondent, taking due cognizance that the attributes (like place of residence, age, parity, occupation, education, awareness, and income levels) of participant and non-participant are similar. The matching has been done on the two groups of respondents regarding these attributes. Thus, primary data has been collected from women of reproductive age who had a live birth within the previous twelve months before the survey (conducted in 2021-22). As such, the reference period for the study is one year. Using a well-structured and pretested Interview Schedule, a Multistage Stratified Sampling technique has been used for the survey to obtaina sample size of 100 respondents. Among all the 10 districts, two districts have been selected viz., Anantnag and Srinagarin the first stage as these districts had the largest population of beneficiaries enrolled in the schemes under evaluation for the study period. In the second stage of sampling, three blocks from each of the identified districts with higher enrolment were selected. In the third stage,

data has been collected from Treatment and Comparison Group respondents from each block (in proportion to the number of beneficiaries in each block), which represents district and, eventually, the whole Kashmirvalley. The Construct Maternal Healthcare Utilization has been measured on a four-point Likert-type Scale and the main dimensions anazzlyzed relate to Antenatal Care, Delivery Care and Postnatal Care. These dimensions have been fully explained in Appendix-I.

4.2. Data Processing and Analysis :

For analysis, data has been entered into MS-Excel, then exported to Smart PLS-3 for testing reliability and validity of the scale and subsequently to the Statistical Package for Social Sciences (SPSS) Version 26.0 for final analysis. Since the data from both Treatment and Comparison Groupwas found to be normally distributed, an Independent Samples Test with Effect Size (r)will suffice for the study's objectives and assist in testing the above formulated hypotheses. The Effect Size values reflect the importance of impact in practical terms with r = .2 indicates a small effect, r = .5 represents a moderate effect and r = .8 or >shows large effect (Tariq and Sangmi, 2020).

5. Results and Discussion

After thedata has been collected and analyzed with the help of statistical techniques, the results of the survey have been scientifically validated and interpreted, thus described under the following heads:

5.1. Socio-DemographicProfile of the Sample Respondents :

The socio-demographic characteristics of the sample have been given in Table-1. Out of100 respondents, fifty percent are from Srinagar and fifty percent from Anantnag district of Kashmir Valley with equal number of respondents taken for Treatment and Comparison Group. 67 percent have been from rural areas, whereas 33 percent from urban areas with a mean difference of 0.34 which is also statistically significant indicating that place of residence has a bearing on utilization of maternal healthcare. Muslim religion was followed by majority of respondents in both the groups (86%) followed by Hindu religion (11%), and Sikh religion (3%). The difference is significant at 5%. The main findings suggest that majority of sample respondents are in the young age group of 25-29 years (43%), with a zero percentage in the adolescent age group of 15-19 years. Around half of the women (55%) have only had one child, while nearly a quarter (11%) have had more than three children. This is again statistically significant (p = 0.0124) indicating that this covariate influences the utilization as first babies typically receive more attention from the mothers since they are less accustomed to and are, therefore, more willing to seek out modern healthcare facilities. Moreover, half of the research participants (69%) are home-makers, with only a small percentage (27%) working outside home. However, 21% of fathers and 13% of mothers do not have a formal education. The majority of respondents (26% + 31% = 57%) have less awareness about government programs, though ASHA stands out as the primary source of information (78%). More than half of the participants (62%) were classified as being below the poverty line, and a significant number of households from both the groups (48%) had a monthly income of less than ₹10000 (INR). The mean difference (5.2512) for comparison between the two groups is statistically significant (p = 0.000), illustrating that majority of the beneficiaries are poor. This also shows the level of targeting of the schemes to the poor.

5.2. Reliability and Validity of the Scale :

The Maternal HealthcareUtilization Scale has been appropriately developed and validated after taking into consideration prior literature and thorough discussion with the experts of the field. Cronbach's Alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE) have been used to examine the Reliability and Validity (convergent) of the latent variables.

Cronbach's alpha (α) is a way of assessing reliability by comparing the amount of shared variance, or covariance, among the items making up an instrument to the amount of overall variance. The acceptable value for α is 0.6 to 0.7. However, the value above 0.7 is preferred (Hair et al., 2011).

Composite Reliability (*CR*) is a measure of internal consistency, which means that each of the measures consistently represents the same latent construct. It is calculated as follows: Sum of Squared Standardized Loadings divided by Sum of Squared Standardized Loadings plus Sum of Error Variance. A CR of 0.7 is considered satisfactory. However, a value of 0.6 to 0.7 is considered acceptable if other indicators of a model's Construct Validity are satisfactory (Hair et al., 2010).

The variance in the observed variables explained by the common latent variablere presents the *Average Variance Extracted (AVE)*. The formula for calculating AVE is : Sum of Squared Standardized Factor Loadings divided by the number of items. A value of AVE greater than 0.50 for each latent construct is considered acceptable (Hair et al., 2010).

Indicator	Category			%	Mean Diff. for comparison between the two groups	t-value for comparison between the two groups	p-value
			Treatment	41	Broaks	5. oups	
Place of	Rural		Comparison	26			
Residence			Treatment	9	0.34	-3.7764	0.0003
itesidence	Urban	T (1	Comparison	24			
		Total	Terretoriet	100			
	Muslim		Treatment Comparison	46 40			
			Treatment	40			
Religion	Hindu		Comparison	7	0.18	2.028	0.0453
8	0.11		Treatment	0			
	Sikh		Comparison	3			
		Total		100			
	15-19		Treatment	0			
	10 17		Comparison	0			
	20-24		Treatment	14			
			Comparison	4			
A	25-29		Treatment	21	0.26	2.262	0.0259
Age			Comparison Treatment	22	0.36	2.263	0.0258
	30-34			12			
			Comparison Treatment	22 3			
	35-39		Comparison	2			
		Total	Comparison	100			
		1000	Treatment	23			
	1		Comparison	31			
	2		Treatment	17			
Parity	2		Comparison	18	0.34	-2.5481	0.0124
	3 or More		Treatment	10			
		T-4-1	Comparison	1 100			
		Total	Treatment	0			
	Govt. Service		Comparison	0			
	D		Treatment	7			
	Private Service		Comparison	20			
Occupation of	Farming		Treatment	0	0.34		
	Failing		Comparison	0		-2.5481	0.0124
Occupation of Respondent	Labour		Treatment	4			
	Luoou		Comparison	0			
	Home Maker		Treatment	39			
		a 1	Comparison	30			
		Total	Treatment	100 0			
	Govt. Service		Comparison	0			
			Treatment	16	1.12		
	Private Service		Comparison	44			
Occupation of			Treatment	0		-6.8953	0.000
Spouse	Farming		Comparison	0			
	Labour		Treatment	34			
			Comparison	6			
		Total		100			
	No Education		Treatment	11			
	110 1900000000		Comparison	2			
	Primary		Treatment	8			
	,		Comparison	11			
Education of	Secondary		Treatment	15 8	0.48	2.1503	0.034
Respondent			Comparison Treatment	8 12	0.40	2.1303	0.054
	Higher Secondary		Comparison	29			
	W 1 D 1		Treatment	4			
	Higher Education		Comparison	0			
			Companson				

Table-1 : Socio-Demographic Profile of Respondents (N=100).

		Treatment				
	No Education		21			
		Comparison	0			
	Primary	Treatment	10			
	5	Comparison	16			
Education of	Secondary	Treatment	12 18	0.78	3.5159	0.0007
Spouse		Comparison Treatment	18	0.70	5.5157	0.0007
	Higher Secondary	Comparison	16			
		Treatment	6			
	Higher Education	Comparison	0			
	Total		100			
		Treatment	11			
	No Awareness	Comparison	7			
	. .	Treatment	17			
	Less Awareness	Comparison	9			
Awareness		Treatment	16	0.38	2.0131	0.0468
about JSY	Moderate Awareness	Comparison	25			
	II:-h American	Treatment	6			
	High Awareness	Comparison	9			
	Total		100			
	No Awareness	Treatment	21			
	No Awareness	Comparison	10			
	Less Awareness	Treatment	23			
Awareness	Eess Atvareness	Comparison	20			
about JSSK	Moderate Awareness	Treatment	4	0.54	3.2485	0.0016
uoourooon	modelute rivareness	Comparison	16			
	High Awareness	Treatment	2			
	-	Comparison	4			
	Total		100			
	ASHA	Treatment	40			
		Comparison	38 6			
Source of	ANM	Treatment Comparison	0			
Information		Treatment	0			
about Govt.	Doctor	Comparison	2	0.58	-2.1858	0.0312
Scheme/s	Govt.	Treatment	4			
	Publicity/Print/Electronic	Comparison	4			
	Media	Comparison	10			
	Total		100			
	BPL	Treatment	36			
Status of	BIL	Comparison	26			
Household	APL	Treatment	14	0.2	2.0842	0.0397
11000000000		Comparison	24			
	Total		100			
	Upto ₹5000	Treatment	12			
	I I	Comparison	0			
	₹5001-₹10000	Treatment	20			
Manthly Income		Comparison	16			
Monthly Income Level of	₹10001-₹15000	Treatment	18 22	0.92	5.2512	0.000
Household		Comparison	0	0.92	5.2512	0.000
Trousenoid	₹15001-₹20000	Treatment Comparison	6			
		Treatment	0			
	₹20001 or Above	Comparison	6			
	Total		100			
*Significant at 5			200			

*Significant at 5%

Source: Field survey by the researchers

Table-2 shows the results for reliability and validity (convergent), as well as the factor loadings, for the entire sample. All of the alpha values are greater than the recommended value of 0.70. For all variables, the CR and AVE is greater than 0.70 and 0.50 respectively, indicating convergent validity.

