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# BIITM BUSINESS REVIEW

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The BIITM Business Review provides an academic forum for encouragement, compilation and dissemination of research on various aspects of management and business practices. It includes original empirical research as well as theoretical and conceptual works related to the field of management. It also publishes case studies, critical evaluation of existing business models and theories, and reviews of the latest books relevant to the corporate world.

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## Executive Director's Message

As said by Malcom X, *“Education is the passport to the future, for tomorrow belongs to those who prepare for it today”*.

It is a matter of great pride to mention that BIITM has been able to carve a niche for itself in management education and is consistently able to develop globally competitive managers in keeping with the demands of the dynamic industry environment. Research plays a key factor in enhancement of this learning. At BIITM we are fortunate to have with us students who are keen to explore further, beyond the walls of their classrooms and textbooks, and faculties who encourage this effort.

In keeping with this effort, BIITM has been publishing its own Research Journal, BIITM Business Review (A Journal of Management Studies) to create an environment in which students and the faculty can explore and advance the limits of knowledge. Addressed to management practitioners, researchers and academics, BIITM Business Review aims to engage rigorously with practices, concepts and ideas in the field of management with the emphasis on providing managerial insights. The articles and papers published in this journal attempt to create a ripple effect in the field of management and empirically create a difference by equipping managers to make better decisions in their professional lives.




**Mr. P. Balabantaray**  
**Executive Director**

## Principal's Message

I am happy to present to you the *Vol-13, No.1, 2022* issue of the BIITM Business Review. The journal is a blind peer-reviewed bi-annual journal, which aims to promote and disseminate research in different domains of management. The journal is presenting a new frontier of knowledge, realizing the institute's goal of creating intellectual capital. The journal of BIITM sensitizes academia and corporate globally, to high quality, original articles and of latest publications. I take this opportunity to thank the esteemed members newly constituted advisory board for being a part of our family.

I firmly believe that the current issue *Vol-13, No.1, 2022* will be a reader's delight. It encompasses 7 research articles covering a wide range of topics from empirically researched finance articles to conceptual review articles on facility management.

I thank all the reviewers, authors and readers for their patronage over the years and look forward to their continued support in taking the journal to greater heights.



**Prof.(Dr.) M.R Nayak**  
**Principal**

## From the Chief Editor's Desk

It is with a sense of great delight that I am presenting to you the current issue of BIITM Business Review. The response from the authors and readers has been overwhelming. With each issue of the journal, we bring to you, the latest and authoritative insights into the dynamic and fascinating world of business.

We have accepted seven research articles on diverse interest area like banking, finance, stock market, digital marketing, public governance and facility management.

I place on record my gratitude to the eminent scholars and authors for their valuable contribution to the quality of our research journal, BIITM Business Review.

Many experts devoted their time and talent in reviewing the papers, by making critical comments and suggestions for improving their quality. I am deeply indebted to all of them.

I owe a word of special thanks to our Chief Patron Mr P.K.Balbantray, Executive Director, BIITM, Prof.(Er.) P.R.Pattanaik, Academic Advisor, BIITM and Patron, Prof(Dr)M.R.Nayak. for their support to this academic endeavor, intended to promote, preserve and disseminate business research.



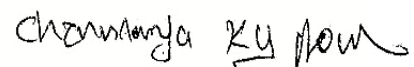
**Dr Dhananjay Beura**  
**Chief Editor**  
**BIITM Business Review**

## Editor's Message

BIITM Business Review is a peer-review journal committed to publishing high quality and influential research to provide in-depth understanding of Management and Organizational issues. BBR invites novel contributions that are empirical in nature or conceptual papers that extend our understanding of existing theory.

I am glad to inform you that very high quality articles are going to publish in this issue. All our intellects have investigated their valuable time and come with qualitative research articles. Prof. Dhanajay Beura, Prof. Gobinda Chandra Panda, Prof. Amiya Ranjan Das, Prof. Shahni Singh, Prof. Naveen, Prof. Tapaswini Nayak and Prof. Tapasi Mohanty have contributed research articles to this issue which is having broad coverage of marketing, IT, Finance, banking, entrepreneurship and stock market area as well.

I hope BIITM Business Review will increase its quality and continue to provide high quality research work in subsequent issues.



**Dr. Chinmaya Kumar Rout**  
**Editor**  
**BIITM Business Review**

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## KPI for sustainable facilities Management – A conceptual framework

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**Abstract:** This paper aims at systematising academic literature on various performance measurement criteria in facility management services. This review paper will establish the academic as well conceptual research framework in the field of facility management along with key performance indicators (KPIs) in facility management services. Findings reflect the need for effective KPIs in facility management as FM practice in India is still immature, unlike developed facility management markets. In this research it was also found that priorities of facility management organisation and their customers vary in sustainable management. There is a need for tangible value added performance criteria in measuring and managing facility management services. This paper therefore creates a conceptual framework to develop KPIs for sustainable facility management services.

Keywords: Sustainable Facility management, KPI, Facility management priorities

### Introduction

Over the years, several definitions for FM have been proposed at an international level. According to the International Facility Management Association (International Facility Management Association, 2012), for example, FM is “the practice of coordinating the physical workplace with the people and work of an organisation; (it) integrates the principles of business administration, architecture, and the behavioural and engineering sciences”. More recently, the British Institute of Facilities Management (BIFM, 2010) defines FM as “the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities”. Despite the continuing debate about the FM definition in which academia plays a pivotal role, what is interesting to point out is the approach that is used for understanding this topic.



Nowadays, both academics and practitioners seem to converge on the fact that the contribution of FM to the organization is, indeed, wider (e.g., Heng et al., 2005; Alexander and Price, 2012). It is true that FM indeed aims to minimize running costs and maximize usable space, but it is also true that it has to support and enhance both the core and non-core activities in an organisation and therefore, it needs to be recognized at boardroom level (Tranfield and Akhlaghi, 1995; Noor and Pitt, 2009; Barrett and Finch, 2014). According to Noor and Pitt (2009, pp.214–215), for example, FM “shapes the business, not just supports the business”. Thus, a strategic approach to FM should be introduced (Tucker and Pitt, 2009).

Sustainability is seen as a far-reaching issue now, and one which the facilities management [FM] profession cannot overlook (Wood B, 2006). In a 2007 IFMA report, sustainability was identified as one of the key areas FM professionals need to develop their competencies in order to face the demands, challenges and opportunities of sustainable development and practices (Elmualim, A., R. Valle, and W. Kwawu, 2012). With the increasing relevance of FM toward business success, the FM function has transformed from just a cost cutting option to a strategic link between organization’s core business and support services. Facilities management professionals are seen as being “at the forefront of organizational behavior change and in a position to influence individuals working in business; government departments and public services” (Elmualim, A., et al.,2010). The concept of sustainable facilities management [SFM] has gained relevance recently in an attempt to integrate FM functions with sustainability. The facilities management profession is presented with this need in two perspectives. One, because of the negative impact of existing buildings over the environment (Organization for Economic Cooperation and Development (OECD),2003), and on the other hand, the increasing demand for technical knowledge required of facilities managers to understand the complexities of intelligent buildings and their operation (Baharum, M.R. and M. Pitt, 2009).

This creates a new perspective to facilities performance measurement and management. Through the review of existing literature, this paper explores current sustainable facilities management [SFM] knowledge and practice with specific focus on performance, as part of a research toward proposing a sustainable FM framework for sustainable healthcare waste management in India. The paper provides an outlook on the state of sustainable facilities

management knowledge and practice as well as the current state of FM practice in India. The paper also elevates the importance of FM performance management in SFM context taking into account the peculiar position of the facilities management.

## **Trends and behavior of Facility Management in India**

Significant growth within the real estate sector on account of shifting preferences towards a safe, clean, and secure surroundings represents one among the first factors bolstering the market growth in India. Additionally, the rising conception of inexperienced Building, alongside the enactment of the important Estate (Regulation and Development) Act (RERA) 2016, that protects home consumers and helps boost the real estate sector, is stimulating market growth. With the booming info technology (IT) sector and also the growing quality of e-commerce platforms, the general need for infrastructure and arranged areas is increasing, which is additionally influencing the market positively. Aside from this, many corporations are utilizing AI and IoT technologies to modify FM services for energy potency audits. Moreover, the govts of some Asian nations have launched the sensible Cities Mission to push property and comprehensive cities. This has resulted in increasing investments within the infrastructure sector, that has additionally created a desire for skilled FM services. Furthermore, the post-pandemic rising stress on hybrid workspaces and return-to-the-workplace ways is anticipated to enhance the demand for FM services to take care of safety, health, and productivity in the country.

The Indian facility management (FM) services market is in its early growth stage and is evolving rapidly, fuelled mainly by the high pace of growth in the construction sector. Increased awareness levels among different vertical markets are expected to take this market to a mature growth phase in its life cycle. But, in terms of market maturity and understanding and accepting of such services by end users, India has a long way to go (Sharma et al. 2016)

## **Concept of sustainable facility management**

It is fundamental to recognize sustainable FM practice as a key component for enhancing organizational competitiveness. The recognition of facilities management embracing sustainable practice can be found in the 2007 IFMA report “Exploring the Current Trends

and Future Outlook for Facility Management Professionals”, which identified sustainability as one of the key issues facing FM professionals in this present day. According to the report, rapid development, especially in Asia, largely accounts for environmental resource depletion, pushing for FM professionals to develop competencies in areas of sustainable development and practices (International Facility Management Association (IFMA), 2007). The report emphasized the need for facilities managers to retain the ability to make a “business case for sustainability” through identifying and developing initiatives to reduce energy consumption, reduce waste, understand the nature of high-performance buildings as well as becoming conversant with high-performance building ratings tools, and to closely work with end users to maximize these initiatives. Similarly, Meng,(2014) makes a strong case for integrating all sustainability considerations, linking strategic level with operational level, incorporating FM knowledge and experience into design, disseminating sustainable knowledge and educating people, encouraging sustainability through innovation as crucial roles facilities managers could play in sustainable FM practice. The general idea of sustainable facilities management [SFM] is to incorporate sustainability practices into the operations and implementation of facilities management functions. Sustainable facilities management integrates FM and sustainability (Meng, X., 2014). According to Tucker (2013), sustainable FM is all about “being able to manage, implement and deliver an organisation’s non-core business services that contribute to the improvement of the economic, social and physical environment, and, in turn, to the greater environmental sustainability on an organisation’s core business objectives”. The potential of FM contributing to achieving sustainability goals within organizations have been acknowledged and investigated (Elmualim, A., R. Valle, and W. Kwawu 2012; Price, S., M. Pitt, and M. Tucker, 2011; Shah, S.S., 2007; Ikediashi, D.I., S.O. Ogunlana, and A.O. Ujene, 2014 ). FM has been firmly established now as an integrated function that operates, manages, and improves buildings and infrastructure of organizations in order to create an environment that enables core business to thrive (Nutt, 2004). Added to this is the unique position of FM as a business support pillar.

## **Performance measurement for sustainable facilities management implementation**

Recently, performance measurement has become a very popular topic discussed and researched in many fields (Amaratunga, R. D. G., 2001). Amaratunga & Baldry (2001) describe performance measurement as a “process of assessing progress towards achieving pre-determined goals, including information on the efficiency by which resources are transformed into goods and services, the quality of these outputs and outcomes, and the effectiveness of organisational objectives”. The basic foundations of performance measurement as noted by Sapri & Pitt (2005) are quantifications of elements and processes, which have an impact on organizational objectives, management control and evaluation. Parker (2000) notes that, organizations measure performance for the following reasons:

- To identify success
- To identify whether they are meeting customer requirements: unless they measure, how do they know that they are providing the services/products that their customers require?
- To help them understand their processes: to confirm what they know and reveal what they do not know
- To identify where problems, bottlenecks, waste, etc., exist and where improvements are necessary in order to ensure that decisions are based on fact, not on supposition, emotion or belief or intuition

Many authors and researchers have created some of overall performance size frameworks that try to include each tangible and intangible measures, maximum notably, the Balanced Scorecard [BSC] with the aid of using Kaplan and Norton in 1992. Major centers overall performance size practices encompass benchmarking, a balanced scorecard approach, put up occupancy evaluation, and size through metrics of key overall performance indicators [KPIs] (Lavy, S., J.A. Garcia, and M.K. Dixit, 2010).



## **Problem statement background: literature review and common perceptions**

In the FM literature, the performance measurement models appear to be a relatively new topic of investigation. However, in recent years the interest towards this issue has increased remarkably and today scholars are stressing how important performance measurement of FM activities is for the business success. In this vein, data show that after salary and wages, expenditures for facility and real estate represent, to date, the largest part of the operating expenses for a company; Thus, any improvement in FM effectiveness should lead to a significant cost saving for the organisation.

Despite its rapid development in the last decade, the definition and scope of FM remains a contentious issue. An evaluation of definitions of FM provided in the past suggests that the focus of FM is clearly on the workplace. The key issues confronting FM are the location, type, quantity, and quality. To enhance the professionalism of FM, it is argued that there must first be a consensus on the role and scope of FM in the industry and firms. Despite the considerable achievements of the last few years, the field of FM remains at a very early stage of development in which:

- ❖ It operates in an ever widening and ill-defined sphere of activity;
- ❖ The claims that it makes for itself are mainly untested;
- ❖ It has few secure methods of its own to underpin good practice experience;
- ❖ It is not yet supported by an adequate knowledge base;
- ❖ It has yet to make its own distinctive contribution to the management discipline;
- ❖ Its development to date has been unsupported by practical theory;
- ❖ It is grossly under-researched (Nutt 1999).

Cable and Davis (2004) argue that the identification of KPIs and the execution of performance measurement of a portfolio of buildings focuses on assessment of overall performance toward an organization's mission. Furthermore, performance measurement addresses issues related to the buildings or facilities owned, their current condition, additional facilities required for achieving organizational goals, issues to be addressed, and

the results of investment or no-investment decisions. Thus the purpose of performance measurement is to comprehend the impact of management decision-making on success and failure of the portfolio and to suggest possible improvements (Cable and Davis, 2004). Barret and Baldry (2003) assert: When the facility management unit lacks reliable and comparable data on building performance and costs, its ability to make its most basic decisions is impaired, as well as its ability to make a convincing case for its recommendations.

Amaratunga et al. (2000a) and Brackertz (2006) indicate that performance relates not only to the functional quality of the building, but also to the contribution made by the building in achieving the organization's goals. Hence, buildings do support organizations in meeting their long-term business and other goals. Cotts and Lee (1992) note that for making sound management decisions, facility managers need to evaluate buildings in a detailed manner. The assessment of buildings could be possible in the form of a total performance assessment that considers the architectural and engineering aspects or a predictive assessment that relates buildings to organizations by diagnosing performance failures (Cotts and Lee, 1992). Varcoe (1996) emphasizes the importance of facility performance measurement in order to evaluate strategies in terms of results and to enable management teams to identify crucial issues affecting the organization, as well as issues pertaining to specific operations.

Researchers have put forth intensive efforts to determine appropriate and relevant KPIs that represent performance in a comprehensive manner. Cable and Davis (2004) state that a set of KPIs must be identified and tracked over a period of time so that it can be compared against a baseline in order to examine improvement or deterioration. Amaratunga et al. (2000a) and Brackertz (2006) argue that, unlike past performance measurement, which focused primarily upon financial issues, current measurement practices must emphasize aspects like business, business goals, and job satisfaction. The popular metrics like those relating to financial and space aspects express the level of performance of the building but do not indicate the contribution made to the organization's strategic results (Brackertz, 2006).

Using a survey, Hinks (2004) found that respondents rank KPIs related to a business perspective quite differently than those associated with facility management. Furthermore, the author refers to the Facility Management Association Ideaction 2001 Conference in

Melbourne, Australia, where participants ranked three top performance indicators from both business and facility management perspectives. The responses revealed a clear difference between the two and indicated that the customer satisfaction indicator was ranked among the top three in both categories. However, Kincaid (1994) places stress on operating costs and eventual reinvestment in the facility. Although he identified 31 elements of a building that should be inspected, he suggested assessing building performance by selecting six elements (conditioning, floor finishes, external facade, roof, electrical services and lights, and ceiling) that typically account for two-thirds of the total expenditure.

Critical success factors (CSFs) are also used to assess performance of an organization. Boynton and Zmud (1984) state that CSFs involve factors that relate to the most vital issues of an organization – its operation and future success. Moreover, these factors reflect areas that need to be taken care of for managerial or organizational success (Boynton and Zmud, 1984; Leidecker and Bruno, 1984). Boynton and Zmud (1984) argue that in spite of a few weaknesses (e.g. difficulty, validity, and applicability,) the CSF method is easily understood and supported by senior management. CSFs incorporate issues that to some extent govern the success and failure of an organization and thus are vital for the assessment of that organization (Chua et al., 1999; Grunert and Ellegaard, 1992; Leidecker and Bruno, 1984; Belassi and Tukul, 1996). Chua et al. (1999) state that the CSFs can be identified by obtaining expert opinions in two ways: first, by asking respondents to list and rank indicators that are critical to the success of an organization; and second, by providing a list of factors and soliciting experts' opinions about their ranking. Grunert and Ellegaard (1992), citing Rockart (1979), explains that CSFs could be ascertained by soliciting managers' opinions on a list of indicators.

