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Men Money Machines Markets Methods Modernisation Maintenance Materials
Management is Synergy

# The Journal of Indian Management & Strategy

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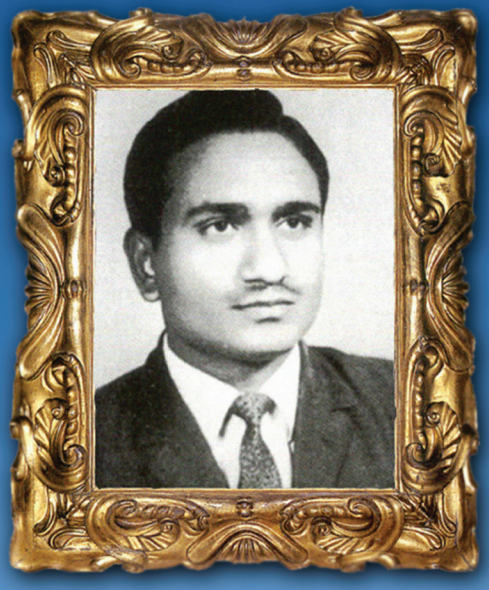
# A TRUE VISIONARY

*"You see things and you say* **Why***? But I dream of things that never were and say* **Why** *not?"*

- George Bernard Shaw



Shri Jagannath Gupta
(1950 - 1980)

*Also a true visionary...who dared to dream!*
*He lives no more but his dreams live on....and on!*

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*And more dreams to come!*

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# Editor's Desk

## Humans- The Pivot for Technology

Today, Big Data and Analytics have changed the world and every second, data is being generated by consumers and businesses across the world. Ample growth of data, Artificial Intelligence (AI) and Data Analytics coerce us to analyse and examine insightful and meaningful patterns to predict future. Nowadays business and enterprises get benefit from Artificial Intelligence and Data Analytics to take automate and quick decisions. Data analytics believe in the gathering, transformation, and organization of data to draw meaningful pattern to take automate decision. It allows organizations to analyse all types of data to connect cognitive abilities into meaningful actions and patterns.

Recent advancement in technologies not only affect enterprises but also has the potential to sense human beings emotions and Machine Learning (ML) have increase the potential of Artificial Intelligence to enhance our Quality of Life (QL), escalate productivity and revamp various types of industries. Newly emerged concept Human –Centred Artificial Intelligence (HAI) is anticipated to bring new opportunities and challenges in the future. HAI encounters human intentions and behaviours. Therefore, every single cognitive system will be able to encapsulate human motions, analyse them, capture gestures and poses and also recognize human facial expressions.

Can Artificial Intelligence replace Humans Intelligence? Artificial Intelligence has the capabilities to work more proficiently as compared to human beings. But it is impossible for Artificial Intelligence or AI technology to replace human beings because human Beings are the creatures that can sense and understand other's emotions which affects our decisions and actions. More likely, AI is the simulation of human intelligence into machines. Machines perform their tasks that are usually instructed and guided by human beings because they require human intelligence to operate. This Machine learning AI technology can be observed everywhere that is transforming our life in many ways. It is a technology that enables human beings to rethink how we can convert raw data into meaningful information. AI is already initiated the world and asking important questions for society and the economy of country. The world is on the acumination of transform many sectors through AI technology, but the way AI technologies are developed need to be understood due to major applications of this technology. Despite its widespread popularity, AI cannot replace human intelligence due to cognitive and affective abilities of human beings and also without any interventions of human beings AI cannot perform its tasks. It has been rightly said by Yann LeCun Professor, New York University that "Our Intelligence is what make us human, and AI is an extension of that quality"

(Anuj Verma)

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# A BIBLIOMETRIC ANALYSIS OF ROLE OF ICT IN SUSTAINABLE DEVELOPMENT GOALS

**Jyoti Paul***

**Purpose:** *This bibliometric review is undertaken to explore the research work being pursued in the field of achieving the 2030 target of sustainable development goals with emphasis to role of ICT. Technology has been emphasised by United Nations as to play a key role as a facilitator in sustainable development goals.*

**Design/methodology/approach:** *The data from Scopus database was used for Bibliometric analysis. .bib file was downloaded from the Scopus database for analysis. The extracted file has details viz. author's name, affiliation, article title, keywords, abstracts, and citation data. This file was used with Bibliometrix (R Studio). 163 results were used for analysis. These subject areas were selected to focus the data collection to the most relevant journal articles. The analysis using Biblioshiny was conducted on 19th Sep 2021.*

**Findings***: The findings revealed that publications around this area have enhanced considerably since 2015 and Norway is the most dominant country as per maximum citations. Furthermore, the thematic map shows that ICT and SDG and its varied related area are presently Basic themes of research i.e it is an area on which researchers have started working upon. Researchers are focussing on wide-ranging dimensions viz. tourism, smart cities, education etc. and exploring the role of ICT in fulfilment of 17 SDGs.*