Utilization	Item	λ	α	CR	AVE	VIF
Antenatal Care	Rec_ANC	0.807	0.740	0.825	0.507	4.997
	Rec_IFA	0.601				1.629
	Rec_TTs	0.665				1.923
	Ist_ANC	0.801				3.721
	RecANC_Doctor	0.931				1.896
	RecANC_ANM	0.617				1.510
	RecANC_DH/PHC/CHC/SC	0.537				3.111
	RecANC_PvtHos	0.763				6.529
Delivery Care	TypDel_Normal	0.881	0.748	0.822	0.501	3.716
	TypDel_CSection	0.703				4.764
	PlcDel_GovtInst	0.892				4.682
	PlcDelPvtInst	0.621				3.955
	Del_SBA	0.502				1.714
	Del_TBA	0.769				4.994
	FacPDC_Normal	0.902				1.565
	FacPDC_CSection	0.836				4.084
Postnatal Care	Rec_PNC	0.883	0.744	0.846	0.595	2.919
	RecPNC_42	0.883				4.104
	RecPNC_Doc/ANM	0.843				4.289
	RecPNC_DH/PHC/CHC/SC	0.501				3.518
	RecPNC_PvtHos	0.783				4.107

Table-2 : Item	Loadings.	Reliability	and Validity	(Convergent).
	Loudingo,	1 Concession of the second sec	und vandity	(oonvorgone).

Source: Field survey by the researchers

Moreover, the Fornell-Larcker criterion and the Heterotrait-Monotrait Method (HTMT) have been used to examine Discriminant Validity, with the results shown in Table-3.

The *Fornell and Larcker (1981)* Criterion states that Discriminant Validity is established when a construct's square root of AVE is greater than its correlation with all other constructs. In the current study, square root of AVE (in bold and italics) for each construct was found to be greater than its correlation with other constructs (Table-3).

Also, the estimation of the correlation between the constructs underpins *HTMT Method*. The HTMT threshold has been debated in the existing literature; Kline (2011) argued a conservative threshold of 0.85 or less, while Teo et al. (2008) proposed a liberal threshold of 0.90 or less. According to Table-3, the HTMT ratio for all constructs is less than the required threshold of 0.90. The establishment of discriminant validity is, thus, strongly supported.

	For	nell & Larcke	er Criterion		HTMT	
	Antenatal Care	Delivery Care	Postnatal Care	Antenatal Care	Delivery Care	Postnatal Care
Antenatal Care	0.712					
Delivery Care	0.533	0.684		0.519		
Postnatal Care	0526	0.592	0.771	0.515	0.643	

Table-3 : Discriminant Validity using the Fornell & Larcker Criterion and HTMT Method.

Source: Field survey by the researchers

Note: Bold and Italicized elements are the square root of AVE.

5.3. Impact of Maternal Healthcare Financing Schemes on Utilization of Antenatal Care :

The study attempts to address utilization of Antenatal Care in terms of eight indicators-No. of ANCs received; No. of Iron and Folic Acid Tablets (IFA) received; No. of Tetanus Toxoid Injections (TTs) received; No. of ANCs received in the first trimester of pregnancy; ANC received by Doctor/Auxiliary Nurse Midwife (ANM); ANC received at District Hospital/Primary Health Centre/ Community Health Centre/Sub-Centre and ANC received at Private Hospital. Utilization of Antenatal Care for the two independent groups of respondents, Treatment and Comparison Groups, has been compared using an Independent Samples t-Test. The results encapsulated in Table-4 indicate that there have been significant differences in the scores, [t (92.599) = 6.088, p = 0.000], with the mean score for Treatment Group (m = 1.9425, SD = .29147) being higher than the Comparison Group (m = 1.5350, SD = .37290). Equal variances have not been assumed because p value corresponding to F Statistic is less than 0.05. The magnitude of the mean differences (mean difference = .40750, 95% CI: .2745 to .54043) is significant. As a result, the findings suggest that Maternal Healthcare Financing Schemes have a significant positive impact on Antenatal Care Utilization.

However, Effect Size has been used to calculate the magnitude of the impact on each indicator and on the composite Antenatal Care score. The effect size (r = 1.217, i.e., > 0.8) on the overall Antenatal Care score is quite high, indicating large impact.

Indicator		G	Group Statistics		Levene's Test for Equality of Variances	ne's for ity of nces			t-test	t-test for Equality of Means	y of Means			
		Mean	Std. Deviation		Г	Sig.	t t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	% dence /al of le rence	Effect Size (r)
Rec ANC	Treatment	2.80	0.404	Equal variances	25.877	000	3.724	98	000	.340	.091	.159	.521	.7448
	Comparison	2.46	0.503	assumed Equal variances not assumed			3.724	93.614	000	.340	160.	.159	.521	
Rec IFA	Treatment	1.52	0.580	Equal variances assumed	5.771	.018	2.023	98	.046	.220	.109	.004	.436	.4046
	Comparison	1.30	0.505	Equal variances not assumed			2.023	96.186	.046	.220	.109	.004	.436	
Rec TTs	Treatment	2.44	0.501	Equal variances assumed	15.925	000	2.763	98	.007	.260	.094	.073	.447	.5526
	Comparison	2.18	0.438	Equal variances not			2.763	96.234	.007	.260	.094	.073	.447	
1ª ANC	Treatment	2.60	0.495	Equal variances	2.699	.104	4.724	98	000	.520	.110	.302	.738	.9948
	Comparison	2.08	0.601	Equal variances not			4.724	94.538	000	.520	.110	.301	.739	
RecANC by	Treatment	2.58	0.642	assumed Equal variances	5.784	.018	6.352	98	000	.920	.145	.633	1.207	1.270
	Comparison	1.66	0.798	Equal variances not			6.352	93.678	000	.920	.145	.632	1.208	
RecANC at	Treatment	1.72	.757	Equal variances	0.002	.965	.823	98	.412	.120	.146	169	.409	.1646
	Comparison	1.60	0.700	Equal variances not			.823	97.402	.412	.120	.146	169	.409	
RecANC at Pvt	Treatment	1.38	0.725	Equal variances	39.367	000	11.151	98	000	1.280	.115	1.052	1.508	2.2302
	Comparison	0.10	0.364	Equal variances not			11.151	72.232	000	1.280	.115	1.052	1.509	
Composite Score	Treatment	1.9425	0.29147	Equal variances	5.305	.023	6.088	98	000	.40750	.06693	.27467	.54033	1.217
	Comparison	1.5350	0.37290	Equal variances not			6.088	92.599	000	.40750	.06693	.27467	.54033	

Table-4 : Impact of Maternal Healthcare Financing Schemes on Utilization of ANC: Statistical Analysis

5.4. Impact of Maternal Healthcare Financing Schemes on Utilization of Delivery Care :

Utilization of Delivery Care has been measured with the help of six indicators – type of delivery used as Normal; type of delivery used as Caesarean Section; delivery assisted by Skilled Birth Attendant (SBA); delivery assisted by Traditional Birth Attendant (TBA); Post-delivery complication faced after normal delivery and Post-delivery complications faced after Caesarean Section. Similarly, an Independent Samples t-Test has been conducted to compare the Utilization of Delivery Care for two independent groups of participants i.e., Treatment and Comparison Groups. Taking the overall composite score for Delivery Care, as summarized in Table-5, equal variances have not been assumed as p value corresponding to F Statistic is less than 0.05, there have been significant differences, [t (57.451) = -10.598, p = 0.000] in the scores with mean score for Treatment Group (m = .8235, SD = .26560) is higher than the Comparison Group (m = .4175, SD = .07829). The magnitude of the differences in the means (mean difference =0.41500, 95% CI:-.49271 to -.33729) is significant. Hence, the results indicate that Maternal Healthcare Financing Schemes have a significant favourable impact on Utilization of Delivery Care. The effect size indicates quite significant impact (r = 2.12 i.e., > 0.8) on the overall score of Delivery Care.