Ho et al. (2000) state that performance metrics represent indicators of performance that can be used for a genuine comparison within and between organizations. Performance metrics provide an essential common platform for comparison, based on which improvements can be sought for any individual indicator. Deru and Torcellini (2005) explain that relevant, clear, compatible, and authentic performance metrics facilitate the understanding of driving forces of a building's performance, assist designers in creating efficient facilities, and support owners in operating buildings in an efficient manner, as well as help management and

decision-makers take necessary steps and track performance. Spendolini (1992) states that selecting proper factors that significantly influence the organization's performance is vital for the evaluation methods, e.g., benchmarking.

Amaratunga and Baldry (2003) categorized the KPIs according to four basic principles: customer relations, FM internal processes, learning and growth, and financial implications. Augenbroe and Park (2005) divided the indicators into four other categories: energy, lighting, thermal comfort, and maintenance. Hinks and McNay (2005) classified a long list of 172 KPIs under eight categories: business benefits, equipment, space, environment, change, maintenance/services, consultancy, and general. One need identified by Douglas (1996) is for a proper categorization of KPIs so that they represent broader applicability and potential use. Such a list would cater to facility management professionals interested in holistic performance evaluation, as well as assessment of a specific aspect of the facility. For example, facility management professionals interested in short-term financial appraisals would not find long-term functional or system replacement indicators useful. Studies have developed and built lists of large numbers of indicators, but certain ones are not usable because of the way they are categorized. Thus, categorization must provide facility management professionals the opportunity to select the performance indicators in which they are most interested (Douglas, 1996; Ho et al., 2000; Gumbus, 2005).

### LIST OF ARTICLES USED AS A FRAMEWORK

Authors	Main Subjects
Neely <i>et al</i> , 1995	Setting a Research Agenda on PM. Defining PM. Performance measurement systems. Individual performance measures
Amaratunga <i>et al</i> , 2000	Facility management performance assessment. Definition and development of the term facility management. Timeline of the changing assessment of FM performance.
Kincaid, 2000	Sketching a basis of PM IN FM. Necessity of adequate PM, Benchmarking of operational performance FM.



Amartunga and Baldry ,2002	The movement from PM to performance to performance management. Characteristics of PM . Performance management in FM.
Chotipanich, 2004	Characteristics of PM ,Organizational alignment to PM,proposal of a basic framework to position FM.
Pitt and Tucker, 2008	Linkage between innovation processes and FM. Summary of collected knowledge on PM in FM.Evolution of PM in FM
Lavyet <i>al</i> , 2010	Historical development of FM, the need and drivers of FM and PM .Wgat and how to measure in PM.
Rorantanaphong and Van der Voordt, 2015	Facility's added valve to organizational performance, Innovative workplace design. Impact of workplace change on organizational performance.
Sharma <i>et al</i> , 2016	Employee perception of performance management systems.The link between appraisal and PM

### Research objectives

This study aims to provide the facility management industry with a concise and categorized set of performance indicators that holistically represent performance measurement and exhibit applicability to a broader range of buildings and facilities. The emphasis is on identifying key indicators that express wider aspects of a facility's performance and on categorization that is representative of the facility management industry's demands. This part of the study aims to establish performance metrics that cover performance indicators as developed in previous studies. This paper aims to achieve the research objective by:

- ❖ searching current literature on performance measurement metrics and KPIs and to identify indicators which are significant in performance measurement;
- ❖ Establishing a list of performance indicators that form the performance measurement metrics;
- ❖ Classifying these KPIs into major categories based on their objective and what they represent.

## Research methods

A comprehensive literature review was used as research methodology for this research paper. Literature review was carried out on a broader perspective with the purpose of being familiar with the subject areas of the research study while holding the focus on research problem. The background study journal articles, online journals, e-books, web sites, electronic library database and other publications. KPIs for measuring performance of FM services in hotel sector were developed at the end by bringing in literal arguments.

The research method adopted is parallel to the concept of discovery through literature proposed by Swanson (1986), which emphasizes the creation of new knowledge by referring to bibliographic information available in the form of peer-reviewed papers, conference proceedings, and other valid forms of literature. This approach is gaining wider acceptance and being used in a large number of research studies (e.g., Kostoff et al., 2006; Srinivasan, 2004; Weeber et al., 2001).

Data were collected through an extensive literature search that included published books, articles in peer-reviewed journals and conference proceedings, assessment reports of federal facilities, benchmarking surveys, and presentations on performance measurements. Each paper was studied in terms of what performance indicators it offered, and how these indicators are related to the performance assessment methods (e.g., Balanced Scorecard) mentioned in the paper. The initial list of KPIs was collected and sorted into one of three major categories: maintenance, energy, or others. Applying this sorting mechanism, it was found that most indicators were put into the maintenance category. Douglas (1996) discusses sorting cost-related and non-cost-related KPIs, which led the authors to put all cost-related indicators under a separate category called “financial.” Further analysis of the KPIs revealed that some indicators represent operational performance of a facility or organization; these were then regrouped under either “functional” or “physical,” based on their scope and intent. Those KPIs found to be unquantifiable or based on subjective opinions were grouped as “survey-based” KPIs. Table I demonstrates major research studies performed to derive and categorize KPIs, and reveals that most of the categories adopted by these studies fall under

one or more of the four categories proposed in this paper. Therefore, the list of KPIs was arranged under the following four categories:

1. financial indicators, which relate to costs and expenditures associated with operation and maintenance, energy, building functions, real estate, plant, etc.;
2. physical indicators, which are associated with the physical shape and conditions of the facility, buildings, systems, and components;
3. functional indicators, which are related to the way the facility and the buildings function and which express building appropriateness through space adequacy, parking, etc.; and
4. survey-based indicators, which are based solely on respondents' opinion to surveys that are primarily qualitative in nature.

Results are presented in a tabulated form where indicators are named, described, and their respective units and sources after information are also given. A total of 35 major indicators are identified by this study of compiling the set of KPIs. It should be stressed that other indicators developed by some researchers and presented in the literature are legitimate for use in cases where needed. The list of indicators presented in this paper represents the views and perceptions of the authors as well as the industry representatives who were consulted for the purpose of this study. The industry representatives' opinions were obtained by administering a brief survey to eleven facility management professionals who are involved in facility management services and consultancy. These industry representatives were asked the following two questions:

1. Do you agree or not agree with the proposed categorization of KPIs? If not, please suggest how you would pursue this issue.
2. Do you agree or not agree that proper facility performance metrics categorization would help in facilities management? If yes, how it can enhance the quality of performance-based facility management decisions? Seven out of eleven respondents replied, constituting a response rate of 63.6 percent, and their responses are summarized in the next section. These professionals work for built facilities in the realm of K-12 education, higher education, healthcare, office buildings, federal organizations, and oil industry.

## Findings

The study identified the following major indicators of performance assessment in four major categories. Following is the tabulated description of each indicator along with its description, units of measurement, and source of information. Key indicators are arranged in the tables from general indicators to the most specific indicators in respective categories. Such categorization permits the analysis of impacts of one indicator on one or more other indicators. Presented this way, their interrelationships can be better understood.

Table 2 summarizes the facility management professionals' responses to the short survey. All of the professionals surveyed agree on the proposed categorization, with some comments made about the need for a fourth category (survey-based), asserting that indicators mentioned in this category could fall in the other three categories (financial, physical and functional). Six out of the seven respondents said that proper categorization of KPIs would help facility managers do their job better.

### Establishment of KPIs

Sources	Financial	Functional	Catagories	Survey Based
Amartunga&Baldry(2003)	Financial Implications	FM internal Process		Customers Relations
Gumbus(2005)	Financial Implications	Growth Operational		Customers Relations
Hinks and McNay(1999)	Business Benefits	Learning and Growth Space	Maintenance and Service	Environme nt
Ho Et al(1999)		Equipment Change consultancy safety and security Size and use of Facility	Ground and environment Energy consumption	General



Augenbre and Park(2005)			Cleaning, Maintenance, Parking, Refurbishments, Energy	Thermal comfort
Massheder and Finch(1998)	Business Benefits	Acquisition	Building Performance	

### Discussion and conclusions

The list of indicators presented above does not represent the entire list of performance indicators developed and discussed in the literature, as there are a large number of indicators being used in facility performance evaluation. Some of the metrics can be measured and quantified, while others are expressed by survey data in qualitative terms.

Unlike similar studies that categorized KPIs into four to seven categories, this paper prefers to classify KPIs into four categories only, as these represent a combination of physical, functional, financial, and psychological factors that influence the performance of a building or a facility.

The list of performance metrics, as identified from previous studies, raises a question as to why so many indicators exist. If that is the case, it is probable that something is not working well in the current use of performance indicators. A careful examination of studies on performance indicators and facility assessment reports suggests that various factors, such as the complexity of what is being measured, large variances, resources available for measurement, more opportunities for making improvements, certain business trends, and various definitions and interpretations of the results tend to affect the use and the existence of this large number of performance indicators.

The authors believe that this study, as well as other studies, shows that there is a missing factor in the development of KPIs, which is forcing researchers to opt for improved performance metrics. Some of the reasons responsible for this may be lack of applicability (to a broad range of facilities), lack of a holistic approach, and failure of proper categorization. The facility performance metrics must have broad applicability so that with

slight modifications, metrics could be used in a broad range of buildings. Performance metrics studies showing a holistic approach cover facility performance broadly and, hence, result in a list of indicators. Lack of proper categorization often results in lesser use of performance metrics because the categories selected have no meaning to the industry. Therefore, the authors suggest that categorization of performance indicators in terms of cost-related and non-cost-related, or functional and physical would be more appropriate, making them more practical for practitioners.

This study suggests that broader applicability, a holistic research approach, and better categorization of performance indicators would benefit the field of performance measurement and would provide a more pragmatic perspective to research studies. The list of KPIs presented in this study is extracted from the literature; however, this study does not undermine the relative significance of the other indicators not presented in this paper.

**Table**

KPI	Reference Source														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Mechanical, electrical and plumbing service</b>															
Planned preventive maintenance as per schedule	√			√	√	√	√		√		√	√			√
Provide operation and maintenance records	√		√		√	√	√		√	√	√	√			√
Provide & support a continuous helpdesk service	√				√	√		√	√	√	√	√			√
Manage and undertake reactive operations within service level agreement or SOP	√								√		√	√			

Attend management meetings & provide relevant FM information on time	√	√		√	√	√		√
Adherence to training & awareness		√		√	√			√
Staff attendance				√				√
Use of personal protective equipment and signage	√				√		√	√
Work request response rate	√				√			√
Store handling			√	√				
Breakdown rate	√	√		√	√	√		
Accurate budgeting plan	√		√	√	√		√	√
Implementation of energy management and sustainable practices					√			√
Hazardous material management	√				√			√
Acceptable operational conditions and parameters			√	√	√		√	√
Issuing of work permits for required work with risk	√						√	√
<b>Fire detection and protection service</b>								
Adherence to fire training and awareness					√			√
Attend management meetings and provide relevant FM information on time	√			√	√	√		√
Planned preventive maintenance as per schedule	√	√			√	√		
Provide operation and maintenance records	√	√		√	√	√		√
Acknowledge and monitor fire alarms	√				√		√	
Acceptable operational conditions and parameters of fire pumps and equipment	√	√		√	√	√		√
Refilling of fire extinguishers according to schedule					√			√
Fire incident management and reporting					√			√
Compliance with local statutory requirements	√	√			√		√	√
Complaints handling	√				√		√	√
Accurate budgeting plan			√		√		√	√
<b>Health, safety and security service</b>								
Compliance with local statutory requirements & personal grooming							√	√
Continuous service to ensure a safe physically secure environment for guests, staff, visitors and building assets			√		√		√	
Manage community violence			√				√	√



Monitor and acknowledge immediately all alarms, panic alarms, and emergency calls.				√			√	√	√	√
Hold and maintain administration records	√	√	√	√	√	√	√	√	√	
The site is to be patrolled as per contract and records to be maintained				√					√	
Adherence to training and awareness			√	√		√	√	√	√	
Attend monthly meetings and provide relevant information on time including the monthly report to management				√		√			√	
Incident management and reporting				√					√	
staff attendance							√		√	
Locating and reporting visually identified building issues to responsible persons or parties			√			√			√	
Complaint handling				√					√	
Provide accurate budgeting plan			√	√		√			√	
<b>Housekeeping and waste management</b>										
Adherence to preventive maintenance schedule	√		√	√	√	√		√	√	
Compliance with local statutory requirements	√	√		√	√	√		√	√	
Provide maintenance records	√			√		√		√	√	
Use of personal protective equipment and signage by staff	√			√	√			√	√	
Attend monthly management meeting and provide the monthly report	√			√					√	
Staff attendance			√		√					
Complaints handling	√	√						√	√	
Accurate budgeting plan	√		√		√			√	√	
Adherence to training and awareness				√	√	√		√	√	
Use of sustainable materials and practices					√				√	
Work request response rate	√			√	√					
<b>Car park management</b>										
Adherence to preventive maintenance schedule								√	√	
Compliance with local statutory requirements								√	√	
Operation and management of hotel Shuttle service	√								√	
Staff attendance								√	√	
Incident management and controlling				√			√			



Provide inspection reports	√					√		
Usage and good condition of signage				√			√	
Complaints handling				√				√
Attend monthly management meeting and provide the monthly report		√		√				√
Cleanliness of the car park				√				√
Civil work and refurbishment								
Adherence to preventive maintenance schedule	√		√	√	√	√	√	√
Compliance with local statutory requirements	√	√		√	√	√	√	√
Provide maintenance records	√		√		√		√	√
Use of personal protective equipment and signage by staff	√			√	√		√	√
Attend monthly management meeting and provide the monthly report	√			√				√
Staff attendance			√		√			
Complaints handling	√	√					√	√
Accurate budgeting plan	√		√		√		√	√
Adherence to training and awareness					√		√	√
Use of sustainable materials and practices					√			√
Work request response rate	√		√		√			
<b>Asset management and space planning</b>								
Compliance with local statutory requirements	√	√			√		√	√
Availability of updated asset register	√			√	√		√	
Availability of assets labeling process							√	√
Asset life cycle planning for critical assets								√
Availability of asset management strategy and plan					√			
Availability of asset positioning indicators							√	√
Accurate budgeting plan				√	√			√
Asset data recording and reporting							√	√
Efficiency of asset utilization				√			√	
Ensure safety of assets	√				√			√

## Future research

The major problems identified in the efforts to establish facility performance metrics during this study relate to the large number and complex nature of KPIs, limited applicability, and non-existent or improper categorization. A careful analysis of these indicators could combine most of them into fewer indicators. This paper could be extended to a study that results in a more concise list of indicators that are not only representative of the major aspects of performance measurement, but also sufficient so decisions can be made based on them.

## Conclusion

Efforts have been made in the past to derive a relatively comprehensive list of KPIs (as discussed in the literature review section); however, the literature suggests that these lists of KPIs need to be categorized in such a way that professionals in the facility management industry may select KPIs according to the aspects being evaluated. The lack of proper categorization often results in less use of performance metrics, because the categories selected have no meaning to the industry. Furthermore, there is a need to minimize the number of KPIs, so that effort is not wasted on redundant, overlapping, or unwanted information. In spite of these significant efforts, researchers are still trying to establish a comprehensive list of KPIs. Some reasons for this may be the lack of applicability (to a broad range of facilities,) lack of a holistic approach, and failure of proper categorization. Facility performance metrics must have broad applicability so that with slight modifications, metrics could be used in a broad range of buildings. Clearly, KPIs that demonstrate wider applicability and are quantifiable and measurable should be included. Performance indicators that express more information or cover a wider aspect of performance evaluation should also be incorporated.

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## Stock Market Reactions to First and Second Waves of Covid 19

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**Abstract-** Covid 19 is an unprecedented shock to all most all the countries around the world. It has a great impact on all sectors. Many research studies have been conducted on the impact of this pandemic on the stock market. Many countries have faced the second and third waves of Covid 19. But till date, none of the researchers have studied the stock market reactions to the first wave of Covid 19 in comparison with the second wave. It is attempted to show the stock market movement during the first wave and second wave of Covid 19 with reference to the Indian Capital Market. The result of the study indicates that in comparison to the first wave Indian stock market shows a positive reaction to the second wave of Covid 19.

**Key Word:** Covid 19, Stock Market, Second Wave

### I. Introduction

An unexpected demon named “Covid 19” started its evil journey from Wuhan City of China and spreads all over the world in a very short period. World Health Organization (WHO) declared this as a ‘Pandemic’ on 11 March 2020. It becomes human-to- human transmitted disease very soon. More than 216 countries in the world were affected by this pandemic. As a result measures like lockdown, shutdown, and travel ban on all means of air, water, and roadways are taken place by most countries. Apart from online activities, all physical activities are stopped. All the countries tried to save their countries from medical emergencies by declaring various financial packages to strengthen their medical facilities and all.

All trade and commercial activities are stopped as the communication system becomes stagnant. As it affects all most all the sectors of the economy, its impact is also clearly visible in the stock market. Major stock indices of the world are crashed by almost 30 % due to Coronavirus. Investors have fear and anxiety which cause high volatility and negative returns. Numerous studies have been conducted throughout the world to show the impact of



Covid 19 on the stock market. Many journals of international repute published research articles in this regard.