**Originality/value:** *The study is a novel attempt to find out the work being done in the area of role of ICT in achieving sustainable development goals. The study has taken a novel variable of ICT and sustainable development goals to find out the dimensions of work in this area. It has taken Scopus database to find prolific authors, dimensions in this area of research and prominent countries doing collaborative research in this domain.*

**Keywords:** ICT, SDG, Bibliometric analysis, Sustainability, Science mapping

**JEL**: O32, Q01, Q55

The Millennium Development Goals were concentrating on the world's deprived and vulnerable nations. The agenda taken up by MDGs has been immersed and enlarged in Sustainable Development goals which appeared in 2015. The Sustainable Development Goals (SDGs) include not only eradication of poverty but have a novel three dimensional approach to economic growth, society and environment protection and preservation. The technology's role can never be underpinned while attaining SDGs. This paper is an attempt to analyse role of technology in attaining SDGs using 163 global publications. The search term "TITLE-ABS-KEY("ICT" AND "Sustainable development goals") was used to retrieve the publications indexed by Scopus citation database. The data from Scopus was exported in .bibtex file format. The file thus obtained was used as source in Biblioshiny to analyse and interpret the data. The study has gathered data from 2009 when the first publication in this domain was found till 2021 when the researcher has performed the analysis. Scopus database was used to procure the data and 163 global publications could be traced in the domain of ICT and sustainable development goals.

After data analysis, it is found that the utmost contribution in role of technology in achieving SDGs research is obtained from Journal articles. It is observed that the publications are steadily growing but it is still in nascent stages though the United Nations emphasises on role of science, technology and innovation in achieving sustainable development goals. Twenty most productive countries in terms of scientific production were identified. Norway topped the list with highest citations (487). The bibliometric study also found prolific authors producing in this domain. The purpose of this study is to analyze the literature on use of ICT in sustainable development by applying technique of science mapping i.e Bibliometric analysis. The results and discussions will provide guidance for future research works and lay practical implications.

The year 2015 witnessed introduction of SDGs and countries across the globe have their fulfilment on their agendas. This bibliometric study is performed to know about the extant literature in this domain and find out the nature of work occurring where ICT and SDG are getting interrelated**.** The role of ICT viz. the achievement of sustainable development

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goals cannot be ignored, but still the literature seems to be in nascent stages only. The aim is to assess the key publishing journals, authors, and documents as well as to uncover the social structure of this research domain.

## I. Review of Literature

The term sustainable development has expanded since the report Our Common Future has been published by WCED. There is a special commission who has been delegated the task of publishing report on sustainable development and thereby propose strategies related to it. WECD defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The sustainable development goals focus on three broad dimensions: the economic, social and environmental. United Nations has stressed upon role of technology to facilitate achievement of SDGs. Science, Innovation and technology will help nations in accelerating the pace to achieve this 2030 agenda.

United Nations for sustainable Development in the year 2012 has called Rio+20 and gave the impression to have a technology facilitation mechanism. The Addis Ababa Action agenda also proposed to implement technology facilitation mechanism for achievement of SDGs.

Sachs (2012) stressed on technology as a pillar for enhancing standard of living of people. Ashford and Hall (2011) also expressed in their study that technological innovations are a prerequisite for sustainable development.

Varied authors have differently used the role of technology to relate to the sustainability agenda. Tchamyou VS, Errygers and Danny Cassimon (2019) show that ICT reduces income inequality through formal financial sector development and financial sector formalization. They have probed the role of ICT taking Africa and financial sector as parameters. Another study examines whether enhancing information and communication technology reduces inequality in 48 countries in Africa.

Bibri and Krogstie (2017) have focussed on role of technology in urban sustainability. The paper pertained to technologically advanced nations and focussed on smart sustainable cities with the help of technological trends and its role in future planning of smart cities.

Tourism is another area where authors have explored role of technology. Gossling and Hall (2018) explained how the digital platforms have turned into vital performers in the global sharing economy. They focussed on role of intermediaries like AirBnB, TripAdvisor in sustainable tourism.

**Objectives**

The main objective of this study is to analyze the publications of role of ICT in SDGs research reported during 2009-2021 and indexed in the Scopus database. Specifically, the study aims to find:

- What is the bibliometric profile of database, the growth trends, emerging themes in this domain and the geographical distribution of this domain of knowledge.
- To identify most influential authors, journals, articles of this area of research.
- To explore the collaboration structure viz. countries and authors of this field.

## II. Research Design and Methods

A bibliometric analysis was carried out for the research domain focussing on ICT and sustainable development goals.

Data Extraction: The data from Scopus database was used for Bibliometric analysis. .bib file was downloaded from the Scopus database for analysis. The extracted file has details viz. author's name, affiliation, article title, keywords, abstracts, and citation data. This file was used with Bibliometrix (R Studio).