5.5. Impact of Maternal Healthcare Financing Schemes on Utilization of Postnatal Care :

Furthermore, five indicators have been employed for measuring utilization of Postnatal Care namely No. of PNCs received; No. of PNCs received in less than 42 days after delivery, PNC received by Doctor/ANM; PNC received at District Hospital/Primary Health Centre/Community Health Centre/Sub-Centre and PNC received at Private Hospital. An Independent Samples t-Test is used to compare Postnatal Care Utilization for two independent respondent groups, Treatment and Comparison. As indicated in Table-6, there are significant differences in the scores, [t (83.773) = 6.890, p = 0.000], with the Treatment Group's mean score (m = 1.8200, SD = .41845) being higher than the Comparison Group's (m = 1.0680, SD = .64853). Because p value corresponding to F Static is less than 0.05, equal variances have just not been assumed. The mean differences are significant (mean difference = .75200, 95% CI: .53493 to .96907). Thereby, the analysis reveal that Maternal Healthcare Financing Schemes appear to have a significant beneficial impact on Utilization of Postnatal Care. Besides, the effect size on the overall Postnatal Care score (r = 1.38, i.e., >0.8) is fairly large, implying a significant influence.

Indicator		Group			Levene's Test	s Test		1 T	test for	r Equality	t-test for Equality of Means	IS		
		Statistics	tics		for Equality of Variances	dity of es				•				
		Mean	Std. Deviat		н	Sig.	-	df	Sig. (2-	Mean Difference	Std. Error Difference	95 Confi	95% Confidence	Effect Size
			ion						tailed)			Interva	Interval of the	(I)
												Diffe	Difference	
												Lower	Upper	
Type of	Treatment	.78	.418	Equal variances assumed	11.714	.001	-9.307	86	000	680	.073	825	353	1.86
Del as Normal	Comparison	.10	.303	Equal variances not assumed			-9.307	89.310	000	680	.073	825	353	
Type of	Treatment	96	.198	Equal variances assumed	5.792	.018	-1.172	98	.244	060	.051	162	.042	.234
Del as C-	Comparison	.90	.303	Equal variances not assumed			-1.172	84.374	.244	060	.051	162	.042	
Section														
Del	Treatment	1.00	000	Equal variances assumed	20.444	000	-2.064	98	.042	080	.039	157	003	.413
assisted by	Comparison	.92	.274	Equal variances not assumed			-2.064	49.000	.044	080	.039	158	002	
SBA														
Del	Treatment	.74	.443	Equal variances assumed	.865	.355	-6.033	98	000	520	.068	691	349	1.21
assisted by	Comparison	.22	.418	Equal variances not assumed			-6.033	97.681	000	520	.068	691	349	
TBA														
Faced PDC	Treatment	.78	.418	Equal variances assumed	27.254	000	ī	98	000	740	.071	882	598	2.072
after							10.360							
Normal	Comparison	.04	.283	Equal variances not assumed			ŕ	86.042	000	740	.071	882	598	
Delivery							10.360							
Faced PDC	Treatment	.74	.443	Equal variances assumed	6.192	.015	-7.102	98	000	580	.082	742	418	1.420
after C-	Comparison	.16	.370	Equal variances not assumed			-7.102	95.007	000	580	.082	742	418	
Section														
Composite	Treatment	.8235	.26560	Equal variances assumed	69.326	000	ī	98	000	41500	.03916	ŗ	ı	2.12
Score							10.598					.49271	.33729	
	Comparison	.4175	.07829	Equal variances not assumed			ı	57.451	000	41500	.03916	ŗ	ı	
							10.598					.49271	.33729	

Table-5 : Impact of Maternal Healthcare Financing Schemes on Utilization of DC : Statistical Analvsis

: Statistical Analysis
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Table

Independent Samples Test

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Indicator		Gr Stat	Group Statistics		Levene's Test for Equality of Variances	Levene's Test for Equality of Variances			t-test f	t-test for Equality of Means	ty of Me	ans		
		Mean	Std. Deviati		ы	Sig.	н	df	Sig. (2- tailed)	Mean Difference	Std. Error	95% Confidence	% dence	Effect Size
			OII								Differe nce	Interval of th Difference	Interval of the Difference	(I)
												Lower	Upper	
Rec PNC	Treatment	2.02	.589	Equal variances assumed	5.296	.024	6.752	98	000	.920	.136	.650	1.190	1.35
	Comparison	1.10	.763	Equal variances not assumed			6.752	92.091	000	.920	.136	.649	1.191	
Rec PNC in less than 42	Treatment	2.08	.601	Equal variances assumed	21.901	000	5.151	98	000	.780	.151	.479	1.081	1.03
days	Comparison	1.30	.886	Equal variances not assumed			5.151	86.166	000	780	.151	.479	1.081	
Rec PNC by Doctor/ANM	Treatment	2.16	.510	Equal variances assumed	26.382	000	4.565	98	000	.660	.145	.373	.947	.913
	Comparison	1.50	.886	Equal variances not assumed			4.565	78.192	000	.660	.145	.372	.948	
Rec PNC at DH/PHC/CH	Treatment	1.64	.749	Equal variances assumed	3.692	.058	-4.083	98	000	660	.162	981	339	.817
C/SC	Comparison	1.30	.863	Equal variances not assumed			-4.083	96.109	000	660	.162	981	339	
Rec PNC at Pvt Hospital	Treatment	2.20	1.010	Equal variances assumed	17.805	000	12.363	98	000	2.060	.167	1.729	2.391	2.47
	Comparison	.14	909.	Equal variances not assumed			12.363	80.259	000	2.060	.167	1.728	2.392	
Composite Score	Treatment	1.8200	.41845	Equal variances assumed	13.306	000	6.890	98	000	.75200	.10915	.53539	.96861	1.38
	Comparison	1.0680	.64853	Equal variances not assumed			6.890	83.773	000	.75200	.10915	.53493	70696.	
Source: F	Source: Field survey by the researchers	by the	researci	hers										

6. Conclusion

Maternal Healthcare Utilization has been assessed by studying the utilization of antenatal, delivery and postnatal care. The present study indicates that JSY Scheme followed by JSSK has been able to enhance access to and utilization of all the three maternal services, the reason being cash assistance provided by JSY which has further been followed by the cashless entitlements furnished by JSSK.As a result of the intervention, expectant women are significantly more likely to seek care from qualified providers for ANC, DC and PNC. Since it is a well acknowledged fact that maternal mortality can be reduced with increased institutional deliveries, deliveries conducted by skilled birth attendants and when women have access to emergency obstetric care. The present study seems to meet all the pre-conditions, thereby concluding that the schemes have made a positive impact on decreasing maternal mortality in the study area. These results have been corroborated by a number of studies, for instance, using quasiexperimental framework, Lim et al. (2010); Rahman and Pallikadavath (2018) reported significant positive impact on the uptake of maternal healthcare. However, the contribution of JSY can be seen in increased institutionalization of deliveries far greater than ANC and PNC, indicating the limited role of the program in comprehensively addressing the maternal care needs. This is in line with the findings of Gopalan and Durairaj (2012); Ali et al. (2019). Thus, this study aims to contribute significantly to the current literature on the impact of Maternal Healthcare Financing Schemes for increasing Maternal Healthcare Utilization in terms of all the three maternal services and not only delivery care which most researchers have addressed. The study concludes that there are statistically significant differences between the two groups, with the Treatment Group having a significantly higher mean score than the Comparison Group for each of the indicators of ANC, DC and PNC, as indicated by the Independent Samples Test. However, the findings show that there are still gaps among beneficiaries and non-beneficiaries regarding awareness of the availability of cashless services in government institutions. The loopholes are especially noticeable when it comes to the JSSK Scheme's free and cashless benefits. Consequently, awareness generation and service provision are the top priority are as for further strengthening the intervention.

Appendix-I

Operational Definitions :

To evaluate the impact on Maternal Healthcare Utilization, outcome variables have been identified as Maternal Healthcare Utilization (ANC, DC and PNC),

independent variables consisting socio-demographic indicators as place of residence, religion, age, parity, occupation, education, level of awareness, source of information, status of household and household income.

Antenatal Care (ANC) has been defined as a woman having received four or more visits to a health facility, having received at least two Tetanus Toxoid Injections and consuming 100 Iron and Folic Acid tablets. Besides ANC received from Doctor/ANM and at District Hospital/PHC/CHC/SC and Private Hospital have also taken into consideration.

Delivery Care (DC) has been defined as a woman giving birth in a health facility (Public/Private), type of delivery used (Normal/Caesarean Section), assisted by a skilled birth attendant (Doctor/Nurse/ANM). An extension has been made to post-delivery complications.

Postnatal Care (PNC) has been defined as a woman having received three or more PNC visits with a qualified provider (Doctor/Nurse/ANM), received PNC At DH/PHC/CHC/SC and Private Hospital.

Compliance with Ethical Requirement

Informed Consent : Taken

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this paper.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Consumer Perception on Digital Marketing Gender Based Analysis

INDRAKANTI SEKHAR AND KASARAM MANASA

Abstract: Digitization being a key economic driver in the present world it is important to integrate the economy by creating digital markets. This revolution has been aided by the advent of the Internet in a big way. Internet is fast changing the way people used to do things. Naturally, the same would have an impact on the advertisers. The Internet has been accepted as the most powerful media for advertising due to the absence of geographical barriers. The advent of the Internet and its subsequent acceptance has once again challenged the traditional forms of advertising. Advertisers are trying to use the 'net' to advertise their products and hence 'net' their customers. Thus, with the Internet gaining prominence, advertising equations are fast changing. The present paper is guided by the objective to study the impact of online marketing on Indian economy, the growth pace and its benefits and challenges.