Many countries developed vaccines, medicine, and road map to deal with this pandemic. All most all the countries around the world are facing the second and third waves of Covid 19 in the way of the new variant. But no researchers have studied the stock market reaction during two waves of Coronavirus. In our study, we have taken the Indian stock market. A stock market index is an important indicator of the economy. The movement of two leading stock indices of India i.e. Sensex and Nifty during two waves of Covid 19 are considered for the present study.

Here an attempt is made to show the effect of both waves on Indian stock indices. The organization of Article II. Review of Literature, III. Objectives of Study, IV. Methodology, V. Data Analysis, and Discussion, VI. Conclusion

## **II. Review of Literature**

Covid 19 is an important source of financial volatility in the US financial market and affects the global financial cycle (Albulescu,2020). Covid 19 have a severe impact on China and USA stock market in comparison to Global Financial Crisis 2007-08 (Sansa,2020). S & P 1500 responded both positive as well as negative way due to Covid 19 in March 2020. Stocks like natural gas, food, healthcare, and software earn high positive returns,s, and petroleum, real estate, entertainment, and hospitality noticed negative returns (Mazur, Dang, and Vega, 2020). The pandemic drastically affects the stock market at the beginning of March 2020 but its effect is slow in mid of April 2020 as various packages were declared by Government. The impact is more on the Asian emerging stock market in comparison to the European market (Topcu and Gulal, 2020). The countries having higher uncertainty aversion attitudes at the national level have noticed more negative returns and vice-versa (Ashraf, 2020).

Covid 19 news in media has a great impact on investors' behavior causing financial volatility in the stock market (Haroon and Rizvi, 2020). The stock markets of different countries responded to Covid 19 outbreak very quickly by considerably decrease in stock returns and

later on market corrected itself (Phan and Narayan, 2020). Indian Financial market noticed a very high decreasing trend due to Covid 19 in comparison to Demonetization and Goods & Services Tax (GST) implementation (Mishra, Rath and Dash, 2020). Due to the announcement of Covid 19 as a pandemic by WHO most all the stocks of the Nifty index showed very high negative returns (Thomas, Sankararaman and Suresh, 2020). In comparison to previous crisis like stock fluctuation 1992 and the Global financial crisis 2007-08, Covid19 have more market risk (Das and Rout, 2020). Covid 19 has a drastic impact on the stock index, purchase manager index, and commodity price as well (Sharma et al, 2020). Chinese stock market is showing significantly negative returns due to an increase in Covid confirmed cases and death rate (Al-Awadhi et al, 2020). Coronavirus quickly spread from China to European countries, then to the US thereby causing negative stock returns and high volatility. An even safer commodity like gold returns affected. Chinese stock market quickly recovered due to timely steps taken by policymakers (Ali, Alam, and Rizvi, 2020).

Covid 19 news has a positive and negative impact on the US stock market. Positively affect the sectors like telecom & utilities and negatively affect the sectors like automobile & business equipment (Baek, Mohanty, and Glamboosky, 2020). The stock market return is more and volatility is less in the Pre-Covid period whereas during the first lockdown of Covid 19 stock market return is very less and volatility is very high (Bora and Basistha, 2020). Covid 19 has a significant on China and USA stock markets (Sansa, 2020). During Covid 19 national culture has a great impact on stock market behavior. Countries having low individualism and high uncertainty avoidance attitude are responded to more negative stock returns and greater volatility whereas countries having high individualism and low uncertainty avoidance attitude are responded to less negative stock returns and volatility as well (Fernandez et al, 2021). Due to Covid 19 stock indices, Asian countries earned more negative abnormal returns than other countries in the world (Liu et al, 2020). Covid 19 has negatively impacted the stock market and investors are investing at a low rate as the market is down (Kotishwar, 2020). Daily closing price and volume of trade are significantly different before and after the pandemic (Machmuddah et al, 2020). Due to Covid 19 volatility is more and stock return is negative in the international market (Chaudhary, Bakhshi, and Gupta, 2020).

As Covid confirmed cases increased, the stock market noticed a negative return (Ashraf, 2020). Covid 19 confirmed cases and death cases have a negative impact on the US stock market and increase volatility (Chowdhury and Abedin, 2020). Indian stock market shows a negative return during the pre-lock down period but noticed a positive average return during the lockdown period in an expectation that the market will recover (Alam, Alam, and Chavali, 2020). When Covid 19 declared as human –to –human transfer pandemic, all most all the stock indexes showed negative returns but later on market correction happen in long run. Shanghai Composite Index which was severely affected during the announcement of Covid 19 quickly bounced back due to the effective policy measures taken by the Chinese Government (Khan et al, 2020). Global Financial Market become highly volatile and unpredictable due Covid the 19 pandemic (Zhang, Hu, and Ji, 2020). Pre- Covid 19 market capitalization was more and market condition was favorable but when Covid 19 was declared Indian stock market crashed like anything (Kumar and Kumara, 2021). Before Covid 19 stock market return was positive but during the pandemic stock market return was negative (Sahoo, 2021). Covid 19 is the major cause of volatility in the stock market.

## Research Gap

The above studies are conducted by various researchers and all of them tried to show the impact of Covid 19 on the stock market and volatility. Some of them have compared the pre-covid period stock market return with return and volatility during the pandemic. Already Covid 19 more than one year old the world is a pandemic. Many countries have faced a second and third wave of it. Many countries have developed vaccines as well as medicine for this disease. Till date, no researchers have compared the stock market status between two waves of Covid 19. Here an attempt is made to compare the impact of Covid 19 on the stock market in the first wave and second wave. For study, we have taken two leading stock indexes of India Sensex & Nifty

## III. Objective of the study

- i. To analyze stock market trend during first wave of Covid 19 & Lock down
- ii. To study stock market trend during second wave of Covid 19 & Lock down

- iii. To compare between trends of two periods

#### IV. Methodology

**Data:** Data used for the study are secondary in nature, collected from World Health Organization (WHO) website, Yahoo Finance. Looking at objectives of the study data relating to Covid 19 Confirmed cases during first lock down period and second lock down period are taken. First Lockdown declared by Government of India March 24, 2020 and due to second wave of Covid 19 Delhi State government declared lock down on April 2021 and then Maharashtra Govt, Tamil Nadu, Karnataka, Kerala, Odisha so on.

**Cumulative Covid 19 Confirmed Cases during Two Waves**  
**Table.1**

Date	Covid Confirmed cases	Date	Covid Confirmed Cases
24-03-2020	519	24-03-2021	1,17,34,058
25-03-2020	562	25-03-2021	1,17,87,534
26-03-2020	649	26-03-2021	1,18,46,652
27-03-2020	724	27-03-2021	1,19,08,910
28-03-2020	724	28-03-2021	1,19,71,624
29-03-2020	979	29-03-2021	1,20,39,624
30-03-2020	1071	30-03-2021	1,20,95,855
31-03-2020	1251	31-03-2021	1,21,49,335
01-04-2020	1636	01-04-2021	1,22,21,665
02-04-2020	1965	02-04-2021	1,23,03,131
03-04-2020	2301	03-04-2021	1,23,92,260
04-04-2020	2902	04-04-2021	1,24,85,509
05-04-2020	3374	05-04-2021	1,25,89,067
06-04-2020	4067	06-04-2021	1,26,86,049
07-04-2020	4421	07-04-2021	1,28,01,785
08-04-2020	5194	08-04-2021	1,29,28,574
09-04-2020	5734	09-04-2021	1,30,60,542
10-04-2020	6412	10-04-2021	1,32,05,926
11-04-2020	7447	11-04-2021	1,33,58,805
12-04-2020	8356	12-04-2021	1,35,27,717
13-04-2020	9152	13-04-2021	1,36,89,453

14-04-2020	10363	14-04-2021	1,38,73,825
15-04-2020	11439	15-04-2021	1,40,74,564
16-04-2020	12380	16-04-2021	1,42,91,917
17-04-2020	13387	17-04-2021	1,45,26,609
18-04-2020	14378	18-04-2021	1,47,88,109
19-04-2020	15712	19-04-2021	1,50,61,919
20-04-2020	17265	20-04-2021	1,53,21,089
21-04-2020	18601	21-04-2021	1,56,16,130
22-04-2020	19984	22-04-2021	1,59,30,965
23-04-2020	21393	23-04-2021	1,62,63,695
24-04-2020	23077	24-04-2021	1,66,10,481
25-04-2020	24506	25-04-2021	1,69,60,172
26-04-2020	26496	26-04-2021	1,73,13,163
27-04-2020	27892	27-04-2021	1,76,36,307
28-04-2020	29435	28-04-2021	1,79,97,267
29-04-2020	31332	29-04-2021	1,83,76,526
30-04-2020	33050	30-04-2021	1,87,62,976
01-05-2020	35043	01-05-2021	1,91,64,967
02-05-2020	37336	02-05-2021	1,95,57,457
03-05-2020	39980	03-05-2021	1,99,25,604
04-05-2020	42533	04-05-2021	2,02,82,833
05-05-2020	46433	05-05-2021	2,06,65,148
06-05-2020	49391	06-05-2021	2,10,77,410
07-05-2020	52952	07-05-2021	2,14,98,591
08-05-2020	56342	08-05-2021	2,18,92,676
09-05-2020	59662	09-05-2021	2,22,96,414
10-05-2020	62939	10-05-2021	2,26,62,575
11-05-2020	67152	11-05-2021	2,29,92,517
12-05-2020	70756	12-05-2021	2,33,40,938
13-05-2020	74281	13-05-2021	2,37,03,665
14-05-2020	78003	14-05-2021	2,40,46,809
15-05-2020	81970	15-05-2021	2,43,72,907
16-05-2020	85940	16-05-2021	2,46,84,077
17-05-2020	90927	17-05-2021	2,49,65,463
18-05-2020	96169	18-05-2021	2,52,28,996
19-05-2020	101139	19-05-2021	2,54,96,330

Source: Compiled by Scholar

For present study stock market movement i.e. Sensex and Nifty for two waves of Covid 19 are taken

### First Wave and Lock down

**Table 2**

<b>Date</b>	<b>Sensex</b>	<b>Nifty</b>
24-03-2020	26,674.03	7,801.05
25-03-2020	28,535.78	8,317.85
26-03-2020	29,946.77	8,641.45
27-03-2020	29,815.59	8,660.25
30-03-2020	28,440.32	8,281.10
31-03-2020	29,468.49	8,597.75
01-04-2020	28,265.31	8,253.80
03-04-2020	27,590.95	8,083.80
07-04-2020	30,067.61	8,792.20
08-04-2020	29,893.96	8,748.75
09-04-2020	31,159.62	9,111.90
13-04-2020	30,690.02	8,993.85
15-04-2020	30,379.81	8,925.30
16-04-2020	30,602.61	8,992.80
17-04-2020	31,588.72	9,266.75
20-04-2020	31,648.00	9,261.85
21-04-2020	30,636.71	8,981.45
22-04-2020	31,379.55	9,187.30
23-04-2020	31,863.08	9,313.90
24-04-2020	31,327.22	9,154.40
27-04-2020	31,743.08	9,282.30
28-04-2020	32,114.52	9,380.90
29-04-2020	32,720.16	9,553.35
30-04-2020	33,717.62	9,859.90
04-05-2020	31,715.35	9,293.50



05-05-2020	31,453.51	9,205.60
06-05-2020	31,685.75	9,270.90
07-05-2020	31,443.38	9,199.05
08-05-2020	31,642.70	9,251.50
11-05-2020	31,561.22	9,239.20
12-05-2020	31,371.12	9,196.55
13-05-2020	32,008.61	9,383.55
14-05-2020	31,112.89	9,142.75
15-05-2020	31,097.73	9,136.85

Source: Compiled by Scholar

### Second Wave and Lock Down

Table 3

Date	Sensex	Nifty
25-03-2021	48,440.12	14,324.90
26-03-2021	49,008.50	14,507.30
30-03-2021	50,136.58	14,845.10
31-03-2021	49,509.15	14,690.70
01-04-2021	50,029.83	14,867.35
05-04-2021	49,159.32	14,637.80
06-04-2021	49,201.39	14,683.50
07-04-2021	49,661.76	14,819.05
08-04-2021	49,746.21	14,873.80
09-04-2021	49,591.32	14,834.85
12-04-2021	47,833.48	14,310.80
13-04-2021	48,544.06	14,504.80
15-04-2021	48,803.68	14,581.45
16-04-2021	48,832.03	14,617.85
19-04-2021	47,949.42	14,359.45
20-04-2021	47,705.80	14,296.40

22-04-2021	48,080.67	14,406.15
23-04-2021	47,878.45	14,341.35
26-04-2021	48,386.51	14,485.00
27-04-2021	48,944.14	14,653.05
28-04-2021	49,733.84	14,864.55
29-04-2021	49,765.94	14,894.90
30-04-2021	48,782.36	14,631.10
03-05-2021	48,782.36	14,634.15
04-05-2021	48,253.51	14,496.50
05-05-2020	48,677.55	14,617.85
06-05-2021	48,949.76	14,724.80
07-05-2021	49,223.50	14,823.15
10-05-2021	49,502.41	14,942.35
11-05-2021	49,161.81	14,850.75
12-05-2021	48,690.80	14,696.50
14-05-2021	48,732.55	14,677.80
17-05-2021	49,580.73	14,923.15
18-05-2021	50,193.33	15,108.10

**Source: Compiled by Scholar**

### **Research Methodology**

Descriptive statistics like mean, standard deviation is calculated by SPSS see the kind of deviation of Stock market indices due to Covid 19. Here we are going study whether First wave of Covid 19 have more impact on Indian stock market or second wave. A comparative study will be made between two waves of Covid 19 on stock market movement.

### **V. Data Analysis & Discussion**

Data of Table 1, Table 2 and Table 3 Run through SPSS.

**First Wave and Lock Down 2020**

<b>Descriptive Statistics for 2020</b>					
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Covid Confirmed Cases	57	519	101139	28931.19	29229.610
Valid N (listwise)	57				

The above table is output for cumulative covid confirmed cases for 57 days run in SPSS during first wave and lock down. Where minimum cases on 1<sup>st</sup> March 2020 is 519 and Maximum cases on 19<sup>th</sup> May 2020 is 1, 01,139. Mean is 28931.19 and standard deviation 29229.610.

<b>Descriptive Statistics for 2020</b>					
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Sensex	34	26674.03	33717.62	30745.9350	1489.16403
Valid N (listwise)	34				

As stock market is not open each day, weekend 2 days close and Holidays are also there, so data for 34 days are available and run in SPSS. During first wave and lock down lowest of Sensex was 26674.03 and highest was 33717.62. The mean is 30754.93 and standard deviation is 1489.16

<b>Descriptive Statistics for 2020</b>					
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Nifty	34	7801.05	9859.90	8993.0412	443.78431
Valid N (listwise)	34				

As stock market is not open each day, weekend 2 days close and Holidays are also there, so data for 34 days are available and run in SPSS. During first wave and lock down lowest of Nifty was 7801.05 and highest was 9859.90. The mean is 8993.04 and standard deviation is 443.78

### Second Wave & Lock Down 2021

Data of 1 ½ months for 2020 and exactly after one year 2021 are analyzed. The following are output, when India is facing second wave and different state Govt declared Lock down.

#### Descriptive Statistics for 2021

	N	Minimum	Maximum	Mean	Std. Deviation
Covid Confirmed Cases	57	11734058	25496330	16913073.09	4502513.639
Valid N (listwise)	57				

In 2021 , even if India is having two vaccines Covxin and Covishield , due to carelessness , casual attitude , forgetting Covid norms the country face second wave of Covid 19. This second wave is very dangerous and exclusively affects the young people age between 30 to 50. Number confirmed cases reached near to 5 Lakhs daily and deaths near to 5000 in India. In Delhi due to lack of oxygen many life lost. During second wave cumulative Cases minimum is 11734058 and Maximum Cumulative Cases is 25496330. Mean is 16913073.09 and Standard Deviation is 4502513.639.

#### Descriptive Statistics for 2021

	N	Minimum	Maximum	Mean	Std. Deviation
Sensex	34	47705.80	50193.33	48984.4962	682.34360
Valid N (listwise)	34				

In second wave covid confirmed cases are more , death rate is high in comparison to first wave but Sensex shows the deviation only of 682.34 and mean 48984.49. In this period Sensex crosses 50k i.e maximum of 50193 points and minimum 47705.80. Which indicate that in comparison to first wave Sensex showing less variation. Indian leading stock index showing positive responses during second phase of Covid 19. It is due to revival package, vaccination drive and a year long experience to deal with pandemic.

**Descriptive Statistics for 2021**

	N	Minimum	Maximum	Mean	Std. Deviation
Nifty	34	14296.40	15108.10	14662.5382	208.53167
Valid N (listwise)	34				

Following Sensex , Nifty also shows the deviation only of 208.53 and mean 14662.53. In this period Nifty crosses 15k, i.e. maximum of 15108.10 points and minimum 14296.10. Which indicate that in comparison to first wave Nifty showing less variation. Nifty showing positive responses during second phase of Covid 19. It may be due to revival package, vaccination drive and a year long experience to deal with pandemic. Investors are very optimistic and hopeful towards future. So in comparison to 1<sup>st</sup> wave and lock down Indian stock market shows positive reaction and movement during second wave and lock down

## VI. Conclusion

In our study, we find that during first period (2020 March to May), Indian leading stock indices crashed like anything. It was decreased almost 33%. Because all over world including India are exposed to this type pandemic first time. There was no medicine or vaccine. But after one year (April 2021) when India face second wave of Covid 19, there is no such crash and negative reaction shown by Indian Stock Market. In this period Sensex Crosses 50k points and Nifty crosses 15k points. Indian stock market shows positive response to second wave Covid 19 in spite of more confirmed cases and death cases. In this period standard deviation of Sensex and Nifty is quite less in comparison to first wave and lock down.