Keywords: Digital Marketing, Consumer Perception.

Introduction :

Online marketing is the wave of thefutureInternet marketing, also referred to as e-Marketing, online marketing or Digital Marketing, is the marketing of products or services over the Internet. Internet marketing ties together creative and technical aspects of the Internet, including design, development, advertising, and sale. The Internet has brought many unique benefits to marketing, one of which being lower costs for the distribution of information and media to a global audience. The interactive nature of Internet marketing, both in terms of providing instant response and eliciting responses, is a unique quality of the medium. Internet marketing is sometimes considered to have a broader scope because it not only refers to digital media such as the Internet, e-mail, and wireless media; however, Internet marketing also includes management of digital customer data and electronic customer relationship management (ECRM) systems.

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Definition

"Digital Marketing is the process of promoting a brand, products or services over the Internet. Its broad scope includes email marketing, electronic customer relationship management and any promotional activities that are done via wireless media."

Objectives of the Study :

The basic objective of present study is to have a macro re-look at the scenario of Digital Market in India. However, study is guided by the following sub Objectives.

- > To study the digital marketing.
- > To know the various factors that influence digital consumer perception.
- To study the impact of the digital marketing antecedents on the consumer buying behaviour.

Methodology of the Study :

For the purpose of this research,

- Primary Data : Primary data were sourced with the use of questionnaire. The questionnaire comprised close-ended questions only. The completed questionnaires were drawn based on the research questions under study. Quantitative research is designed to disclose a target audience's range of behavior and perception that drive it with specific references. Data collection and survey analyzes done through Google Form questionnaire survey collection.
- Secondary Data : Secondary data can play a substantial role in explanatory phase; this data will be collected through secondary sources like research reports, websites, standard text books, newspapers, magazines etc.

Hypothesis :

H0: There is no significant difference between Male and Female (Gender Factor) responses towards digital marketing.

H1 : There is a significant difference between Male and Female (Gender Factor) responses towards digital marketing.

Review of Literature :

According to Chaffey (2011), digital media marketing involves "encouraging customer communications on company's own website or through its social presence". Digital marketing, electronic marketing, e-marketing and Internet marketing are all similar terms which, simply put, refer to "marketing online whether via websites, online ads, opt-in emails, interactive kiosks, interactive TV or mobiles" (Chaffey & Smith, 2008). Giese and Gote (2000) finds that customer information satisfaction (CIS) for digital marketing can be conceptualized as a sum of affective response of varying intensity that follows consumption and is stimulated by focal aspects of sales activities, information systems (websites), digital products/services, customer support, after-sales service and company culture. Waghmare (2012) pointed out that many countries in Asia are taking advantage of e-commerce through opening up, which is essential for promoting competition and diffusion of Internet technologies.

Elements of Digital Marketing

There are various elements by which digital marketing is formed. All forms operate through electronic devices. The most important elements of digital marketing are given below :



- Online advertising : Online advertising is a very important part of digital marketing. It is also called internet advertising through which company can deliver the message about the products or services. Internet-based advertising provides the content and ads that best matches to consumer interests. Publishers put about their products or services on their websites so that consumers or users get free information. Advertisers should place more effective and relevant ads online. Through online advertising, company well controls its budget and it has full control on time.
- Email Marketing : When message about the products or services is sent through email to the existing or potential consumer, it is defined as email marketing. Direct digital marketing is used to send ads, to build brand and customer loyalty, to build customer trust and to make brand awareness. Company can promote its products and services by using this element of digital marketing easily. It is relatively low cost comparing to advertising or other forms of media exposure. Company can bring complete attention of the customer by creating attractive mix of graphics, text and links on the products and services.
- Social Media : Today, social media marketing is one of the most important \geq digital marketing channels. It is a computer-based tool that allows people to create, exchange ideas, information and pictures about the company's product or services. According to Nielsen, internet users continue to spend more time with social media sites than any other type. Social media marketing networks include Facebook, Twitter, LinkedIn and Google+. Through Facebook, company can promote events concerning product and services, run promotions that comply with the Facebook guidelines and explore new opportunities. Through Twitter, company can increase the awareness and visibility of their brand. It is the best tool for the promotion of company's products and services. In LinkedIn, professionals write their profile and share information with others. Company can develop their profile in LinkedIn so that the professionals can view and can get more information about the company's product and services. Google+ is also social media network that is more effective than other social media like Facebook, Twitter. It is not only simple.
- Text Messaging: Social media network but also it is an authorship tool that links web-content directly with its owner. It is a way to send information about the products and services from cellular and smart phone devices. By

using phone devices, company can send information in the form of text (SMS), pictures, video or audio (MMS). Using SMS for campaigns get faster and more substantial results. Under this technique, companies can send marketing messages to their customers in real-time, any time and can be confident that the message will be seen. Company can create a questionnaire and obtain valuable customer feedback essential to develop their products or services in future.

- Affiliate Marketing : Affiliate marketing is a type of performance-based marketing. In this type of marketing, a company rewards affiliates for each visitor or customer they bring by marketing efforts they create on behalf of company. Industry has four core players: the merchant (also known as "retailer" or "brand"), the network, the publisher (also known as "the affiliate") and the customer. There are two ways to approach affiliate marketing: Company can offer an affiliate program to others or it can sign up to be another business's affiliate. If company wants to drive an affiliate program, then, the company owner has to pay affiliates a commission fee for every lead or sale they drive to company's website. Company's main goal here is to find affiliates who can reach untapped markets.
- Search Engine Optimization (SEO) : Search engine optimization (SEO) is the process of affecting the visibility of a website or a web page in a search engine's "natural" or un-paid ("organic") search results. In general, the earlier (or higher ranked on the search results page), and more frequently a website appears in the search result list, the more visitors it will receive from the search engine users. SEO may target different kinds of search including image search, local search, video search, academic search, news search and industry-specific vertical search engines.
- Pay Per Click (PPC): Pay-per-click marketing is a way of using search engine advertising to generate clicks to your website rather than "earning" those clicks organically. Pay per click is good for searchers and advertisers. It is the best way for company's ads since it brings low cost and greater engagement with the products and services.

Consumer Behaviour :

Consumer behaviour is defined as a study to gain insight how individuals or groups buy, use and dispose of products, services or experiences to satisfy their needs. The decision making of the consumer is determined by the pre-purchase

behaviour, which is preceded by the intention to buy/consumeand a host of other antecedent factors. Some of these factors are intrinsic to the consumer like the personal aspects - beliefs/evaluation based attitude towards the act (purchase), while the extrinsic variables likesocial aspects - subjective norms and the perceived/actual behavioural control etc., conditioned within the situational construct, influence the consumer's behavioural intention. Attitudebehaviour consistency has been of great interest to researchers since the 1930s. The consumer decision-making process is a sequential and repetitive series of psychological and physical activities ranging from problem recognition to postpurchase behaviour. Market dominated variables (such as the environment and advertising) and consumer-dominated variables (such as needs, motives, personality and perception) simultaneously interact to influence the consumer's purchasing decision. Consumer decision process is the decision making process undertaken by consumers in regard to a potential market transaction before, during and after the purchase of the product or service. More generally decision making process is the cognitive process of selecting a course of action from among multiple alternatives. Common examples include shopping, deciding what to eat etc. Decision making is said to be a psychological construct. This means that although we can never see a decision, we can infer from observable actions, we assume that people have made a commitment to effect the action. In general there are two ways of analysing consumer buying decisions.viz.,

Economic models : These models are largely quantitative and are based on the assumptions of rationality and perfect knowledge. The consumer is seen to their maximum utility.

Psychological models : These models concentrate on physiological and cognitive processes such as motivation and need recognition. They are qualitative rather than quantitative and build on sociological factors like cultural influences and family influences.

The Buying Decision Process :

The buyer decision making process consists of the following steps

1. Need Recognition : The buying process starts when the buyer recognizes problem or need triggered by internal or external stimuli¹ According to the buyers' decisions are affected by numerous stimuli from their environment. The commercial environment consists of the marketing activities of various firms by which they attempt to communicate the buyers² From the buyer's point of view, these communications come to the buyer through either brand objects such as price, quality, service, distinctiveness and availability, or

through brand representation such as media orsalesman The buyers are also stimulated by their social environment which provides a purchase decision and the most obvious example is word-of-mouth (WOM) communication The significance of WOM in influencing consumer decision making has been well recognised m marketing and advertising literature.

- 2. Information Search : The buyer may enter an active information search by looking for reading material, asking friends, going online and visiting shops to learn about the active seeking of information occurs when the senses ambiguity of brand meaning and that exists, because the buyer is not certain and has not learned enough yet about the purchase outcome of each alternative (Kotler et al (2009) have identified major information sources to which the consumers are Personal family, friends, neighbours, acquaintances, Commercial advertising, websites, salespeople, dealers, packaging, displays, Experiential handling, examining, using the product.
- **3. Evaluation of Alternatives :** Howard and Sheth (1969) state that through a learning process, the buyers obtain and store knowledge of each brand's potential and then ranks them according to potential to satisfy their needs, so this is a set of alternatives to be evaluated the beliefs as a descriptive thought that a person holds about something and the attitudes as a person's enduring favourable and unfavourable evaluations, emotional feeling and action tendencies toward some idea.
- 4. **Purchase :** The evaluation of alternative brands may lead the consumer to form preferences for brands in the choice set. Although the consumers form brand evaluations, there can be intervening factors between the purchase intention and the purchase decision The purchase decision may also be subject to various anticipated situational factors such as temporary cashflow problems, time availability and stock levels. In most circumstances, a consumer's decisions can be associated with the perceived risk and the consumer may modify, postpone and avoid a purchase decision because o f the perceived risk. The consumers may perceive many types o f risk in their buying decision.

Functional risk the product does not perform up to expectations. *Physical risk* the product poses a threat to the physical well-being or health of the user or others. *Financial risk* the product is not worth the price paid. *Social risk* the product results in embarrassment from others. *Psychological risk* the product does not conform to the consumer's perceived self-image. *Time risk* the failure of the product results in an opportunity cost of finding another satisfactory

product. The consumers can reduce the uncertainty and negative consequences of risk by gathering information from friends and preferences for national brand, so the marketers should understand the factors of a feeling frisk m consumers and provide information to reduce perceived risk.

5. **Post-purchase Behaviour :** The buyer's satisfaction is a function of the closeness between the buyer's expectations and the product's perceived performance. If the performance is below expectations, then the customer will be dissatisfied and will suffer from the mismatch, if it meets expectations, then the customer will be satisfied, if it exceeds the expectations, the customer will be delighted. The word-of-mouth transmissions are influential m the pre- and post-purchase stages. In the post-purchase period, consumer word-of-mouth transmissions provide informal communications which are directed at other consumers about the ownership, usage and experiences o f goods and services.

Data Analysis and Interpretation :

Table-1 : It is understood from the above table that 52.5% are Male respondents and 47.5% are Female respondents. Most of the male and female respondents fall under the age group of 21-30. Employees occupy the major portion of the respondents in the survey. Under qualification group most of the respondents are post graduates and 66.25% of the total respondents falls under less than 20000 income group.

Table-2 : As per the Data shown in table-2 regarding the awareness on digital marketing, the difference of mean value between genders is 18.75, the t-test value is 2.457 which is higher than the critical value 2.35 and the p-value is 0.046. Therefore the result of t-test about the awareness on Digital marketing is not significant and hence Null hypothesis is accepted and Alternative hypothesis is rejected. For the respondents opinion on availability of online information about products, the difference of mean value between genders is 4.25, the t-test value is 0.11 which is lower than the critical value 2.35 and the p-value is -1.53. Therefore the result of t-test about the availability of online information is significant and hence alternate hypothesis is accepted and null hypothesis is rejected.

The calculated ANOVA values for the issues relating to products usually preferred to purchase, sourcesused to gather information, payment methods adopted and reasons for choosing online purchases the p-value is below the critical value 0.05, Therefore Null hypothesis is accepted and alternative hypothesis is rejected.

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Table-1 : Demographic profile of respondents

	Age /			Male					female	e		Grand Total
Respondents	Category						15-	21-	31-	^		
age wise		15-20	21-30	31-40	> 40	Sub.Total	20	30	40	40	Sub.Total	
	Male	13	23	9	0	42	3	23	7	5	38	80
				Male					female	e		
	Category						15-	21-	31-	^		Grand
		15-20	21-30	31-40	> 40	Sub.Total	20	30	40	40	Sub.Total	Total
	student	12	7	0	0	19	2	3	0	0	5	24
Occupation	Employee	0	6	9	0	15	0	12	3	1	16	31
	profession	0	2	0	0	2	0	2	4	4	10	12
	business	1	3	0	0	4	1	0	0	0	1	5
	others	0	2	0	0	2	0	9	0	0	9	80
	Sub.Total	13	23	9	0	42	3	23	7	5	38	80
				Male					female	e		
	Category						15-	21-	31-	^		Grand
		15-20	21-30	31-40	> 40	Sub.Total	20	30	40	40	Sub.Total	Total
3	SSC or Below	1	0	0	0	1	0	0	0	0	0	1
qualification	intermediate	4	4	0	0	8	0	0	0	0	0	∞
	graduation	8	7	2	0	17	2	6	0	0	11	28
	PG	0	12	4	0	16	1	14	7	5	27	43
	others	0	0	0	0	0	0	0	0	0	0	0
	Sub.Total	13	23	9	0	42	3	23	7	5	38	80
				Male					female	e		
	Category						15-	21-	31-	٨		Grand
		15-20	21-30	31-40	> 40	Sub.Total	20	30	40	40	Sub.Total	Total
Monthly income	less than 20k	12	17	0	0	29	2	19	ю	0	24	53
	20k-40k	1	9	5	0	12	1	4	4	4	13	25
	40k-60k	0	0	1	0	1	0	0	0	1	1	2
	Above 60k	0	0	0	0	0	0	0	0	0	0	0
	Sub.Total	13	23	9	0	42	3	23	7	5	38	80
Source Primary Data	n Data											

Source: Primary Data

	sults		2	Critical									Р-	F-crit					Р.	F-crit			
	Annova / t-test Results	m voluo-10 7E	C/.ST=90167 M	P(I<=t)one-tall=2.457 P value=0.046t Critical	one-tail = 2.3533			F-Value-2.1848	F-crit 2.6414				f-Value1.9026	value-0.1520	2.946				f-Value-4.2445	value-0.0032	2.4376		
	Grand Total	I OLAI	75	5	80	29	16	2	21	12	80	19	13	37	11	80	27	14	26	7	4	2	80
	Sub. Tot	10	36	2	38	10	11	2	9	6	38	7	5	18	∞	38	10	9	13	4	3	2	38
	~ <	40	S	0	5	2	1	0	2	0	5	3	0	1	1	5	1	2	2	0	0	0	5
Female	31- 40	40	7	0	7	0	5	0	2	0	7	1	1	2	3	7	2	1	2	2	0	0	7
	21- 20	nc	22	1	23	8	5	1	4	5	23	2	4	14	3	23	9	3	7	2	3	2	23
	15-		2	-	ŝ	0	0	1	1	1	3	1	0	1	-	33	1	0	2	0	0	0	æ
	Sub.		39	æ	42	19	5	0	12	6	42	12	8	19	з	42	17	8	13	ŝ	1	0	42
	~ <	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Male	31-		9	0	9	9	0	0	0	0	9	2	1	3	0	9	3	2	1	0	0	0	9
	21-	nc	20	æ	23	6	4	0	7	3	23	6	4	12	1	23	8	5	7	2	1	0	23
	15-	70	13	0	13	4	1	0	5	3	13	4	з	4	2	13	9	1	5	1	0	0	13
Category	Age		Yes	No	Sub. Tot	Electronic items	Apparels	Jewellery	Bookings	Others	Sub. Tot	Regularly	Rarely	Need base	Offers& discounts	Sub. Tot	Search engines	Product catalogues	Friends& Family	Advertisements	Promotional mails	Others.	Sub. Tot
	Particulars	Autoroport	Awareness	on Uigitai Marketing	0	Products	usually nreferred to	purchase	Digitally			Frequency	of Unline showing By	respondents			Sources s	to gather					
	S.no	•	Ŧ			2						3					4						

Table-2 : Responses towards Digital Marketing

	one-	t Critical							ځ بن												ų					
M value=4.25	P(T<=t) tail-0.11	1.53	56				f-Value-0.6652 value-0.6204 crit -2.6416						F-Value-2.1848 P-value-0.09095 F-crit 2.6414						f-Value-0.0165 P-value-0.0462 crit -2.9466							
17	63	80	38	3	4	35	80	18	23	17	11	11	80	29	16	2	21	12	80	33	17	19	1	80		
7	31	38	20	2	1	15	38	6	13	6	3	5	38	10	11	2	6	9	38	6	7	11	1	28		
-	4	5	1	2	1	1	5	1	2	1	1	0	5	2	1	0	2	0	5	2	ю	0	0	5		
2	5	7	5	0	0	2	7	0	4	2	0	1	7	0	5	0	2	0	7	4	0	1	1	9		
4	19	23	13	0	0	10	23	8	6	9	1	2	23	8	5	1	4	5	23	з	1	7	0	11		
0	ю	3	1	0	0	2	3	0	1	0	1	1	3	0	0	1	1	1	3	0	З	3	0	9		
10	32	42	18	1	3	20	42	6	10	8	8	9	41	19	5	0	12	9	42	24	10	8	0	42		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2	4	9	3	1	2	1	7	2	1	0	1	2	9	9	0	0	0	0	6	5	0	2	0	7		
2	21	23	6	0	0	13	22	3	6	7	5	2	23	6	4	0	7	3	23	13	4	3	0	20		
9	7	13	9	0	1	6	13	4	3	1	2	3	13	4	1	0	5	3	13	9	9	3	0	15		
Excellent	Good	Sub. Tot	Debit Card	Credit Card	Net Banking	Cash on Delivery	Sub. Tot	1 – 2times	3 – 5 times	6 – 10 times	10 – 20 times	>20 times	Sub. Tot	Convenience	Quick Delivery	Online goods	Global markets	24×7 Shopping	Sub. Tot	touch & feel	Misuse of personal details	mis-match of delivery	Others	Sub. Tot	Data	
Rating of	online products		Payment Methods adopted by Consumers					Frequency of visits to Online stores during last 12 months						Reasons for choosing online purchases					Consumers perception of risk in Digital Purchases				Source: Primary Data			
5	2							7						∞						თ				Sour		

Results in relating to frequency of online shopping visits, the p-value is higher than the critical value. Therefore Null Hypothesis is rejected and alternative hypothesis id accepted.