So present study concludes that Indian stock market become shock absorber and become efficient to deal the pandemic like Covid 19.

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## The impact of various social media platforms on industries: An Overview

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### Abstract:

Organizations all over the world are slowly realising the value of social media in business. The internet is seen as the next frontier for doing business. It gives businesses a way to reach more people while avoiding problems like time, distance, and accessibility. The industry is growing at an amazing rate. To stay in business in a very competitive market, one of the first things a business needs to do is create and develop a website that can be used for on-going promotion and marketing. A business needs to use social media like Facebook, YouTube, Instagram, and Twitter, and so on to reach more people online. At the moment, all businesses, no matter how big or small, use these platforms as part of their normal operations. The goal of the study is to find out how different social media tools affect the business performance of different types of businesses, and which social media tool has the best effect. The goal of this paper is also to understand how social media affect industries in different ways. We have collected 152 samples from students of BPUT in Odisha and analysed the data by making graphs with MS-Excel, R- Programming in order to achieve these goal.

**Keywords:** *Social Media, Business Performance, Website, MS-Excel, R Programming, Correspondence Analysis, Perceptual map.*

### 1. Introduction

Traditional corporate communication methods have been replaced by social media-based public relations. Since its introduction, social networking has had a significant effect on business. People can use online networks and communities to develop and share information, ideas, hobbies, and other forms of expression through interactive computer platforms. Since the benefits of using these platforms have become clear, most businesses are now putting equal effort into both social media and traditional corporate communication.

The term 'social media' refers to the many apps and websites that give users the ability to create and share materials as well as to take part in social networking. Mostly photos, events, films, thoughts and other information that people and companies deemed essential may be shared via social media. It is essential to take note of the fact that all successful firms and organisations have used this technology virtually and that the majority of people from business and corporations have accounts on various social media platforms in order to do business. Users of social media like Facebook, YouTube, Instagram and Twitter along with other social media platforms play a crucial part in the process by which information about brands and new products is discovered, researched, and shared.

Facebook is one of the most popular social networking websites worldwide. Facebook's 2.93 billion monthly active users represent over one-third of the world's population. Since its inception on February 4, 2004, Facebook has adapted to satisfy the requirements of its members and to attract new users. This includes the purchases of Instagram and WhatsApp. Businesses may establish pages, groups, and events on Facebook. Facebook also provides targeted advertising choices for individuals that desire to reach a certain demographic segment. Customers may receive personalised Facebook Messenger messages from companies. Over 200 million companies (mostly small businesses) utilise Facebook tools, and over seven million advertise regularly in order to promote their businesses on Facebook.

YouTube is more than just the most popular video-sharing website in the world. In addition, it is the second most used search engine in the world, after Google. Eventually, Google has purchased the firm, which was founded in 2005. YouTube attracts about 2 billion logged-in visitors every month. Even more individuals view videos on the web without registering for an account. YouTube may be utilised by any business desiring to attract an audience via video marketing. Additionally, the platform provides statistics, promotes user participation, and enables the embedding of films on other websites.

On average, 186 million people use Twitter every single day. It is a fast-paced platform where many people go to learn new things. Because of this, it's a good way for companies that regularly put out original content to market themselves. Twitter also makes it easy for people to share links to new blog posts and web pages. If you do this often, people will go

straight to your new content. If one makes it a habit to share helpful and interesting content from other sources, one will become known as an expert in your field.

Instagram, which is owned by Facebook, has over a million monthly active users. It offers advertising choices comparable to Facebook. Instagram is a visual medium that allows one to exhibit a company's individuality. It is not a text-heavy site, and links inside postings are not permitted. The good news is that people can have access to a variety of tools that they may utilise to enhance their audience's creative experience. If someone wants to reach out to their consumers through photographs and videos, Instagram is the greatest platform for them. One may share images of one's items in action and encourage one's followers to do the same. Instagram hashtags which provide an excellent technique for marketers to reach larger audiences.

## **2. Literature Review**

Edosomwan et al. (2011) did a study called "The History of Social Media and Its Impact on Business." The purpose of the study was to show how social media has changed over time, including the rise of major social networking sites in the 21st century. A study by Kietzmann et al. in 2011 was called "Social Media? Don't play! Understanding how the parts of social media work together." Its aim was to show how businesses should come up with plans for keeping track of, understanding, and responding to different things that happen on social media. Bashar et al. (2012) in their study called "Effectiveness of social media as a marketing tool: An empirical study" shows the role of empirical research in figuring out how effective social media is as a marketing tool. They also tried to figure out how much social media helps people decide what to buy. Geho et al. (2012) did a study called "The Evolution of Social Media as a Marketing Tool for Entrepreneurs" which shows how entrepreneurs can use social media to their advantage. Stoica et al. (2013) did a study called "A Novel Model for E-Business and E-Government Processes on Social Media." The goal of this study is to show how social media affects the growth of electronic business (e-business) and to give companies or even governments a workable solution through a model. Abuhashesh (2014) did a study called "Integration of Social Media in Businesses" to show how important the process of integrating social media is to the company's main marketing and advertising tasks.



"Business performance and social media: Love or hate?" was a study done by Paniagua et al. in 2014 to show that "followers" and "likes" are good for a company's share value and that twitter is a better way to improve business performance than Facebook. Georgescu et al. (2015) did a study called "The New Paradigm of Collaboration and Communication for Business Environment" to show how the transfer of knowledge, the creation of positive network externalities, the increase of business information capital, and the social and ethical effects of social media all contribute to the creation of "virtual proximities." Hassan et al. (2015) did a study called "Strategic Use of Social Media for Small Business Based on the AIDA Model" to show small business owners how to use social media to market their businesses in a strategic way. Muaid et al. (2016) did a study called "Social media marketing: Using social media to advance brand awareness and increase online sales." The goal of the study was to find out how social media affects the bed and breakfast (B&B) industry in terms of brand awareness and online sales. "Social Media Impact on Business Evaluation," a study done by Grizane et al. in (2017), shows that social media has an effect on the restaurant business. Jayasuriya et al. (2017) did a study called "The Impact of Social Media Marketing on Brand Equity" to find out which Facebook marketing activities have an effect on brand equity and how important each activity is when it comes to building brand equity. Ahmad et al. (2018) did a study called "Reflections of entrepreneurs of small and medium-sized enterprises concerning the adoption of social media and its impact on performance outcomes" to show that the rate of social media adoption in the small and medium-sized enterprises (SMEs) sector has stayed low. Annisa et al. (2019) suggested that social media should be aligned with the business process domain using the Process Classification Framework (PCF). Venkateswaran et al. (2019) did a study called "Impact of Social Media Application in Business Organization" to show why social media is better than other tools for marketing and communication in business. Chatterjee et al. (2020) did a study called "Why do small and medium enterprises use social media marketing and what is the impact?" to show that Indian SMEs are quickly adopting different social media platforms for digital marketing, and the impact can be seen in business performance, sales, and contacts with customers. Olanrewaju et al. (2020) did a study called "Social media and entrepreneurship research: A literature review." In it, they found that entrepreneurs use social media for more

than just marketing. They now use it to network with other business owners, find information, and raise money for their businesses. Dolega et al. did a study in 2021 called "Going digital? The effect of social media marketing on the number of visitors, orders, and sales on retail websites" The study's main results show that social media drives more people to websites but doesn't lead to a big jump in product orders. And the way it works on different products depends on how complicated they are, how much they cost, and how well-known the brand is. Tiwary et al. (2021) did a study called "Impact assessment of social media usage in B2B marketing: A review of the literature and a way forward." The study found that, compared to business-to-customer (B2C) firms, business-to-business (B2B) firms cannot use SM to its fullest potential. "Examining the research on social media in business-to-business marketing with a focus on sales and the sales process," Kumar & Sharma, 2022.

**Table -1**

**Contribution of different authors year wise and their contribution**

Authors	Research Contribution	Method	Findings
Chih-Wen Wu (2016)	Impact of social media in the chain store industry	Structural equation modeling (SEM)	The results show that organizational performance has a big impact on the business of chain stores and franchises
Grizane & Jurgelane (2017)	Social Media Impact on Business Evaluation (Restaurant business and customer habits)	Stella-Excel model	Social media affects restaurant business and client habits. The methodology can be used to evaluate social media investments in different business domains. Social media affects restaurant business and client habits. The methodology can be used to evaluate social media investments in different business domains.
Anas A. Al Bakri (2017)	The impact of social media adoption on competitive advantage in the small and medium enterprises	Structural equation modeling and confirmatory factor analysis	The study concludes that there are no significant correlations between SME social media usage and competitive advantage.
Drummond et al.(2018)	The impact of social media on resource	content analysis by in-depth interviews	The study's findings support the activity structures of business-to-

	mobilisation in entrepreneurial firms		business relationships and networks.
Voorveld et al. (2018)	This study examines how consumers' engagement with social media platforms drives engagement with advertising	A principal components analysis (PCA) with varimax rotation was conducted on the entire data set	The findings indicate that engagement is highly context dependent.
Wardati & ER (2019)	The Impact of Social Media Usage on the Sales Process in Small and Medium Enterprises (SMEs): A Systematic Literature Review	Systematic Literature Review (SLR)	The study's findings demonstrate the influence of social media on SME customers, stakeholders, business partners, and competitors.
Annisa & ER (2019)	Impact of Alignment between Social Media and Business Processes on SMEs' Business Process Performance: A Conceptual Model	Process Classification Framework (PCF)	The result of this research is a conceptual model that follows the proposition of Task-Technology Fit to investigate the impact of social media on the business process performance of small and medium-sized enterprises (SMEs).
Chatterjee & Kar (2020)	Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India	Structured equation modelling	The findings indicate that perceived usefulness, usability, and compatibility have a positive effect on the impact of SMM after adoption by SMEs.
Olanrewaju et al. (2020)	Social media and entrepreneurship research: A literature review	Systematically reviews research	The result indicates that entrepreneurs now use social media for business-related networking, information searches, and crowdsourcing, in addition to marketing.
Dolega et al. (2021)	Going digital? The impact of social media marketing on retail website traffic, orders and sales	Autoregressive integrated moving average (ARIMA)	The study's key findings indicate that social media increases web traffic but do not significantly increase product orders. And its effectiveness varies depending on the complexity, cost, and brand status of the product.
Tiwary et al. (2021)	Impact assessment of social media usage in B2B marketing: A	Bibliometric analysis	Compared to business-to-customer (B2C) firms, business-to-business (B2B) firms are unable to maximise SM's potential.

	review of the literature and a way forward		
Kumar & Sharma (2022)	Examining the research on social media in business-to-business marketing with a focus on sales and the selling process	Multimethod approach	The result indicates that the research can be divided into usage, performance, and framework categories. Due to the lack of research on social media and business-to-business sales.
Sedalo et al. (2022)	Exploring social media affordance in relationship marketing practices in SMEs	Thematic analysis technique	The study identified three advantages of social media for relationship marketing in SMEs: brand visibility, sharing, and relationships. These advantages of social media lead to customer acquisition.
Present Paper	The impact of various social media platforms on different attributes of business	Correspondence Analysis and Perceptual Mapping	Through the use of correspondence analysis and a perceptual map, this study described the relationship between various business attributes and social platform. In addition, we have suggested various precautionary measures for a manager to take in order to establish a solid relationship between attributes and social media.

## 2.1 Objective of the Study

The purpose of the study is to carry out primary research about the contribution of four important social platforms such as Facebook, Instagram, YouTube and Twitter towards the six basics attributes such as Branding, Service, P & A, Information, Competition and CRM.

1. To represent the collected data through questionnaire in pie chart and line graph;
2. To obtain the relationship between the different attributes with respect to social platform through perceptual map using “R programming”.

## 3. Methodology

Correspondence analysis reveals the correlation between and within two groups of variables, based on data given in a contingency table. This helps to find perceptual map from the obtained responses, which satisfies the objective of our study. Correspondence analysis is a

part of MDS which is very much useful and able to produce visual geometric representation of the data obtained from the respondent through primary research. For the purpose of our study this method is relevant since it focuses not only on the objective but also it helps in interpreting the consumer (Respondent) perception.

### **3.1 Sample**

In order to conduct our research, we surveyed a sample of B-School students affiliated with Biju Patnaik University of Technology, Odisha. A total of 180 questionnaires were distributed, 152 of which were returned with responses. Slowly, businesses around the globe are recognising the importance of social media to their operations. This is due to the perception that the Internet is the next frontier for conducting business. It enables businesses to reach more individuals while avoiding issues such as time, distance, and accessibility. The industry is expanding at a phenomenal rate. In order to survive in a highly competitive market, one of the first steps a company must take is to create and develop a website that can be used for ongoing promotion and marketing. To reach more people online, a business must utilise social media such as Facebook, YouTube, Instagram, Twitter, and others. Currently, all businesses, regardless of size, utilise these websites as part of their standard operations. The purpose of the study is to determine how various social media tools influence the business performance of various types of businesses and which social media tool has the greatest impact. The purpose of this paper is also to comprehend how social media influences various industries. To accomplish this, we collected 152 samples from various industries in Odisha and analysed the data using MS Excel graphs. R- Programming. 72 females and 80 males.

### **3.2 Questionnaire Design**

The questionnaire consists of six different questions. Each question seeks the impact of social platform on a particular attribute on a 10 point scale ranging from 1 to 10 where 10 is the highest and 1 is the lowest. Here we have taken four different social platforms like Facebook, Youtube, Instagram, and Twitter along with six attributes namely, Branding, Service, P & A, Information, Competition and CRM.

### 3.3 Results and Discussion

The collected responses through questionnaires are represented in a contingency matrix having four rows and six columns. Rows represent the different social platform and column represent six different attributes. Correspondence analysis provides a spatial representation of the rows and columns of a correspondence table while maintaining their similarity. Here, our study was likewise centred on determining the similarity of responder perspectives. We show them in the table below.

Correspondence Table-2

Social Media	Attributes						
	Branding	Service	P & A	Information	Competition	CRM	Total
Facebook	13	6	21	11	13	29	93
Youtube	39	28	49	27	29	37	209
Instagram	38	18	37	24	26	46	189
Twitter	11	10	12	13	14	21	81
Total	101	62	119	75	82	133	572

The values that should be anticipated in the light of the data. The formula for calculating the anticipated value of each cell in a two-way table is (row total \* column total) divided by the total number of observations in the table, where n is the total number of observations.

Expected values Table-3

Social Media	Attributes					
	Branding	Service	P & A	Information	Competition	CRM
Facebook	16.42	10.08	19.35	12.19	13.33	21.62
Youtube	36.90	22.65	43.48	27.40	29.96	48.60
Instagram	33.37	20.49	39.32	24.78	27.09	43.95
Twitter	14.30	8.78	16.85	10.62	11.61	18.83



The residuals of a statistical model are the differences between the values of the data that were seen and those that were anticipated. They serve as a diagnostic tool that is applied in the process of evaluating the accuracy of a model. They are also referred to as mistakes.

**Residuals Table-4**

Social Media	Attributes					
	Branding	Service	P & A	Information	Competition	CRM
Facebook	-3.42	-4.08	1.65	-1.19	-0.33	7.38
Youtube	2.10	5.35	5.52	-0.40	-0.96	-11.60
Instagram	4.63	-2.49	-2.32	-0.78	-1.09	2.05
Twitter	-3.30	1.22	-4.85	2.38	2.39	2.17

From the residual table we have obtained the following table which clearly suggest the association between the different social platforms with different business attributes. The following table is divided into two columns highest and lowest association according to the numeric values. The highest numerical values shows that strong association

**Table-5**

Highest		lowest	
Facebook	7.38	Facebook	-4.08
Youtube	5.52	Youtube	-11.60
Instagram	4.63	Instagram	-2.49
Twitter	2.39	Twitter	-4.85

1. Based on the responses of respondents, the following Pie chart reflects the visual observation.

**Figure-1 (Pie chart)**

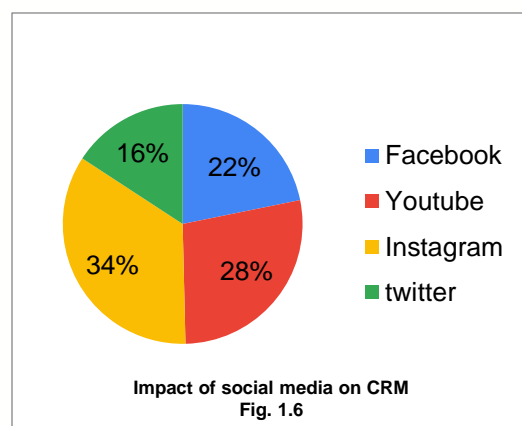
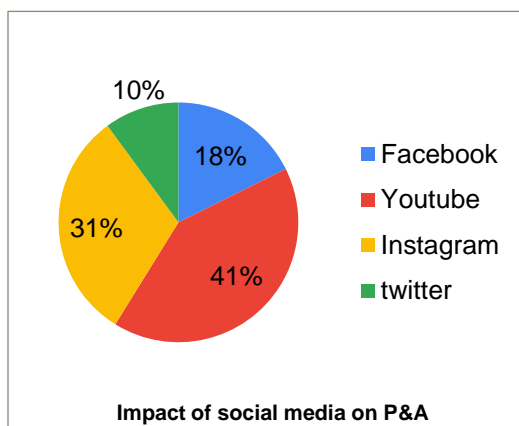
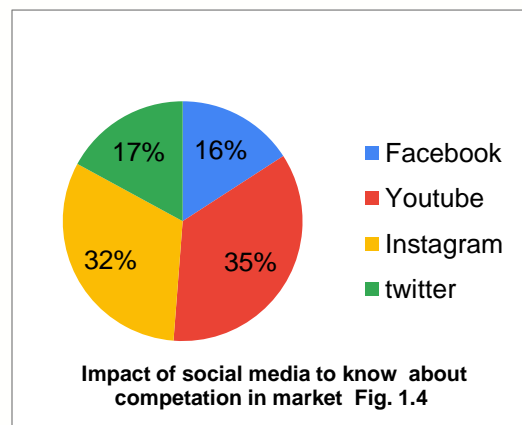
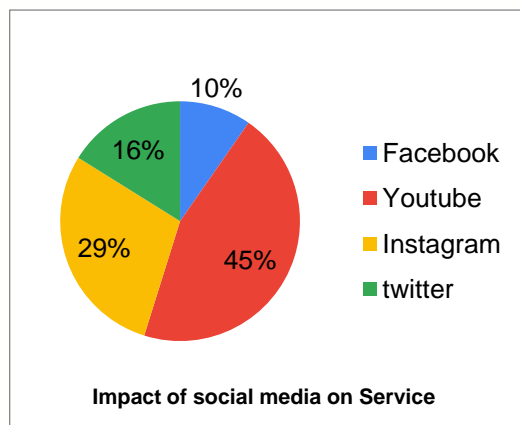
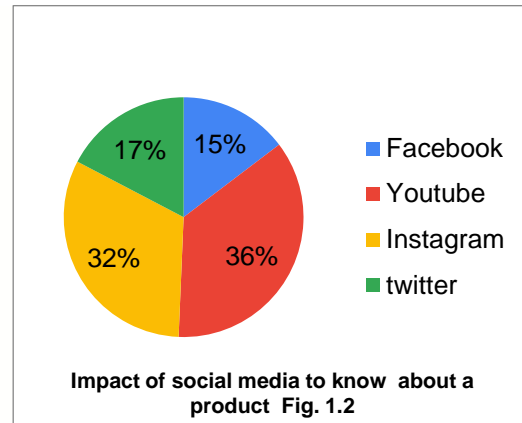
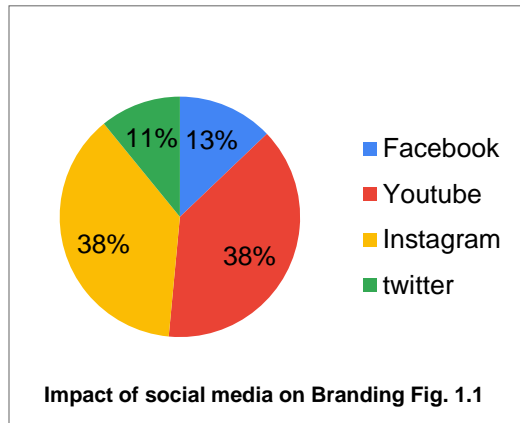
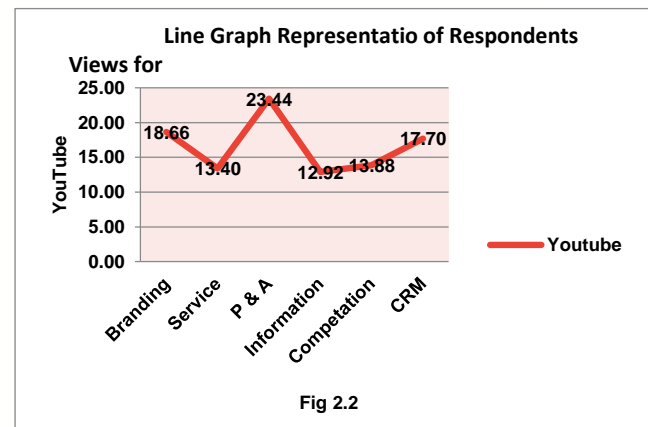
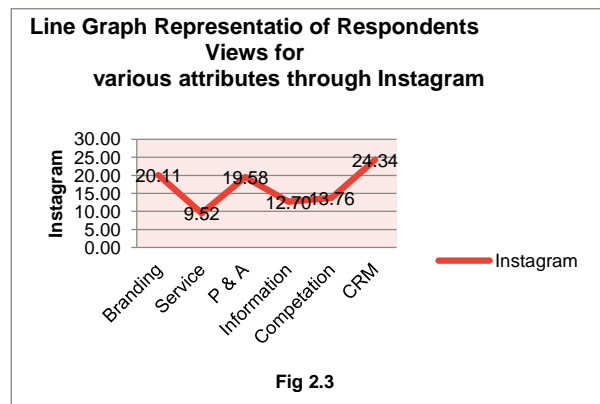
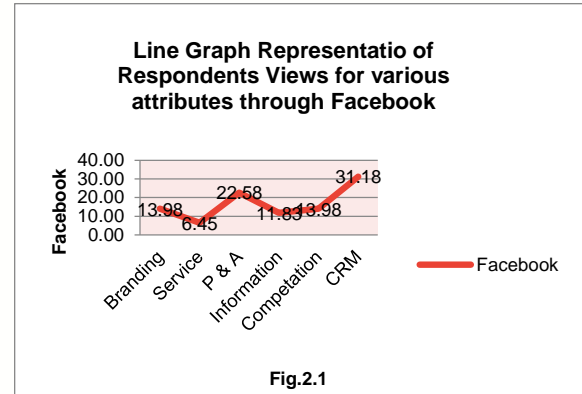
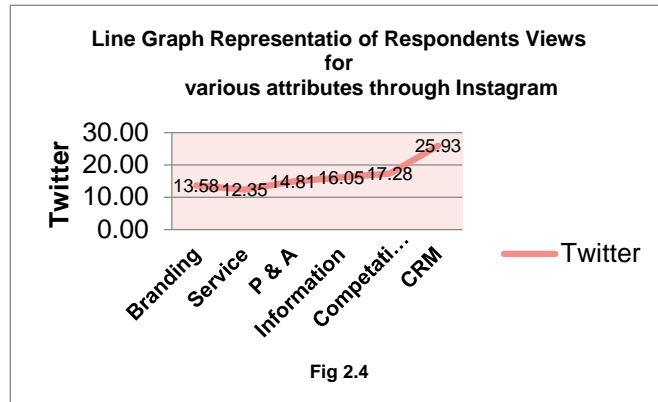
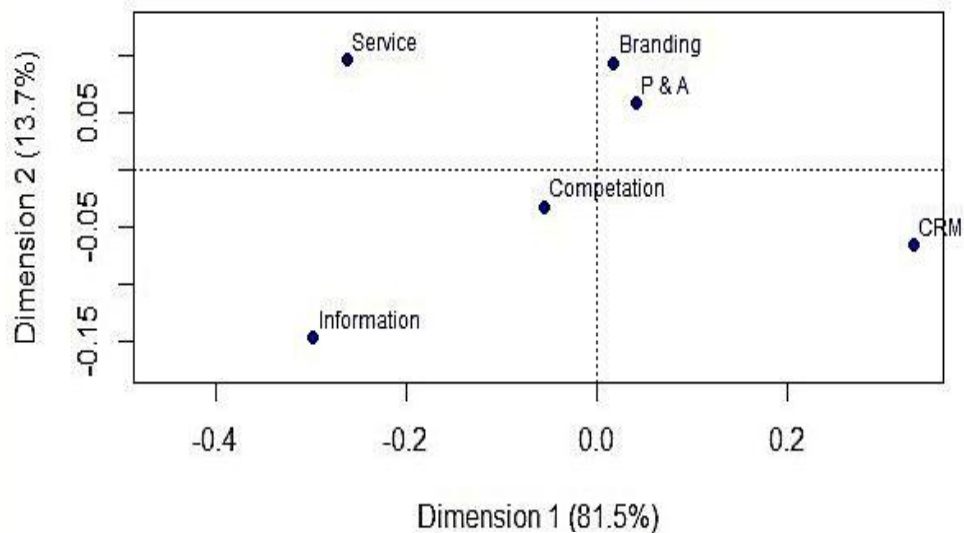
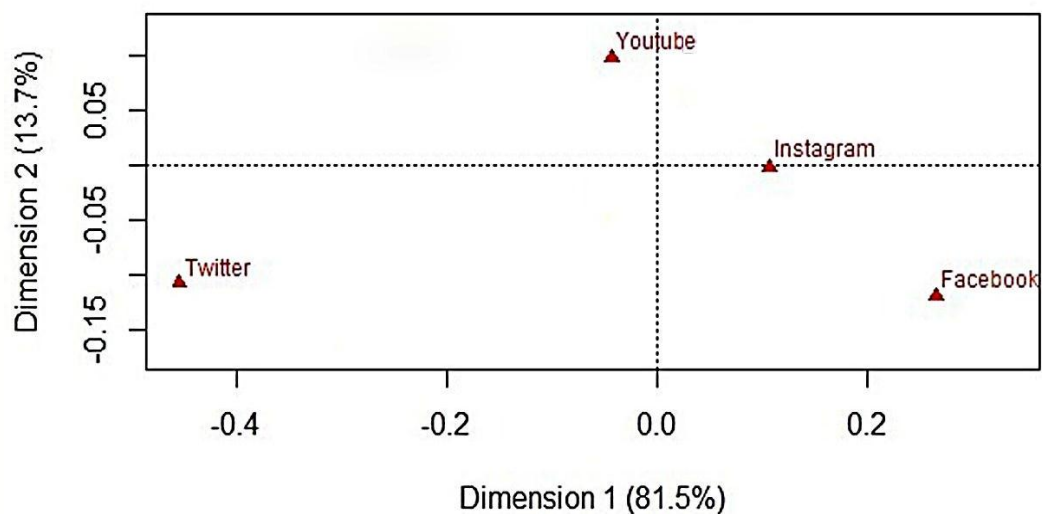


Figure-3 (Perceptual Map)



**Row percentages****Fig. 3.1****Findings from the above figure**

According to the survey responses collected from the respondent, the first quadrant contains Branding along with Promotion and Advertising, the second quadrant contains Service, the third quadrant contains Information and Competition, and the fourth quadrant has Customer Relationship Management.

**Column percentages****Fig. 3.2**

### Finding

According to the graphic, Instagram can be found in the first quadrant, YouTube can be found in the second quadrant, Twitter can be found in the third quadrant, and Facebook can be found in the fourth quadrant.

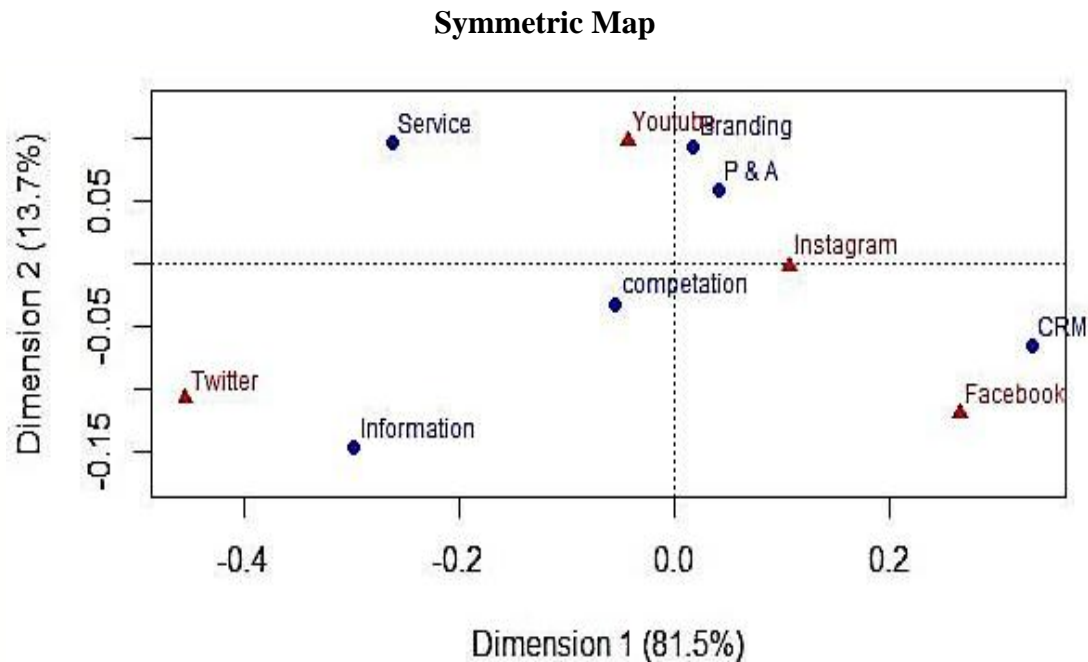


Fig. 3.3

### 3.4 Data Interpretation

From the above figure it is obvious that there is no impact of twitter on branding, and promotion and advertisement because twitter is in third quadrant branding, promotion and advertisement is in first quadrant so the association is very less. Similarly, the impact of Instagram is very less on information and competition. There is no association between branding, P& A and twitter because they are

- The above figure shows that in the first quadrant we have Instagram, Branding and P&A so according to the correspondence analysis, there is strong association between Branding, P& A with Instagram
- Service and YouTube are also in the second quadrant. Based on correspondence analysis, we can say that there is a clear association between service and YouTube.

- The above graph shows that Twitter and Information are in the third quadrant. Based on the correspondence analysis, we can say that Twitter and Information have a strong connection.
- From the above graph, we can see that Facebook and Customer Relationship Management are both in the fourth quadrant. This means that, according to the correspondence analysis, there is a strong link between Facebook and Customer Relationship Management.

### 3.5 Managerial Decision

In section 3.4 we have observed that according to the respondent opinion, Instagram is more focused on branding and P&A of a product and it puts emphasis on service and CRM. So from a managerial decision point of view based on the present study, Instagram should give better emphasis on the information and competition. Similarly, the association of Twitter is more with information and competition, and it is closely associated with service and CRM, and the distance of Twitter is more from branding and P&A. So from the managerial decision point of view, Twitter is more focused on branding and P&A, and Twitter should focus more on branding and P&A. We have also observed that Facebook is more connected with CRM, and it has close association with competition, information, branding and P&A, and there is a negative relation between Facebook and service. So this study emphasizes on service to sustain in the market and at the end there is strong association between YouTube and services, and YouTube is closely connected with competition, information. It is obvious that YouTube has a negative association with CRM, so the study suggests that from managerial decision point of view YouTube should work on CRM.

### 4. Future work

We constructed our model by giving the background study the right amount of time and attention. We have provided a conceptual model that was duly validated through correspondence analysis which is a combination of factor analysis and MDS. We chose some students from Biju Patnaik University of Technology in Odisha, India, to take part in our survey for correspondence analysis. In our survey work, we looked at 152 useful responses and did our survey work over the course of two months in the middle of 2022. We have



looked at how social media affects different parts of business and tried to figure out what it all means. There is a sufficient scope to study how social media may affect different parts of business in the future. For example, a researcher can choose the clothing industry, the food industry, the auto industry, the travel and tourism industry, the education industry, the health care industry, and so on. Using different statistical analyses, a researcher can look at how social media helps people get services in the above areas.

## 5. Conclusion

The purpose of this study was to determine how social media may benefit all industries. This study determined the business benefits of social media. Several business characteristics, including Branding, service, P&A, information, competition, and CRM, are associated with social media platforms like Facebook, YouTube, Instagram, and Twitter that are more conducive to social media platforms. Modern social media platforms have proved to be effective growth and performance boosters for businesses. Here, we have conducted primary research among students using a rating scale questionnaire. The entirety of the work is founded on qualitative research utilising correspondence analysis, a combination of factor analysis and multidimensional scaling. Using R programming, we have represented and interpreted primary data on a perceptual map based on the concept of correspondence analysis. After obtaining the perceptual map, we analysed the position of various attributes and social media, as well as their relationship. In section 3.4, the detailed interpretation and their findings are discussed. In addition, various graphs, such as pie charts and line graphs, illustrate the collected data for clear visualisation from the respondent's perspective.

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## Evaluating Websites of State Public University of Odisha based on web parameters

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### Abstract

This study aims to discuss the present status of websites of State Public Universities in Odisha based on the quality attributes using online tools. It seeks to assess these websites in respect of how effective they are from the user's perspective. Through an assessment of the existing websites of the State Public Universities in Odisha, the awareness of website parameters- based services, their viability, and service values can be enhanced. The effectiveness of the domain, traffic overview and webpages are analyzed in this study to suggest improvements in the current websites.

**Keywords:** Website Evaluation, Website Design, University Websites

### 1. Introduction

Information and Communication Technology (ICT) is crucial in the interaction and dissemination of information with users. The information can easily be retrieved and disseminated on the internet with the help of World Wide Web which acts as a communication tool. The Internet and the Web are playing a vital role in the field of Education and Research. The information published in the websites is one of the most effective methods of disseminating and communicating.