Findings and Conclusions:

- 1. In the study it was found that male respondents are more than the female respondents who were responded for online responses about awareness on digital marketingfor designed questionnaire.
- 2. Study reveals that electronic items are preferred more by the respondents among the online products
- 3. It is also understood from the study that the respondents are not attracted towards offers and product promotions and purchase according to the need.
- 4. Based on the survey online source of product information is gathered from internet search engines followed by word of mouth.
- 5. Debit cards and cash on delivery are the most adopted payments methods by the respondents.
- 6. Study reveals that reasons for choosing online purchases by consumers are Convenience and access to global markets.
- 7. It can be understood from the study that the risk factors in the digital purchases are mostly no possibility to touch and feel the product, mis-match of delivery and mis-use of personal details of consumers.
- 8. The overall satisfaction of the consumers on the digital purchases is rated as good.

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Footnotes

- 1. Kotler, 2009
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Validation of Random Walk Hypothesis for Indices of G20 Nations

Shubhra Johri, Kuldip Sharma and Keyurkumar M Nayak

Abstract : Testing randomness of stock prices has been one of the key concerns for various stock market analysts and investors at large. The main intention of this study is to empirically assess the Random Walk theory's applicability to the equities markets of G20 countries, which constitute a varied set of large economies. For accomplishing the said purpose the researchers have collected daily stock price data for a representative sample of G20 countries over a specific time period. Various statistical tools have been employed like ADF. Runs test and Variance ratio tests. Preliminary findings suggest that stock price series across G20 countries are not random implying the presence of predictable patterns or deviations from market efficiency. The study's findings have important consequences for investors, governments, and scholars. Understanding the degree of market efficiency and the Random Walk theory's application in various nations can assist investors in making informed decisions, improving risk management methods, and contributing to the creation of financial market regulations. Furthermore, the findings can contribute to a broader debate about the efficiency of financial markets and the Random Walk theory's validity in an era of increased globalisation and interconnection

Keywords : Random Walk Theory, G20 Countries, Market Efficiency, Stock Prices, Unit Root Tests, Financial Markets, Investor Behaviour.

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1. Introduction :

Predicting or estimating future swings in asset prices has always been the main priority of investors as well as analysts since the advent of regulated securities market activities. However, such efforts were typically found to be fruitless because price swings are largely unpredictable and random. The random walk hypothesis suggests that stock prices and other financial market prices move randomly and are not affected by past events or trends. This idea has been widely studied and debated in the fields of finance and economics. Some researchers have provided evidence to support the random walk hypothesis, while others have found evidence to suggest that prices do follow trends and are not completely random. There are several different models that have been proposed to explain why prices may follow certain patterns. One popular model is the efficient market hypothesis, which suggests that prices always reflect all available information and that it is impossible to consistently earn abnormal profits by trading on this information. Other researchers have suggested that prices may follow a random walk in the short term, but that there may be longer-term trends or patterns that emerge over time. These trends could be the result of factors such as changes in consumer behavior, changes in government policy, or other economic or social factors. Overall, the debate around the random walk hypothesis continues, and there is still much research to be done to fully understand the behavior of financial markets. This research worktries to revisit RWH in the stock markets of G20 countries to determine whether these stock markets are consistent with RWH and whether they can be regarded as efficient, at least in its weak form. The random walk hypothesis had been verified for individual scripts, industry as well as indices by many scholars across the globe, however this is the first study of random walk hypothesis on G20 nations.

2. Literature Review :

Random Walk Hypothesis and testing weak form of efficiency has been of keen interest to several researchers in the past. The studies below examine the extent of literature available on the subject area of interest.

The two indexes of the Dhaka Stock Exchange (DSE) were examined by Ahmed (2019), who found that the DSE is an inefficient market where prices do not fluctuate at random and that, while real-time information about listed businesses is not available, investors must fully rely on previous prices to forecast future prices. It demonstrates the nature of the Dhaka market's inability. It may be able to prognosticate the upcoming trends of firms based on their historical prices in

the short run, but it is not possible in the long run. Akinsomi and Bonga-Bonga (2018) investigated Random walk theory in South African stock Market and found evidence of a random walk but also observed some evidence of long-term dependencies and structural breaks in the market. Bouri et al.(2018) in his study supported random walk in the European stock markets, but also discovered some evidence of market structural breaks and long-term dependency. Ali and Yusoff (2017) found evidence to support the random walk hypothesis in the Malaysian stock market and inferred found some evidence of long-term trends in the market. Diop et al. (2017) supported random walk in the West African regional stock market, but also found some evidence of volatility clustering and long-term dependencies in the market Cheong and Lee (2016) found evidence of a random walk in the Singapore stock market, but also found some evidence of long-term dependencies and volatility clustering in the market.

Sook and Qaiser (2015) found in the stock price series of Malaysian financial enterprises that, while it may be possible in the short run to envisage the upcoming trends of firms based on their last closing prices, it is not possible in the long run. The efficiency standards in Malaysia's financial industry are subpar. These stocks' rates fluctuate erratically.

Gherghina and Stanica (2015) were of the view that Romanian stock markets follow random walk but also found some evidence of short-term momentum effects in the market. Kim and Kang (2014) supported the random walk hypothesis in the Korean stock market, but also found some evidence of longterm trends in the market. Gogas and Papadimitriou (2014) observed random walk in the US stock market, but also found some evidence of long-term trends and volatility clustering in the market.

Kushwah et al. (2013) also looked at the Indian stock markets, which have a poor level of form efficiency. The Indian market is becoming more information-efficient due to numerous changes like modernization, liberalisation, globalisation, and high-level technology. Additionally, they noted that following technical analysis that is based on historical rate trends is no longer useful in India as a result of the stock market's reforms and increased transparency.

Chen et al (2013) proposed random walk in the Japanese stock market, but also found some evidence of long-term trends and volatility clustering in the market.

Nayak (2012) came to the conclusion that the Indian stock market is completely random. He continued by saying that the Indian stock market operates effectively. Since all investors have access to the same clear information, it is impossible to manipulate stock prices of companies listed on Indian stock exchanges. As a result, predicting future stock market rates is independent of current stock prices. He asserts that the Indian stock markets are highly efficient and that investors should trade based on their confidence in the Indian market. He used a runs test to determine whether the random walk was legitimate.

Caspi and Ben-Zion (2012) were of the view that Tel-Aviv Stock Exchange follows random walk hypothesis but also found some evidence of volatility clustering in the market. They suggested that these volatility patterns may be related to factors such as investor sentiment and market news. Chong and Ng (2011) found evidence of a random walk in the Singapore stock market, but also found some evidence of long-term trends and structural breaks in the market. Chong and Liu (2011) also supported random walk in the Australian stock market, but also found some evidence of long-term trends and volatility clustering in the market. Hammoudeh and Aleisa (2010) observed random walk in the Saudi stock market, but also found some evidence of volatility persistence and long-term dependencies in the market. Baum and Karasulu (2009) concluded random walk in the Turkish stock market with some evidence of long-term trends and momentum effects in the market. Kasman and Vardar (2009) inferred a random walk in the Turkish stock market but observed long-term trends and volatility clustering in the market. Kim and Shamsuddin (2006) observed random walk in the Malaysian stock market and gave some evidence of long-term trends and volatility clustering in the market. Kim and Shamsuddin (2005) examined and supported random walk in the Singapore stock market. Lee and Rui (2003) found evidence of a random walk in the Chinese stock market and inferred long term trends. Narayan and Smyth (2002) found evidence of a random walk in the Australian stock market, but also found some evidence of long-term trends and volatility clustering in the market. Bessler and Yang (2001) found evidence of a random walk in the US stock market, but also found some evidence of volatility clustering and long-term dependencies in the market.

These are only a few of the numerous studies that have looked at the random walk theory. Although there is still significant disagreement on the subject, these research opine that there may be some proof that short-term price fluctuations in the financial markets are random.
3. Research Methodology :

3.1. Objectives of the Study :

- To investigate the normality properties of the select indices of G20 countries
- To examine the stationarity of the indices of G20 countries.
- To examine the randomness of the index price movements of G20 countries

3.2. Hypothesis of the Study :

The hypothesis of the study are as follows :

H1 : Stock Markets of G20 countries have Weak Form of Efficiency.

H2 : The historical daily prices of indices follow normal distribution

H02 : Stock price indices are random

H03 : Indices of G20 countries have a unit root and equal variances

3.3. Data and Data Sources :

To achieve the stated objective the study uses data of ten G20 countries. Selection of the G-20 countries is done continent wise. Top 3 G20 countries are selected (based on GDP per Capital) from each of the continents viz America, Europe, Asia and one from African. As per GDP per Capita the researcher has included US, Canada and Mexico from American Continent; Germany, UK and France from Europe; Australia, South Korea and Japan from Asia and South Africa from African Continent. For Data of major stock exchanges of these countries has been used to study randomness. Stock exchanges are chosen on the basis of Market Capitalisation.

Time Period of study chosen is a period of 10 years. The analysis is done for the period 15th June 2013 to 15th June 2023). For the above mentioned period daily closing index values were collected for each of the 10 indices.

Statistical tests are then applied on the series as selected above.

3.4. Methodology:

Initially descriptive statistics were calculated and examined with help of return series. Augmented Dicky-Fuller test has been applied to check series stationarity

		GDP		Index
		per		
Continent	Countries	capita	Major Stock Exchange	
				NYSE U.S. 100
			New York Stock	Index
	United States	76,622	Exchange (NYSE)	
				Canada Stock
American			The Toronto Stock	Market Index
Continent	Canada	55,085	Exchange	(TSX)
				IPC MEXICO
	Mexico	11,161	Mexican Bolsa	(^MXX)
				DAX
			The Frankfurt Stock	PERFORMANCE-
	Germany	48,636	Exchange	INDEX (^GDAXI)
Europe	United			FTSE 100
1	Kingdom	45,775	London stock exchange	
	France	41,000	Euronext Paris	CAC 40
			ASX Australian	ASX200
	Australia	66,049	Securities Exchange	
ASIA	South Korea	34,744	Korea Exchange (KRX)	KOSPI200
			Japan Stock Exchange	NIKKEI 225
	Japan	33,731	(JPX)	
				FTSE/JSE SA All
AFRICAN				Share Index
CONTINENT	South Africa	6,694	JSE Limited	(J203.L)

Table-1 : Continent Wise Details of Selected Countries and their Stock Market Indices

Source : Compiled by the Author.

aspects. Several parametric and non-parametric tests are employed to check the randomness of the series. Amongst the several tests employed are Variance ratio tests and Runs test. Runs test is applied with the help of latest software used for checking presence of unit root.

4. Data Analysis and Interpretation :

Descriptive Statistics and Graphical Presentation:

To accept or reject the null hypothesis of the random walk, the very first step is of checking if the series are well modelled by a normal distribution. For the purpose of determining is the series are normally distributed or not an initial assessment is done graphically by looking at the plots (see figures).



Figure-1 : Graphical Representation of ALSH (South Africa)





Figure-3 : Graphical Representation of ASX 200 (Australia)



Figure-4 : Graphical Representation of FTSE (UK)





Figure-5 : Graphical RepresentationFigure-6 : Graphical Representationof GDAXI (Germany)of KOSPI 200 (South Korea)



Figure-7 : Graphical Representation of NEKKEI 225 (Japan)



Figure-8 : Graphical Representation of MXX (Mexico)







Post that values of skewness, kurtosis and Jarque bera test and its probabilities have been observed. Table-2 illustrates basic statistics for the daily closing prices of indices. The mean daily closing prices is maximum for FTSE/JSE SA All Share Index and minimum for KOSPI200.Skewness values indicate that FTSE/ISE SA ALSH, ASX200, GDAXI, KOSPI200, NEKEEI 225, NYSE, TSX Canada and CAC40 are positively skewed while closing prices of FTSE UK and MXX are negatively skewed. Kurtosis values indicate that KOSPI200 is leptokurtic while all other stock market indices are Platykurtic. The Jargue Bera test indicates that the p values of all indices are less than 0.05 which indicates that none of the indices closing prices are normally distributed.

Testing for Stationarity (Augmented Dickey and Fuller Test (ADF Test):

On each of the ten index series under consideration, ADF Test was performed. The significance of the test statistic is assessed using MacKinnon's critical values and the Schwarz Information Criterion (SBC), which determines the optimal lag duration. Table-3 Shows the results of ADF test:

The results indicate that all the ten indices are non-stationary at level since p values are greater than 0.05 and are stationary at first difference as p values are less than 0.05 in all the cases. Thus all series are I (1). The unit root null

								NEKKEI		TSX_CAN
	ALSH	ASX200	CAC_40	FTSE_UK	GDAXI	KOSPI200	MEXICO	_225	NYSE	ADA
									10297	
MEAN	57028.93	6085.091	5297.648	6947.017	12075.11	296.0479	45684.58	21540.51	.57	16287.75
									10086	
MEDIAN	54718.8	5916.3	5167.92	7018.6	12165.19	280.69	45250.34	21252.72	.36	15617.3
									14689	
MAXIMUM	80791.36	7628.9	7577	8014.31	16310.79	440.4	56609.54	33706.08	.62	22087.2
									6894.	
MINIMUM	37963.01	4546	3595.63	4993.89	7692.45	199.28	32964.22	12834.01	22	11228.5
									2061.	
STD. DEV.	8923.85	753.478	896.1433	529.5194	2038.959	52.19396	4476.931	4675.5	672	2453.679
									0.439	
SKEWNESS	0.770919	0.37838	0.600945	-0.494999	0.157768	1.108847	-0.0557	0.223857	349	0.643735
									1.990	
KURTOSIS	2.958301	1.922634	2.495829	2.66533	2.242953	3.483368	2.607028	2.040045	248	2.445487
JARQUE-									187.9	
BERA	257.8247	182.8019	181.1979	117.5372	70.99615	525.4846	17.46933	114.2998	055	205.4307
PROBABILI									0.000	
TY	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0	0.0000
OBSERVAT										
IONS	2601	2531	2560	2583	2533	2448	2513	2445	2517	2509

Table-2 : Descriptive Statistics

Source : Compiled by the Author.

hypothesis has been rejected in favour of the stationary alternative in each case at first difference.

Testing for Randomness/Serial Correlation (Runs Test) - Non Parametric Test

The study's descriptive statistics for the chosen index returns demonstrate that the return series exhibit significant jarque-berra statistics, clearly demonstrating that they do not follow a normal distribution. As a result, using a non-parametric run test has additional significance. Run test has been employed in addition to examine the randomness of the observation and to determine whether the series followed a trend.

A data sequence that runs in a certain direction is known as a run. The results of run test have been incorporated in Table-4 as follows :

		level form			At first di			
				Critical			Critical	
		Test	P value	value	Test		value	Decisi
Indices	Criteria	statistics	level	(5%)	statistics	P value	(5%)	on
	With	1 000 450	0.6400	0.0605	-	0.0000	0.0605	T/1)
	intercept	-1.280452	0.6408	-2.8625	15.6439	0.0000	-2.8625	I(1)
	With intercept							
	and trend	-3.823057	0.0155	3.41161	15.6405	0.0000	3.41161	I(1)
		-5.825057	0.0155	-	- 15.0405	0.0000	-	1(1)
R(nyse)	None	0.856225	0.8948	1.94095	15.6024	0.0000	1.94095	I(1)
	With				-			
	intercept	-1.779814	0.3909	-2.8625	15.1646	0.0000	-2.8625	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.38435	0.0537	3.41161	15.1619	0.0000	3.41161	I(1)
R(s&p/ts	Nama	0 (84020	0.9626	-	-	0.0000	-	I(1)
x)	None With	0.684939	0.8636	1.94095	15.1345	0.0000	1.94095	I(1)
	intercept	-2.138785	0.2295	2.86249	47.4273	0.0001	2.86249	I(1)
	With	-2.150705	0.2275	2.00247	77.7273	0.0001	2.00247	1(1)
	intercept				-			
	and trend	-2.540828	0.3082	-3.4116	47.4191	0.0000	-3.4116	I(1)
				-	-		-	
R(mxx)	None	0.50646	0.8249	1.94095	47.4271	0.0001	1.94095	I(1)
	With			-	-		-	
	intercept	-1.718266	0.4219	2.86248	51.1503	0.0001	2.86249	I(1)
	With intercept							
	and trend	-3.553827	0.0341	3.41159	51.1404	0.0000	3.41159	I(1)
	and trend	-5.555627	0.0341	-		0.0000	-	1(1)
R(dax)	None	0.782619	0.8821	1.94095	51.1361	0.0001	1.94095	I(1)
	With			-	-		-	
	intercept	-1.411179	0.5783	2.86247	50.9345	0.0001	2.86247	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.286176	0.0687	3.41157	50.9263	0.0000	3.41157	I(1)
R(cac 40)	None	0.853709	0.8944	- 1.94095	- 50.9192	0.0001	- 1.94095	I(1)
R(cac 40)	With	0.033709	0.0744	1.74093		0.0001	1.74093	1(1)
	intercept	-1.381361	0.5929	2.86253	49.4499	0.0001	2.86253	I(1)
	With							
	intercept			-	-		-	
	and trend	-2.009286	0.5954	3.41165	49.4399	0.0000	3.41166	I(1)
				-	-		-	
R(kospi)	None	0.343659	0.7843	1.94095	49.4525	0.0001	1.94095	I(1)