The institute's constant source of information is the website, which allows it to make its facilities and opportunities known to users all over the world. Websites are the need of today for every academic institution to achieve their objectives.

Universities' websites are gateways of the virtual location for dissemination of information to their students and others regarding Admissions, Academic activities, infrastructure and facilities, Affiliated Colleges, Research activities, Library resources, Day-to-day news and events, Alumni, etc (Gupta et al., 2022). The analysis of website use is an important practice

and it has to be done from time to time. Hence, there is a need to evaluate the quality of University websites and make them better from the users' perspective.

Usability of websites for State Public University in Odisha is evaluated based on the quality attributes like traffic overview, page rank, response time, page size, broken links, download time, accessibility, and design optimization by using MS Excel.

## **2. Review of related literature**

(Dave & Jain, 2013) describes the techniques of making backlinks with its effect in improving search engine ranking. Search engines are designed to crawl and index the web pages efficiently for better search results. Link building has a great contribution to the popularity of a website. The number of backlinks play an important role for website ranking in search engines. Backlink is any link received by a website from another website.

(Patel & Chauhan, 2021) observes that after writing a query in search engine, a user obtains the bulk of results within a second in web page format but most of the users found their answers from the first two pages. The first page results on Google get 75% of all clicks. Therefore, every business or organization wants to rank their website on the first page of every search engine that is the game of Search Engine Optimization (SEO). SEO is one of the best business enhancing techniques because it makes your website more visible, and that means it gets more traffic and more opportunities to convert visitors into customers. SEO-friendly websites also increase the website visibility on different search engines.

(Moe & Fader, 2004) develops an individual oriented model for evolving visiting behavior based on Internet clickstream data. Many online sites, both retailers and content providers, routinely monitor visitor traffic as a useful measure of their overall success. In addition, (Moe & Fader, 2004) also examine the relationship between visiting frequency and purchasing propensity at an e-commerce site and show that changes (i.e., evolution) in an individual's visit frequency over time provides further information regarding which customer segments are likely to have higher purchasing conversion rates.

(Alshamari, 2016) explores the tools that are customarily used by disabled users while using the web. It also discusses a number of available tools that help designers, developers and testers to assess web accessibility, and evaluates the accessibility of 3 popular Arab e-commerce websites using 5 accessibility testing tools; namely Achecker, TAW, Eval Access,



MAUVE and FAE. This research has found that most accessibility guidelines are covered by Achecker tool. Navigation, readability, input assistance and timing are the commonly found accessibility problems while assessing the accessibility of the targeted websites. It has been also revealed that HTML can influence accessibility evaluation as HTML errors are considered as accessibility problems.

(Li et al., 2021) constructed models of the two companies' smart library portal with the support of Link Analysis. This paper analyzes three smart library portal models of two major Chinese third-party companies on Smart Library Portal Research and Development, by selecting the following seven website influencing factors: total number of the web pages, internal web link counts, external web link counts, External WIF, Baidu weight, Sogou weight and PR Value. Then the values of these seven influencing factors are synthetically sorted and sequenced based on Grey Relation Analysis.

(Campoverde-Molina et al., 2021) have performed a systematic literature review (SLR) to consolidate, analyze, synthesize and interpret the accessibility results of university websites published in 42 papers. The results present the analysis and synthesis of the evaluations of 9,140 universities in 67 countries. In this study, 38,416 web pages, 91,421 YouTube videos and 28,395 PDF documents were evaluated. Manual methods, methods with automatic tools and the combination of both methods were used for the evaluation. Most websites were evaluated using the ISO/IEC 40500:2012 and Section 508 standards. The accessibility guidelines most commonly violated in the evaluations were: adaptable, compatible, distinguishable, input assistance, keyboard accessible, navigable, predictable, readable, and text alternatives. In conclusion, the university websites, YouTube videos and PDF documents analyzed in the 42 papers present important accessibility problems. The results of the statistical classification and accessibility report of the websites showed that a number of improvements are needed to make them more accessible and usable in terms of WCAG 2.0.

(Sharma & Choudhary, 2021) takes the issue of web accessibility of the home page of the library website for the top fifty universities ranked by NIRF (National Institutional Ranking Framework). The home page of the top fifty Universities Library websites has been analyzed for accessibility errors and related issues with the help of WAVE (Web Accessibility

Evaluation Tool). Results revealed that maximum universities had accessibility issues on their library home page.

**3. Research Questions:** The objective of this study is to evaluate the websites quality of State Public Universities in Odisha on web performance parameters. To achieve this objective, we have attempted in this study to find answers to the following research questions.

- I. What is the quality of the Websites of State Public Universities in Odisha based on the selected parameters?
- II. What are the major quality issues in the Websites of State Public Universities in Odisha?

#### 4. Methodology

The survey method of research was used in this study, and data collection was done through observation techniques. This study examines the websites of 13 State Public Universities in Odisha. The list of State Public Universities in Odisha was obtained from the Higher Education Department, Government of Odisha website shown in the Table 1 (<https://dhe.odisha.gov.in>). The data were collected from various online diagnostic tools for the month of June 2022. The websites' URL were entered into the online tools to collect the data for defined parameters and the data was analyzed by using the MS excel. The parameters studied during the evaluation of the websites are: traffic overview, bounce rate, response time, page size, page rank, design optimization, content, backlinks, and accessibility. The online diagnostic tools used against the parameters are shown in Table 2.

**Table 1 Name of the State Public University in Odisha and their official website**

Name Of The University	Official Website
Utkal University	<a href="https://www.utkaluniversity.nic.in/">https://www.utkaluniversity.nic.in/</a>
Berhampur University	<a href="http://www.buodisha.edu.in/">http://www.buodisha.edu.in/</a>
Sambalpur University	<a href="http://www.suniv.ac.in/">http://www.suniv.ac.in/</a>
Ravenshaw University	<a href="http://www.ravenshawuniversity.ac.in/">http://www.ravenshawuniversity.ac.in/</a>
Maharaja Sriram Chandra Bhanja Deo University	<a href="http://www.nou.nic.in/">http://www.nou.nic.in/</a>
Shree Jagannath Sanskrit University	<a href="http://www.sjsv.nic.in/">http://www.sjsv.nic.in/</a>
Fakir Mohan University	<a href="http://www.fmuniversity.nic.in/">http://www.fmuniversity.nic.in/</a>

Rama Devi Women's University, Bhubaneswar	<a href="https://www.rdwuniversity.nic.in/">https://www.rdwuniversity.nic.in/</a>
Gangadhar Meher University	<a href="http://www.gmuniversity.ac.in/">http://www.gmuniversity.ac.in/</a>
Khallikote University	<a href="http://www.kub.ac.in/">http://www.kub.ac.in/</a>
Odisha State Open University	<a href="http://www.osou.ac.in/">http://www.osou.ac.in/</a>
Madhusudan Law University	<a href="https://mlu.ac.in/">https://mlu.ac.in/</a>
National Law University	<a href="http://www.nluo.ac.in/">http://www.nluo.ac.in/</a>

Table 2 Parameters and Diagnostics tools used to collect data

Parameters	Online Tool
Traffic Overview	<a href="https://neilpatel.com/website-traffic-checker/">https://neilpatel.com/website-traffic-checker/</a>
Bounce rate	<a href="https://www.semrush.com/analytics/traffic/">https://www.semrush.com/analytics/traffic/</a>
Google page rank	<a href="https://checkpagerank.net/">https://checkpagerank.net/</a>
Response time	<a href="https://www.websitepulse.com/tools/website-test">https://www.websitepulse.com/tools/website-test</a>
Page size	<a href="https://www.websitepulse.com/tools/website-test">https://www.websitepulse.com/tools/website-test</a>
Accessibility	<a href="http://www.site-analyzer.com">http://www.site-analyzer.com</a>
Design optimization	<a href="http://www.site-analyzer.com">http://www.site-analyzer.com</a>

## 5. Discussion and implications

This study evaluates the quality of the websites of thirteen State Public Universities in Odisha. The values for the quality parameter were obtained by the online tools for the month of June, 2022. They are shown in Table 3. The scope of this study is the result given by web diagnostic tools. Once the data from various online diagnostic tools were collected, a descriptive analysis was conducted.

Table 3 values for the quality parameter are obtained by the online tools

Name Of The University	Traffic Overview	Bounce rate	Google page rank	Response time (seconds)	Page size (bytes)	Accessibility	Design	Contents
Utkal University	4979	52.63%	4	5.855	266989	51.3	63.8	64.2
Rama Devi Women's University	14452	0%	3	2.149	103517	45	80.1	38.6
Madhusudan Law University	651	21.67%	2	2.315	45430	61.3	78.3	34
Sambalpur University	68356	63.27%	4	1.513	114992	57.8	56.5	45.3
Shree Jagannath Sanskrit University	2280	21.73%	3	0.861	26379	50.8	51.5	34.9
Ravenshaw University	1214	54.75%	4	0.731	657451	49.1	78.3	56.6
Odisha State Open University	56295	11.71%	4	0.847	20390	44	57.6	24.7
Maharaja Sriram	6274	20.00%	4	0.947	23162	26.6	72.9	44.5

Chandra Bhanja Deo University								
National Law University	10852	70.02%	4	3.511	195435	57.7	55.7	72.3
Khallikote University	7348	57.14%	3	0.539	10909	66.4	55.7	13.3
Gangadhar Meher University	47547	89.76%	3	2.432	94021	57.8	56.5	59.9
Fakir Mohan University	14393	43.66%	4	3.655	88986	58	51.5	59.2
Berhampur University	7226	68.22%	4	1.361	364710	58	74.6	45.3

The results show that the best organic monthly traffic in the Indian context is 68356 of Sambalpur University website, while the worst organic monthly traffic is 651 of Madhusudan Law University website. Simply keeping a watch on traffic alone will tell if content strategy is paying off or if there is anything new to undertake. (Stephen, 2020)

The average bounce rate of the websites under study was found to be 44% with a minimum of 0% of Rama Devi Women's University website and maximum of 89.76 % of Gangadhar Meher University website. A bounce rate of 56% to 70% is on the high side, although there could be a good reason for this, and 41% to 55% would be considered an average bounce rate. An optimal bounce rate would be in the 26% to 40% range (SEMrush 2020).

The average response time was found to be 2.055 and the minimum response time is 0.539 for Khallikote University website and maximum response time is 5.855 for Utkal University website. The fact is that there are fractions of a second to convince a user to stay on a web page. When a webpage's loading time increases from just 1 to 3 seconds, the probability of the user leaving a site rises by 32%. If you stretch the load time to 5 seconds, bounces increase dramatically to 90% (Think with Google, n.d.).

Page size is one of the important issues in web development process as it is affecting a number of designing areas. Increase in webpage size is a natural progression as more and more content gets added to a website with each coming day. From the above results, analysis and discussion it is clear that increase in webpage size is becoming a major obstacle in the web designing process (Manhas, 2014). The average page size of the websites under study was found to be 112910 bytes (151.24 KB). The minimum page size is 10909 bytes (10.66 KB) of Khallikote University website and the maximum page size is 657451 bytes (642.33

KB) of Ravenshaw University website. The majority of the websites considered during the webpage size evaluation process are up to the standard i.e. the 100kb thumb rule provided for the webpage size. Page size is an important factor of web performance as they impact load time directly.

PageRank (PR) is an algorithm used by Google Search to rank web pages in their search engine results. It is named after both the term "web page" and co-founder Larry Page. PageRank is a way of measuring the importance of website pages (Wikipedia, n.d.). The Google page rank shows the score on the scale of 0 to 10. If the result is closer to 10, that means PR score is good. If the result is closer to 0, that means PR score isn't that impressive. The average Google page rank of the websites under study was found to be 3.53. The minimum Google page rank is 2 of Madhusudan Law University website and the maximum Google page rank is 4 for the websites of Utkal University, Sambalpur University, Ravenshaw University, Odisha State Open University, Maharaja Sriram Chandra Bhanja Deo University, National Law University, Fakir Mohan University, and Berhampur University. The design optimization score ranged from 51.5 to 80.1 with highest optimized website being that of Rama Devi Women's University, Bhubaneswar.

The content score is an aggregated predictor for the competitiveness of online content. The Content Score uses data to determine the quality of the writing and optimization to what is considered to be relevant content. The average content score is in this study is 45.6%, where minimum score is 13.3% of Khallikote University website and the maximum content score is 72.3% of National Law University website. In general, content score between 0 - 33 warns about irrelevant or low-quality content. 34 - 66 represents decent quality and relevance, or high quality with low relevance, or low quality with high relevance. 67 - 100 indicates optimum quality and relevance.

For good search engine ranking of website, the really important factor is content. Content should be original, not copied. For good search engine ranking other than content, the links associated with other higher PageRank websites are really important, that is called backlinks. Backlinks should be in relevant niche websites (Dave & Jain, 2013). Here, in this study the average backlinks in a website is 14577. The minimum backlinks are 339 of Madhusudan

Law University website and the maximum backlinks are 64589 of Sambalpur University website.

Web Accessibility or Accessibility means that a website is developed in such a way that there are no barriers which prevent interaction with or access to the websites by people with physical disabilities, situational disabilities, and socio-economic restrictions. This means all the users have equal access to information and functionality. In this study the minimum accessibility score is 26.6 of Maharaja Sriram Chandra Bhanja Deo University website and the maximum accessibility score is 66.4 of Khallikote University.

## **6. Conclusions**

This study has determined the factors that assess the quality of a University website. The list of attributes was derived from the specialized literature. The survey and analysis described in this paper enabled a greater understanding of the inter-relations and influences on the quality factors. The results provide an important foundation for the understanding of quality in University websites that will allow developers to assess the strengths and weaknesses of their sites in order to know where to focus for further development.



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## A COMPARATIVE ANALYSIS OF LIQUIDITY, SOLVENCY AND PROFITABILITY OF PUBLIC and PRIVATE BANKING SECTOR

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### Abstract

*The investigation of Indian Banking zone possesses an imperative area in progress of monetary framework in India, and is expressed to close and great estimated take a gander at of different measures chose with inside the activity of business undertaking and control association. The expectation of this paper is to concentrate on liquidity, money related situation and productivity of private and public zone banks at some stage in 2014-15 - 2015-19. The glance at is predicated on auxiliary realities which are assembled from the soundness sheets, profit proclamations and yearly surveys of banks in India. The liquidity proportions inspect the energy of the banks to take care of their cash owed with inside the brief while the dissolvability proportions give a gauge of the primary security of the banks. productivity proportions objective an organization's backpedal on subsidizing in stock and excellent resources. These proportions generally show how appropriately organizations are fit for do income from their tasks. to degree the liquidity financial assessment store proportion, state of the art proportion and coins store proportion are broke down while to degree the dissolvability and benefit obligation reasonableness proportion, capital sufficiency proportion, backpedal on resources, backpedal on decency and web side interest edge are examined separately. a technique ANOVA, relapse, suggest and difference are utilized as factual devices. Relapses are carried out to assess the impact of liquidity and financial situation on banks benefit. The impacts of relapses show that liquidity and dissolvability influences banks productivity unimportantly. If there should be an occurrence of SBI it are consistently noticeable that ROA consolidates a unimportant impact on CR, CADR, CDR, CAR and DE. in the event of BOB it will probably be noticeable that ROA irrelevantly affects CR, CADR, CDR, CAR and DE affects ROA. in the event of Canara it very well may be noticeable that ROA irrelevantly affects CR, CADR, CDR, DE and CAR is meaningfully affecting ROA. In the event of HDFC it very well may be noticeable that ROA consolidates an irrelevant impact on CR, CADR, CDR, CAR and DE. If there should be an occurrence of ICICI it is found that ROA irrelevantly affects CR, CADR, CDR, CAR and DE. If there should be an occurrence of AXIS it very well may be noticeable that ROA irrelevantly affects CR, CDR, CAR, DE and CADR*

*significantly affects ROA. The glance at shows that each the non-public and public zone banks do comparatively appropriately to keep up with out their removal exercises to their clients.*

**Keywords:** - Liquidity, Profitability, Solvency, Regression Analysis, One Way ANOVA

## INTRODUCTION

Banking framework plays out a fundamental situation in blast of economy. They are the life saver of any state of the art economy. It is one of the crucial mainstays of financial gadget, which plays out a significant position withinside the accomplishment or disappointment of an economy. It's obviously true's that banks are one of the most established monetary go-betweens in the monetary framework. Indian industry was functional in a very directed environmental elements until the time banking area changes were presented in mid 1990s. With the progression, privatization and financial cycle banks in India face colossal rivalry and needed to control with effectiveness. The greatest test is to attract new clients and hold significant clients. The innovation is furthermore partaking in a critical job in rising the strength and giving solaces to the clients. The new confidential area banks and furthermore the unfamiliar banks functional in India are giving an extreme contest to the public-area banks and late confidential area banks inferable from their cuttingedge business tasks. Liquidity, benefit and dissolvability assume a fundamental part inside the smooth endurance of the banks. These are the essential variables in the support of bank's money related suitability. A sound and productive financial area bear the negative shocks and add to the sufficiency of monetary framework.

## REVIEW OF THE LITERATURE

Most of the empirical evidences on the connection among the liquidity and profitability on one hand, and among the solvency and profitability alternatively come from research of the determinants of company liquidity ratios and solvency ratios and profitability. Over the beyond years, diverse attempts were made via way of means of the researchers to examine the profitability, solvency and liquidity function of private sector and public sector banks.

**Brigham and Ehrhardt (2010)** expressed "financial proportions are intended to help think about money related explanations". Monetary proportions are utilized as a making arrangements and oversee instrument. Monetary proportions assessment is utilized to evaluate the general exhibition of an association. It goals to choose the hearty and defenseless factors and its gives arrangements with the guide of utilizing granting reasonable plans.

**Nagarkar Jivan Jayant (2015)**, in his review "Examination of Financial Performance of Banks in India", has tried to look at the general presentation of five essential public, private and unfamiliar district banks. The paper attempted to discoverS, how banks have done on monetary boundaries throughout the course of recent years in contrast with extreme increment years. Monetary in general execution of banks is in correlation in two time spans: High increment long stretches of 2004-08 and Low increment long stretches of 2009-13.

### **AIMS AND OBJECTIVES**

1. To investigation the productivity, dissolvability and liquidity position of private area and public area banks.
2. To track down the effect of liquidity proportions and dissolvability proportions on productivity of banks in India.
3. To dissect whether public area or confidential areas bank is better regarding proportions.

### **RESEARCH AND METHODOLOGY**

A research technique includes particular strategies which might be followed in research system to collect, bring together and compare records. It defines the ones tools which might be used to acquire applicable facts in a selected research study. There are varieties of statistics number one and secondary. The examine is primarily based totally at the secondary records. The secondary records has been accumulated from the annual document and the income statement posted withinside the money control.

**Research Design-** This present examine is performed through following a Descriptive Design.

**Sample Unit-** This examine consist of general six banks which in addition categorized into 3 Public region Banks and 3 Private region Banks in India. Period of the Study- This studies examine covers a duration of 5 years i.e. from economic 12 months 2014-15 to 2018-19.

**Data Collection-** The inspect is essentially founded absolutely on optional records that has been amassed from yearly audits of the particular banks, Reserve Bank of India records, Indian Banks Association distributions, magazines, diaries, documents and different posted realities.

**Programming** The assessment of the optional records was done the utilization of MS WORD and MS-EXCEL.

**Instruments Applied -**

Monetary Tools-Ratio Analysis

Factual Tools-MEAN = amount of variable/N

$SD = \sqrt{\sum X^2/N - (\sum X/N)^2}$

$CV = SD/MEAN * 100$

### **One way ANOVA and Regression analysis**

**Variables of the study-** Liquidity ratios, Solvency ratios and Profitability ratios  
**Dependent variables-** The dependent variables of the examine are Return on Assets (ROA)

**Independent variables-** The impartial variables are liquidity ratios and solvency ratios which consist of current ratio, credit score deposit ratio, cash deposit ratio, debt equity ratio and capital adequacy ratio respectively.

### **Analytical Model**

Model 1:  $ROA = \alpha + \beta_1 CR + \beta_2 CDR + \beta_3 CADR + \epsilon$

Model 2:  $ROA = \alpha + \beta_1 DE + \beta_2 CAR + \epsilon$

Where,  $\alpha$  is the constant;  $\beta_1, \beta_2, \beta_3$  are the coefficients of independent variables and  $\epsilon$  = Error term. ROA = Return on Asset Ratio; CR = Current Ratio; CDR = Credit Deposit Ratio; CADR = Cash Deposit Ratio; DE = Debt Equity Ratio and CAR = Capital Adequacy Ratio

**Hypothesis testing -** An investigation of fluctuation is factual speculation inside which the inspecting dissemination of test measurement once invalid theories is valid. Invalid speculations are set and embraced for the investigation of information. The invalid



speculations are portrayed by  $H_0$ . The resulting speculation had been anticipated for the review –

$H_0$ : There is no significant relationship among liquidity, dissolvability and productivity proportions between the above driving Indian Banks.

$H_1$ : There is significant relationship among liquidity, dissolvability and productivity proportions between the above driving Indian Banks.

## ANALYSIS AND INTERPRETATION OF DATA

*Table showing Mean, SD & CV of public sector banks in India*

Banks/Ratios	SBI			BOB			CANARA		
	Mean	Standard Deviation	Coefficient of Variation	Mean	Standard Deviation	Coefficient of Variation	Mean	Standard Deviation	Coefficient of Variation
CDR	79.11	5.282	6.677	69.37	3.376	4.866	70.17	1.475	2.103
CADR	6.53	0.683	10.464	3.75	0.194	5.196	4.46	0.337	7.566
CR	0.07	0.011	16.288	0.04	0.013	32.596	0.05	0.013	26.076
DE	15.18	1.215	8.004	15.52	0.542	3.497	19.61	1.1	5.614
CAR	11.17	0.542	4.855	11.44	1.533	13.406	11.92	1132	9.499
ROE	4.57	6.067	132.76	-2.07	10.663	-514.631	-0.38	8.843	-2327.24
ROA	0.276	0.352	127.806	-0.08	0.4994	-624.25	0.004	0.605	15139.56
NIM	2.38	0.193	8.138	2.26	0.15	6.64	2.34	0.182	7.796

*Source: Secondary Data, MS Excel*

*Table showing Mean, SD & CV of private sector banks in India*

Banks/Ratios	HDFC			ICICI			AXIS		
	Mean	Standard Deviation	Coefficient of Variation	Mean	Standard Deviation	Coefficient of Variation	Mean	Standard Deviation	Coefficient of Variation
CDR	84.31	1.86	2.207	98.39	6.641	6.75	90.97	3.637	3.998
CADR	7.34	1.935	26.372	6.41	0.41	6.409	6.77	0.633	9.355
CR	0.05	0.0103	26.076	0.11	0.028	25.712	0.13	0.03	23.709

DE	7.96	0.602	7.573	7.03	0.498	7.089	9.38	0.718	7.664
CAR	15.76	1.141	7.242	17.33	0.732	4.228	15.71	0.664	4.226
ROE	9.31	17.039	183.018	18.86	2.762	14.648	10.38	7.58	73.033
ROA	2.36	0.25	10.612	1.192	0.571	47.952	0.95	0.74	78.449
NIM	4.28	0.044	1.044	3.36	0.115	3.428	3.57	0.209	5.857

Source: Secondary Data, MS Excel

The above examination shows the bank wise mean, standard deviation and coefficient of variety proportion of six chose banks.

### Hypothesis testing

$H_0$ : There is no significant relationship among liquidity, dissolvability and productivity proportions between the above driving Indian Banks.

$H_1$ : There is significant relationship among liquidity, dissolvability and productivity proportions between the above driving Indian Banks.

Table showing one way ANOVA

Source	F	P-value	F crit
Credit Deposit Ratio	38.8345	9.711	2.620654
Cash Deposit Ratio	18.58666	2.1608	2.533555
SCurrent Ratio	10.94857	4.6306	2.533555
Capital Adequacy Ratio	26.90753	4.1909	2.620654
Debt Equity Ratio	185.4726	2.3318	2.620654
Return on Assets	15.34687	8.3607	2.620654
Return On equity	3.339553	0.026202	2.772853
Net Interest Margin	135.1831	9.1317	2.620654

Source: Secondary Data, MS Excel

Above examination determined worth of ANOVA one way test is more (F esteem) than the table worth (F crit) subsequently invalid speculation is dismissed in every one of the cases. Confidential Sector Banks have higher CAGR than Public Sector Banks. ANOVA Hypothesis additionally recommends that there is tremendous contrast in Credit Deposit Ratio of chosen public area banks and confidential area banks. The typical CDR of public area banks was 4.91 and the normal CDR of private area banks was 6.84 during this period. Confidential Sector Banks have higher CDR than Public Sector Banks. ANOVA Hypothesis likewise proposes that there is huge contrast in Cash Deposit Ratio of chosen public area banks and confidential area banks. The typical CR of public area banks was 0.05 and the normal CR of private area banks was 0.09 during this period. Confidential Sector Banks have higher CR than Public Sector Banks. ANOVA Hypothesis additionally recommends that there is tremendous distinction in Current Ratio of chosen public area banks and confidential area banks. The typical CAR of public area banks was 11.51% and the normal CAR of private area banks was 16.26% during this period. Every one of the banks are keeping up with CAR over 8% which is least recommended by RBI. Confidential Sector Banks have higher CAR than Public Sector Banks. ANOVA Hypothesis likewise proposes that there is huge contrast in Capital Adequacy Ratio of chosen public area banks and confidential area banks. The typical DE of public area banks was 16.77 and the normal D of private area banks was 8.12 during this period. Confidential Sector Banks have higher DE than Public Sector Banks. ANOVA Hypothesis additionally proposes that there is tremendous distinction in Debt Equity Ratio of chosen public area banks and confidential area banks. The typical ROA of public area banks was 0.2 and the normal ROA of private area banks was 1.5 during this period. It shows that private area banks are more productive in creating return on their resources than public area banks. Public area banks are dealing with the issue of non-performing resources which lessens their profit from resources. Confidential Sector Banks have higher ROA than Public Sector Banks. ANOVA Hypothesis likewise recommends that there is tremendous distinction in ROA of chosen public area banks & confidential area banks. The typical ROE of public area banks was 0.71 and the normal ROE of private area banks was 12.85 during this period. Confidential Sector Banks have higher ROE than Public Sector Banks. ANOVA Hypothesis likewise proposes that there is massive distinction in

Return Equity Ratio of chosen public area banks and confidential area banks. The typical NIM of public area banks was 2.33 and the normal NIM of private area banks was 3.73 during this period. Confidential Sector Banks have higher NIM than Public Sector Banks. ANOVA Hypothesis likewise recommends that there is massive distinction in Net Interest Margin Ratio of chosen public area banks and confidential area banks. Above examination determined worth of ANOVA one way test is more (F esteem) than the table worth (F crit) in this way invalid speculation is dismissed in every one of the cases. Accordingly it is inferred that there is critical connection between the liquidity, dissolvability and productivity of the chose private and public area banks.

### Regression Analysis

ROA as independent variable

*Table showing the result of regression analysis (impact of liquidity ratios on ROA)*

Source	SS	MS	F	Significance F
SBI	0.473659471	0.157886	6.562054	0.27767123
BOB	0.984773	0.328258	25.59176	0.144064
CANARA	1.322123	0.440708	3.043617	0.393343
HDFC	0.142815	0.047605	0.440361	0.771075
ICICI	0.899072	0.299691	0.734881	0.672296
AXIS	2.220702	0.740234	727.1065	0.027253

*Source: Secondary Data, MS Excel*

*Table showing the result of regression analysis (impact of solvency ratios on ROA)*

Source	SS	MS	F	Significance F
SBI	0.353775	0.176888	2.457714	0.28920843
BOB	0.925343006	0.462672	12.80628	0.072431
CANARA	1.435222	0.717611	45.27786	0.021609
HDFC	0.194375	0.097187	3.437519	0.225351

ICICI	0.839996	0.419998	1.799151	0.357251
AXIS	1.630297	0.815148	2.756565	0.266201

*Source: Secondary Data, MS Excel*

The above table presents the regression model, which is used to find the impact of the liquidity ratios and solvency ratios on ROA. In case of SBI it can be seen that ROA has a insignificant impact on CR, CADR, CDR, CAR and DE. In case of BOB it can be seen that ROA has a insignificant impact on CR, CADR, CDR, CAR and DE is having significant impact on ROA. In case of CANARA it can be seen that ROA has a insignificant impact on CR, CADR, CDR, DE and CAR is having significant impact on ROA. In case of HDFC it can be seen that ROA has a insignificant impact on CR, CADR, CDR, CAR and DE. In case of ICICI it can be seen that ROA a insignificant impact on CR, CADR, CDR, CAR and DE. In case of AXIS it can be seen that ROA has insignificant impact on CR, CDR, CAR, DE and CADR is having significant impact on ROA.

## CONCLUSION

The review showed that the chose banks are different as far as their CDR, CADR, CR, CAR, DE ratio, ROA, ROE and NIM. Differences exist in their mean value of CDR, CADR, CR, CAR, DE ratio, ROA, ROE and NIM. ANOVA Hypothesis suggests that there is significant difference in CDR, CADR, CR, CAR, DE ratio, ROA, ROE and NIM of chosen public area banks and confidential area banks. The review mirrors that both the private and public area banks are doing similarly well to complete their loaning exercises to their clients.

### Limitations-

1. The examination is connected with three public and confidential area banks in India.
2. The examination depends on the auxiliary information and has been gathered from the distributed yearly reports and bank sites.
3. The review is connected with a time of long term from 2014-15 to 2018-19
4. The review limitations on restricted factors just for examining the productivity, liquidity and dissolvability of chosen private area banks and Public area banks.

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## ROLE OF RURAL ENTREPRENEUR IN THE ECONOMIC DEVELOPMENT OF INDIA - A STUDY

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### ABSTRACT

A majority of the Indian population resides in villages. The village is the back bone of the country. Rural industries play an important role in the rural development of Indian economy. Enterprise and entrepreneurship are the drivers of economic growth in India. With the constant challenges facing traditional rural sectors, the future success of the rural economy is directly related to the capacity of rural entrepreneurs to innovate, and to find new business opportunities which create employment and income in rural areas. Rural entrepreneurship is not only essential for generating employment opportunities in the rural areas, but also its contribution to the development of agriculture and urban industries. Rural entrepreneurship is considered as one of the solutions to decrease poverty, migration, economic disparity, unemployment and progress rural areas and backward regions. In the rural sector of the economy those who are carrying out entrepreneurial activities by establishing industrial and business units, are called rural entrepreneurs. In the rural areas the establishment of industrial and business units refers to rural entrepreneurship. In other words, rural entrepreneurship indicates entrepreneurship developed in rural areas. Or, say, rural entrepreneurship implies rural industrialization. Thus, we can say, entrepreneurship precedes industrialization. This paper presents a study on role of rural entrepreneur in the economic development of India.

***Keywords: Rural entrepreneur, Economic development, Backward regions, Indian economy, opportunities.***

## INTRODUCTION

Rural entrepreneurship is defined as entrepreneurship which originates in the rural areas but has a lot of prospective to drive numerous endeavours in industry, agriculture, business, etc. and add to the economic development of the country. India is a country of villages. Nearly 70% of its major population resides in villages and their livelihood is supported by agriculture and allied activities. Thus the economic development of the country depends largely on the standard of living of the people living in the rural areas and the level of development taken place in those areas. According to Mahatma Gandhi, the real solution to the problems of this country is production by its masses and not mass level production. Rural development will be made possible through the growth of rural entrepreneurs which would help in reducing levels of poverty, unemployment, etc. Rural entrepreneurship also means rural industrialization. Although agriculture provides income to rural people, still rural development is increasingly connected to enterprise development. As national economies are more globalized and competition is increasing at a higher rate, rural entrepreneurship is affecting not only industry but also agriculture. It is not surprising that rural entrepreneurship is gaining its importance as a force of economic change that must take place if many rural communities are to survive. However, entrepreneurship needs a supporting environment in order to flourish.

## MAJOR OBJECTIVES OF STUDY

1. To study the role of rural entrepreneurs in economic development
2. To know the main benefits of rural entrepreneurship
3. To study the problems in rural entrepreneurship
4. To suggest various remedial measures for solving the problems of rural entrepreneurs

## METHODOLOGY

This research paper is based upon secondary data. The data were collected from journals, books, website and annual reports.

## ROLE OF ENTREPRENEURS IN ECONOMIC DEVELOPMENT

Economic development basically means a process of upward shift whereas the real per capita income of a country increases over a period of time. Entrepreneur plays a vital role in economic development. Entrepreneurs work as the facilitators in the process of

industrialization and economic growth. Technological progress alone cannot meet economic development, unless technological developments are put to economic use by entrepreneurs.

The entrepreneur organizes and puts to use capital, labour and technology. Accordingly, “development does not occur suddenly as a natural consequence when economic conditions in some sense are right. A promoter is needed and this requires entrepreneurial activity to a considerable extent, the diversity of activities that characterizes rich countries can be attributed to the supply of entrepreneurs.”

The entrepreneur is important for the creation of new enterprises that strengthen the economy and revive the established enterprises that make up the economic structure.

Entrepreneurs create the process of economic development in the following ways:

### **1. Capital Formation:**

A country can attain economic development only when there is more amount of investment and production. Entrepreneurs mobilize the idle savings of the public through the issues of industrial securities. Investment of public savings in industrial activity results in efficient utilization of national resources. The increase in the rate of capital formation is essential for rapid economic growth. Thus, an entrepreneur is the creator of wealth.

### **2. Increase in Per Capita Income:**

Entrepreneurs convert the latent and idle resources like land, labour and capital into national income and wealth in the form of goods and services. They help to increase net national product and per capita income in the country, which are important yardsticks for measuring economic growth.

### **3. Generation of Employment:**

The entrepreneurs are not job seekers but job makers and job suppliers. Entrepreneurs generate employment both directly and indirectly. Directly, an entrepreneur offers the best way for independent and honorable life as self-employment. Indirectly, they offer jobs to millions by setting up large and small scale business units. Thus, entrepreneurs help to reduce the level of unemployment in the country.

**4. Balanced Regional Development:**

The entrepreneurs always look for opportunities in the environment. They capitalize on the opportunities of governmental concessions, subsidies and facilities to set up their enterprises in undeveloped areas. The setting up of steel plant at Tata Nagar, Reliance Petrochemicals at Jamnagar (Gujarat) have resulted in the development of Good Township and peripheral regional development. Thus entrepreneurs reduce the imbalances and disparities in development among regions.