Table-3 : ADF Test

	With			-			-	
	intercept	-3.088639	0.0275	2.86246	-51.082	0.0001	2.86246	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.390106	0.0529	3.41155	51.0722	0.0000	3.41155	I(1)
R(ftse				-			-	
100)	None	0.158864	0.7322	1.94095	-51.089	0.0001	1.94095	I(1)
	With			-	-		-	
	intercept	-1.803014	0.3794	2.86248	55.0274	0.0001	2.86248	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.531806	0.0362	3.41159	55.0166	0.0000	3.41159	I(1)
R(asx200				-			-	
)	None	0.702175	0.867	1.94095	-55.021	0.0001	1.94095	I(1)
	With			-	-		-	
	intercept	-0.84855	0.8045	2.86253	49.8066	0.0001	2.86254	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.396927	0.052	3.41166	49.8015	0.0000	3.41168	I(1)
				-	-		-	
R(n225)	None	1.361157	0.9569	1.94095	49.7688	0.0001	1.94096	I(1)
	With			-	-		-	
	intercept	-1.41579	0.576	2.86245	50.3503	0.0001	2.86245	I(1)
	With							
	intercept			-	-		-	
	and trend	-3.210114	0.0826	3.41154	50.3423	0.0000	3.41154	I(1)
R(jsesaal				-	-		-	
sh)	None	0.993654	0.9159	1.94095	50.3322	0.0001	1.94095	I(1)

Source : Compiled by the Author.

Table-4 : Runs Test

	TSX CANAD A	NYSE	MXX MEXIC O	GDAX I	FTSE UK	CAC 40	ASX2 00	KOSPI 200	NEKKE I 225	ALSH
Test value ^a	16287.75	10297.57	45684.58	12075.11	6947.017	5297.65	6085.09	296.05	21540.51	57028.93
Cases < test value	1559	1368	1356	1219	1197	1419	1476	1435	1293	1617
Cases >= test value	950	1149	1157	1314	1386	1141	1055	1013	1152	984
Total cases	2509	2517	2513	2533	2583	2560	2531	2448	2445	2601
Number of runs	58	46	58	52	50	46	32	30	46	54
Z	-47.682	-48.372	-47.851	-48.309	-48.894	-48.806	-49.052	-48.280	-47.631	-48.801
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

A. Mean

Source : Compiled by the Author.

The table clearly shows that the number of runs are 58 for TSX Canada and MXX Mexico, 54 for ALSH, 52 for GDAXI, 50 for FTSE UK, 46 for NYSE and CAC 40, 32 for ASX 200 and 30 for KOSPI 200. Analysis shows that returns of all the ten indices are significant as p value is 0.000 which is less than 0.05 and hence are not random at all.

Testing for Equal Variances (Variance Test Ratio)

Variance ratio test is one of the widely used test for the claim that a time series follows a random walk or a martingale difference sequence. Variance ratio test has been applied on all the index series and results of individual and joint tests are shown in the table-5 and 6 respectively.

Chow |Z| denning statistic is 1.748368, 0.68947, 2.116152, 0.7436 and 2.023245 for NYSE, S&P/TSX, MXX, GDAXI and ASX 200 respectively which is associated with period two while the statistic for CAC 40 is 0.330439 for period 8, 0.631872 for KOSPI for period 4 and 0.433417, 0.678156 and 0.775705 for FTSE 100, Nekkei 225 and JSE SA ALSH respectively for a period 16. P>5% in all cases which implies series are a martingale and not random walk.

5. Conclusion :

The research study was undertaken to examine randomness and weak form of efficiency in the stock markets of G20 countries. Several tests were employed to check the validity of Random Walk hypothesis. Normality, randomness stationarity and equality of variances were checked on the basis of Jarque Bera test, ADF test, Runs test and Variance ratio tests. The tests are indicative of the fact that the series were not normally distributed and were integrated at the order one i.e.. were found to be stationary at first difference and not at level data. Further Runs test and Variance ratio tests indicate that the series are not random and do follow a trend

The current work contributes to the body of literature by using unit root testing on G20 countries data and by taking heteroscedasticity into account for testing form of efficiency or random walk. The results are more crucial due to the fact that it has taken into account a period of a decade which is substantial enough to cover all sorts of reforms and changes in the economies and it is covering to G20 countries where as other studies have included Asian countries or BRIC countries to name a few.

			STD		Probability
Indices	Lags (q)	VR(q)	ERROR	Z Statistic	value
	2	0.90078	0.05675	-1.74837	0.0804
	4	0.921172	0.107123	-0.73587	0.4618
	8	0.88235	0.163846	-0.71805	0.4727
R(NYSE)	16	0.864923	0.231664	-0.58307	0.5598
	2	0.953303	0.067729	-0.68947	0.4905
	4	1.014519	0.127281	0.114071	0.9092
	8	1.068362	0.199879	0.342018	0.7323
R(S&P/TSX)	16	1.117006	0.278761	0.419737	0.6747
	2	1.054924	0.025955	2.116152	0.0343
	4	1.035252	0.049009	0.719291	0.472
	8	0.978803	0.078232	-0.27095	0.7864
R(MXX)	16	0.957248	0.114328	-0.37394	0.7084
	2	0.981056	0.025476	-0.7436	0.4571
	4	0.998583	0.050625	-0.02798	0.9777
	8	1.015175	0.085798	0.17687	0.8596
R(DAX)	16	1.01149	0.129367	0.088819	0.9292
	2	0.992438	0.028653	-0.26391	0.7918
	4	1.010417	0.056112	0.185654	0.8527
	8	1.031193	0.094398	0.330439	0.7411
R(CAC 40)	16	1.014548	0.139949	0.103952	0.9172
	2	0.997844	0.035272	-0.06113	0.9513
	4	1.040112	0.063482	0.631872	0.5275
	8	1.027486	0.096013	0.286278	0.7747
R(KOSPI)	16	1.054416	0.136855	0.397615	0.6909

Table-5 : Variance Ratio Test (Individual)

(Contd...)

	2	0.99486	0.031615	-0.1626	0.8708
	4	0.984639	0.05921	-0.25944	0.7953
	8	0.967006	0.097169	-0.33955	0.7342
R(FTSE 100)	16	0.937873	0.143342	-0.43342	0.6647
	2	0.909902	0.044531	-2.02325	0.043
	4	0.9267	0.085895	-0.85338	0.3935
	8	0.949915	0.134304	-0.37292	0.7092
R(ASX200)	16	1.028439	0.191073	0.148839	0.8817
	2	0.987699	0.029377	-0.41873	0.6754
	4	1.011882	0.052468	0.226455	0.8208
	8	0.986544	0.07888	-0.17059	0.8645
R(N225)	16	0.922803	0.113833	-0.67816	0.4977
	2	1.012613	0.025672	0.4913	0.6232
	4	0.998242	0.053311	-0.03297	0.9737
R(JSE SA	8	0.950347	0.087432	-0.56791	0.5701
ALSH)	16	0.899333	0.129775	-0.77571	0.4379
			1		

Source : Compiled by the Author.

Table-6 : Variance Ratio Test (Joint)

Joint Tests								
Indices	Max z	Value	Df	Probability				
R(NYSE)	Max z (at period 2)*	1.748368	2515	0.2849				
R(S&P/TSX)	Max z (at period 2)*	0.68947	2508	0.9326				
R(MXX)	Max z (at period 2)*	2.116152	2511	0.1304				
R(DAX)	Max z (at period 2)*	0.7436	2527	0.9131				
R(CAC 40)	Max z (at period 8)*	0.330439	2557	0.9955				
R(KOSPI)	Max z (at period 4)*	0.631872	2437	0.9501				
R(FTSE 100)	Max z (at period 16)*	0.433417	2582	0.9874				
R(ASX200)	Max z (at period 2)*	2.023245	2530	0.1614				
R(N225)	Max z (at period 16)*	0.678156	2426	0.9363				
R(JSE SA ALSH)	Max z (at period 16)*	0.775705	2600	0.9002				

Source : Compiled by the Author.

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