**5. Improvement in Living Standards:**

Entrepreneurial initiative helps to increase in the level of income and purchasing power of people by generating more employment. Increased demand for goods and services boost up industrial activity. Large scale production will result in economies of scale and low cost of production. The contribution of entrepreneurial initiative for new innovative and varying quality products at most competitive prices, are making common man's life smoother, easier and comfortable.

**6. National Self-reliance:**

Entrepreneurs are certainly the cornerstones of national self-reliance. They help to produce indigenous substitutes to imported products which reduce the dependence on foreign countries. There is also possibility of exporting the goods and services to receive foreign exchange. The import substitution and export promotion help to ensure the national self-reliance of the country.

**7. Backward and Forward Linkages:**

The change initiated by an entrepreneur has a chain reaction. Building of an enterprise has various backward and forward linkages. For example- by the establishment of a steel plant, many ancillary units like iron ore and coal are generated. These are backward linkages. Similarly, increasing the supply of steel enables the growth of tube making, machine building, utensil manufacturing and so on.

Entrepreneurs generate an atmosphere of enthusiasm and express a sense of purpose. They give an organization its momentum. Entrepreneurial behavior plays vital role for the long term growth of an economy.

## PROBLEMS OF RURAL ENTREPRENEURS

Entrepreneurs play very important role in the development of economy thus contributing to overall Gross Domestic Product of the nation. They are facing various problems in day to day life. Every flourishing business has its own problems as thorns are part of roses. Some major problems met by rural entrepreneurs are as under:

1. Financial Problems: Some of the key financial problems faced by rural entrepreneurs are as follows:
  - a. *Paucity of funds*: Most of the rural entrepreneurs fail to get external funds due to absence of tangible security and credit in the market. Sometimes the loan facility of the banks is too much time consuming that it dissatisfies the rural entrepreneurs. Nowadays lack of finance available to rural entrepreneurs is one of the biggest problems especially due to global recession.
  - b. *Inadequate Infrastructural Facilities*: The growth of rural entrepreneurs is not very good due to poor infrastructural facilities in spite of the efforts made by government.
  - c. *Risk Element*: Rural entrepreneurs have very less risk bearing capacity due to lack of financial resources and external support.
2. Marketing Problems: The fundamental marketing problems met by rural entrepreneurs are as follows:
  - a. *Competition*: Rural entrepreneurs face severe competition from urban entrepreneurs. They experience greater cost of production due to high input cost. Problem of standardization and competition for large scale units are some of the major problems faced by marketers. New ventures have limited financial resources, therefore cannot afford to spend more on advertising and sales promotion.
  - b. *Middlemen*: Middlemen exploit rural entrepreneurs. Rural entrepreneurs are very much dependent on middlemen for marketing of their products who necessarily get

huge profit. Poor means of transportation facilities and storage facilities are also other marketing problems in rural areas.

3. Management Problems: Some of the major management problems are as follows:
  - a. *Lack of Knowledge of I.T:* Information technology is not popular in rural areas. Entrepreneurs depend on internal relationships which encourage the transformation of goods and services, ideas and information.
  - b. *Legal formalities:* It is extremely difficult for rural entrepreneurs to fulfill various legal formalities and to attain licenses due to ignorance and illiteracy. The procurement of raw materials is also a difficult task for rural entrepreneur. They may also face the problem of storage and warehousing.
  - c. *Lack of technical knowledge:* Rural entrepreneurs suffer a severe problem of lack of technical knowledge. Lack of training facilities and other extensive services create an obstacle for the development of rural entrepreneurship.
  - d. *Inferior quality products:* Another problem in the growth of rural entrepreneurship is poor quality products produced due to unavailability of standard tools and equipment as well as poor quality of raw materials.
4. Human resource Problems: Some of the major human resource problems found in organization are as follows:
  - a. *Low skill level of workers:* Most of the rural entrepreneurs are unable to find workers with high skills. They have to be provided with on the job training and their training is a difficult task for entrepreneur as the workers are generally uneducated and the training should be provided in local language for their easy understanding.
  - b. *Negative attitude:* Sometimes the family, society and support system is not providing conducive environment to encourage rural people to take up entrepreneurship as a career. Mostly it is due to lack of knowledge and awareness of entrepreneurial opportunities. Young and well-educated youths mostly tend to leave. As per circumstances, rural people by force may be more self-sufficient and capable in comparison to their urban counterparts, but the culture of entrepreneurship tends to be weak. Continuous motivation is required in case of rural employee to whom it is very much difficult for an entrepreneur to impart with.



## MEASURES FOR SOLVING THE PROBLEMS OF RURAL ENTREPRENEURS

The organizations like NABARD, ICICI, SIDBI, IFCI, etc. are continuously trying to solve the problems met by the rural entrepreneurs. Marketing problems are mainly related with pricing, distribution channels, product promotion etc. For making the rural entrepreneurs to start any business venture, the measures must be adopted as follows:

- a. Formation of Finance Cells: Banks and financial institutions which provide finances to entrepreneurs must have distinctive cells to make finance easy for rural entrepreneurs.
- b. Concessional Interest Rate: The rural entrepreneurs must be provided finances at concessional interest rate and on easy repayment basis. The unnecessary formalities should be avoided in sanctioning the loans to rural entrepreneurs.
- c. Offering training facilities: Training is essential for the complete development of entrepreneurships. It also enables the rural entrepreneurs to commence the venture successfully as it certainly imparts required skills to run the enterprise. Presently the economically weaker entrepreneurs are necessarily offered such training facility by government of India regarding skill development so that rural entrepreneurs can generate employment opportunities and income in rural areas specifically in south and north east region.
- d. Proper supply of scarce raw materials: On a priority basis rural entrepreneurs must be ensured of proper supply of scarce raw materials. To make the products manufactured by rural entrepreneurs reasonable and cost competitive, subsidy must be offered on time.
- e. Development of marketing co-operatives: Proper encouragement and assistance should be given to rural entrepreneurs for the development of marketing co-operatives. The marketing co-operatives are helpful in getting the inputs at a reasonable price and also helpful in retailing the products at profitable prices. Thus proper education, comprehensive training, development of marketing co-operatives, building of separate financial institutions help to flourish the rural entrepreneurs in India.

## SUGGESTIONS

1. Labour intensive techniques to be adopted
2. Educate the rural entrepreneurs
3. Offer finance with low rate of interest
4. Government role: To provide infrastructure, warehousing, marketing facilities and assist rural entrepreneurs to export their goods to foreign countries.
5. Exploitation of village resources like wind and solar energy for rural electrification.
6. Establishment of ancillary units to support big industries of urban.
7. Providing market information
8. SWOT Analysis: Strengths, Weaknesses, Opportunities, and Threats of small businessmen have to be identified and properly trained to motivate them to become entrepreneurs.
9. Innovators club should be established in villages to support the large mass of youth who are interested in taking business as a career.
10. Marketing, management skills should be improved by imparting training.
11. Govt. should felicitate top ranker rural entrepreneur.
12. We should invite successful rural entrepreneurs from other states of country.

## CONCLUSION

Rural entrepreneur is a key figure in the economic development of India. Rural entrepreneurs the way of converting developing country into developed country. It helps in creating employment opportunities in the rural areas with low capital, raising the real income of the people, helping for the development of agriculture by reducing disguised unemployment, reducing poverty, migration, economic disparity, unemployment. Therefore, there should be more pressure on integrated rural development programs. But the problem is that most of the rural youth do not think of entrepreneurship as their career option. Therefore, the rural youth need to be inspired to take up entrepreneurship as a career, with training and sustaining support systems by providing all essential assistance. There should be efficient regulated market and government should also lend its helping hand in this context. The promotional activities should be enhanced. Standardization and grading should be encouraged. NGOs should be provided full support by government.

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## PRIVATIZATION OF WATER SERVICES

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### Abstract

The privatization of water service emerged with the idea that to provide clean and safe water to the citizen for their improved health. This review is an attempt to understand the consequence of water service privatization upon household. The objective of this review is to know the impact of privatization on household. This paper found that the privatization has improved the health condition of the people with their provision of safe water, but has an adverse impact upon the poor because of its high price.

*Keywords : Drinking water, privatization, Human health*

### 1. Introduction

Scarcity and misuse of fresh water pose a serious threat on sustainability of the water resources and protection of the environment. The Dublin conference (1992) in its fourth principle explains that “water has an economic value in all its competing uses and should be recognized as an economic good”.

Scarcity is the core of economic sciences and makes an economic approach to water related problems. Scarcity of water consists of three dimensions. One is quantity dimension; the second one is quality dimension reflecting the lack of water of a sufficient quality to carry out various functions of water such as, drinking water. The third dimension of water is the safety dimension of water, reflecting the potential scarcity of protection from an abundance of water, such as floods (Dalhuisen et al., 2002). This water scarcity constrains the human livelihood and especially the health.

The idea of treating water as a “basic need” was based on an economic philosophy that healthy citizens would flourish and become productive member of society (Pavri et al 2009). To achieve this objective across world, there are different mode of service provision emerged to provide safe water to the household. Privatization of water service is one among the provision emerged to resolve the problem. This review is an attempt to understand the

consequence of water service privatization upon household. The objective of this review is to know the impact of privatization on household.

## **2. Privatization as a concept**

Based on economic perspective, ownership, competition, and the alignment of benefit with price are the three categorization of privatization,. On the basis of strategies undertaken for the course of action pragmatic, tactical, and systemic are the three types of privatization. Pragmatic privatizations give ad-hock solutions to immediate problems and it is short-term in nature. Tactical is privatization is political in nature. Again systematic privatization is off three kinds (i) power shift; non transient change in the capacity of already mobilized interests (ii) perceptual shift;non transient change in the values, culture, and expectation of the active public and (iii) institutional shift;the market's more covert and less transparent forces will replace overt political and bureaucratic structures as the primary means of social control(Feigenbaum et al., 1994).

Privatization in water supply has appeared in different forms. “Adapting the classification of Stottman (2000), Onjala (2002) and UN-Habitat (2003,O.A.) K’Akumu (2006) identifies ten types of PPP applicable to water enterprises. The range, is continuum from public enterprises in which the asset ownership, management, tariffs regulation are all under statutory control, followed by public limited company (PLC), service contract, Built operate-Transfer (BOT), Joint venture, Divestiture in the extreme end” (Obosi, 2011). Management contracts, leases, concessions are the different form of delegated management (Deschamps, 1986)..

The least controversial form of water privatization involves providing incentives for small local business to sub contract with publicly owned water facilities to perform specific water services such as drilling bore holes, digging wells, expanding or improving connection etc. Usually, contracts, leases, or concessions are granted to foreign multi nationals or their subsidiaries. There are some important differences between the three common types of water privatization. The most common legal arrangement is the concession. While the World Bank encourages full cost recovery in water sector, there appears to be some debate within the bank about the exact definition of the term. (IMF & World Bank)

Privatizing water involve transferring full control of water supply networks into the hands of private corporations by fully divesting assets through public flotation or through direct sales.

Privatization also occurs through public-private partnership. A P3 is a 20-40 year contract with a private company to build, operate or manage, and sometimes finance publicly owned water systems. P3 are a relatively new form of privatization that began in the United Kingdom in the 1990s (Pavri et al., 2009). Private sector participation projects can take many forms to meet the specific requirements and objectives of the project. The form of PSP differs on characteristics such as the duration of contract, sources of investment, mode of cost recovery by the private sector (Annamalai et al., 2012).

### **3. Need for water privatization**

The motivation behind introduction of privatization differs across world. The England wales opt toward privatization because of financial and political stress of providing water supply (Jeffery, 1994). Faced with constraint on public financing, some countries have looked to the private sector for financing of the massive investment requirement. Efficiency, innovation and separation of providers and regulator suggest that it is appropriate to involve private sector in the provision of water services (Briscoe & Garn, 1995). The World Bank's agenda for the water and sanitation sector promotes private sector involvement as a means of improving efficiency and closing the investment gap (Annamraju, Calaguas, & Gutierrez, 2001). The deterioration in performance of water systems in Argentina under public management was so large that it allowed for a privatisation (Galiani, Gertler, & Schargrodsky, 2005).

The IMF and the World Bank argue that many developing country governments are too poor to provide subsidies for water and sanitation services. Hence full cost recovery from water consumers is necessary. The basic definition of full cost recovery implies that water consumers should cover the cost of operating, maintaining, and expanding water utility as needed. However, in case of a private company, full cost recovery includes a "reasonable" profit margin. The general practice of the World Bank is to discourage debt and deficit – ridden governments from subsidizing water and to push for full cost recovery from water consumers (World Bank, 2009). Dalhuisen et al., 2002, in their paper "The economics of urban drinking water use research" has explained that "full cost recovery can defined in three ways. First, there is full-operational cost recovery, where costs are equal to the revenues.



Second there is full service cost recovery, where revenues are equal to the capital cost and operational costs. Third, there is full water cost recovery where revenues equal the operational cost plus the capital costs plus the environmental costs of the water provision. He has suggested that only privatization is the cure for an inefficient working public utility, such as water provision, without a sound empirical support from a scientific research.

“When the government water policies and water management strategies of Ireland reflected the fact that water was seen as a free and renewable resource and there was no encouragement to conserve water in any way, despite of its small size of population has evidenced high and continues increasing per capital consumption of water compared to large countries. The local authority finances through borrowing to cover the cost of providing water to the non domestic sector and repay the loan when charges are collected, which is not a sustainable method. The funds provided through local government fund are not sufficient to cover full cost of domestic water and waste water services in Ireland. Because the water running from the tap is free, people have no idea to the cost or consequences of their actions” (Zhao et al., 2012).

Across the globe, since the neo liberal policies of the Thatcher-Reagan era, there has been a trend back towards privatizing water. In Canada and the United States, inadequate funding since the 1990s forced municipalities to turn to the private sector. The IMF and World Bank, generally believe that the private sector is more efficient and cost-effective as the provider of basic goods and services in many sectors, including water. However, there is little evidence that privatization improves the access to, or affordability, of water especially for the poorest sectors of the population. Too often water price hikes and water quality problems follow in the wake of privatization. (Pavri et al., 2009).

Uninterrupted water supply and improved access to water and sanitation has direct benefit of physical and mental health for woman (Ivens, 2008; Mitra, 2008).

#### **4. Privatization: Cases**

“In the United Kingdom many people have deep rooted objections to the British Privatization model, believing that a natural monopoly should remain in the public sector” (Jeffery, 1994). Private operation of water facilities is associated with much higher average water charges

and with greater use of water metering (Kirkpatrick et al., 2006). Kenya privatization fails because of the institutional regulatory system. The over and excess government control overwhelmed the small scale water provider to participate in the market (Obosi, 2011).

The World Bank's promotion of water privatization and cost recovery has failed to bring water services to those without, and expanding access to clean and affordable water in the developing world. The World Bank's cost recovery policies have made water more expensive and therefore less accessible-driving the world's poorest people to drink from polluted streams, rivers or hand-dug wells. The result has been an increase in easily preventable water borne diseases, including diarrheal diseases, cholera and parasitic diseases. From 2004 to 2008, the World Bank reduced the number of water supply and sanitation loans that promote privatization and increased cost recovery. This shows a slow but important shift in policy back toward support of public utilities. The World Bank has now acknowledged that the privatization failure, including the failure to expand services to the poor, the environmental and public health catastrophes, the legal quagmires and new debt burdens faced by governments, and the impact of rising consumer water rates. (World Bank, 2009).

The adoption of flexible legal framework by French municipal management authority was succeeded in providing an integration of sewage and water service by understanding their local problem (Deschamps, 1986). The privatization took place in those areas of Argentina where experienced fall in their child mortality and increasing number of household connection as compared to did not privatize area (Galiani et al, 2005).

In most part of the world, women's work is integrally linked with water. As the more poorly paid of the two sexes, women bear the impact of increases in water costs. Here in Canada, perhaps the most important consideration is that women tend to make up a large percentage of low income households and privatizing water lead to consumer price hike, more disconnections from the water supply, poorer water quality, and increased health risks will disproportionately impact women in a negative way. Faced with no choice, poor women "may be forced to use contaminated water that they get for free rather than". Yet given the vast number of "boil water advisories" and "do not consume" orders still plaguing many First Nation Communities, they are least likely to have access to clean drinking water. Here Privatization in the form of using bottled water will likely only add to their poverty, and fails

to address Aboriginal people often lack sovereignty over their own water sources and have often seen the closure of their water sources by government or the overuse and contamination of water sources due to industrialization (Pavri et al., 2009).

## **5. Conclusion**

Scarcity is the core of economic sciences and makes an economic approach to water related problems. Privatization can be defined as the shifting of a function, either in whole or in part from the public sector to the private sector. Privatization also occurs through public-private partnership. Discourage debt and deficit –ridden governments from subsidizing water, push for full cost recovery from water consumers, cure for an inefficient working public utility, enhanced service quality and improved health outcomes are the reason for which water service need to be privatized. Privatization has improved the health condition by expanding supply but by charging higher prices results more number of disconnection. Poor women headed household are the major victim of this price rise and increases the health risk. The institutional regulatory mechanism has created difficulty in functioning of the small scale water service provider in effectively functioning in the market.

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