Data search: 182 results came from Scopus and they were limited to categories in Scopus. TITLE-ABS-KEY ( "ICT" AND "Sustainable Development Goals" ) AND ( LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "COMP" ) OR LIMIT-TO ( SUBJAREA , "ENVI" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) )

Post this refine, 163 results were used for analysis. These subject areas were selected to focus the data collection to the most relevant journal articles. The analysis using Biblioshiny was conducted on 19th Sep 2021.

Then data was interpreted and visualization of the results was done as per the research questions. The purpose of Bibliometric review is to find out whether the domain is overly researched, motor theme or an emerging area with future scope. It also explains the structure of research work in the area and also to find out collaboration network and intellectual structure of research in a given domain. So, it helps to gain knowledge on the broad work done in the area, prolific authors doing work in the area and the growth of work. The underlying review applied bibliometric analysis, to explore the knowledge base of role of technology in achieving sustainable development goals.

## III. Results and Discussion

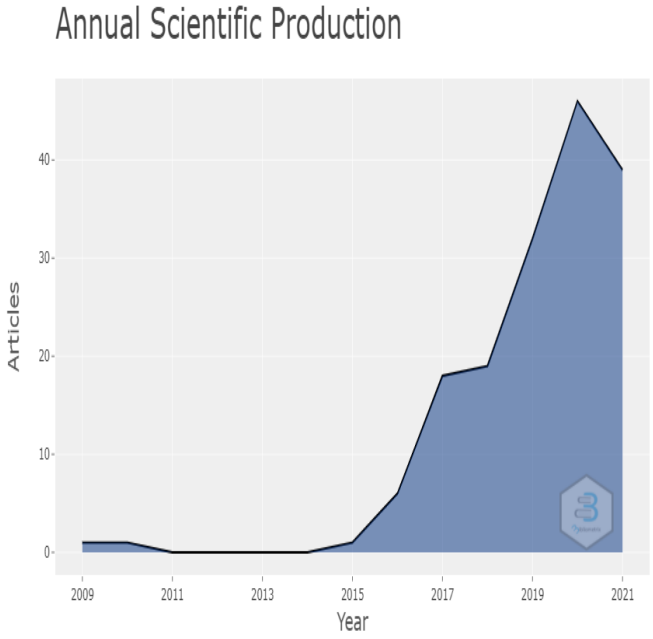
**Main Information Table 1: Bibliometric Profile of role of ICT in SDG research**

| | |
|---|---|
| Span of analysis | 2009:2021 |
| Sources viz. Journals, Books, etc | 110 |
| Documents | 163 |
| Average years from publication | 1.83 |
| Average citations per documents | 8.81 |
| Average citations per year per doc | 2.877 |
| References | 1 |
| DOCUMENT TYPES | |
| Article | 94 |
| Book | 2 |
| Book chapter | 15 |
| Conference paper | 41 |
| conference review | 2 |
| review | 9 |
| DOCUMENT CONTENTS | |
| Keywords Plus (ID) | 759 |
| Author's Keywords (DE) | 602 |
| AUTHORS | |
| Authors | 456 |
| Author Appearances | 480 |
| Authors of single-authored documents | 31 |
| Authors of multi-authored documents | 425 |
| AUTHORS COLLABORATION | |
| Single-authored documents | 38 |
| Documents per Author | 0.357 |
| Authors per Document | 2.8 |
| Co-Authors per Documents | 2.94 |
| Collaboration Index | 3.4 |

*Source: Author's own work and compilation*

The above Table 1 shows the bibliometric profile in the domain. The time span takes all publications up to 2021 published in the said domain. The maximum academic contribution in the domain of role of technology for fulfilling SDGs comes from research articles category followed by review document types. There were 38 single-authored documents in the entire set. The average citations are steadily growing with 18 being average citation in 2017 to 46 average citation per year in 2020.

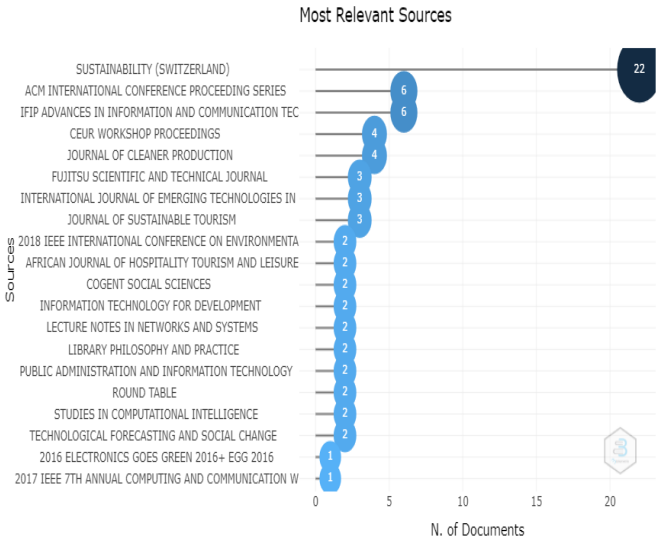
**Figure 1: Growth trajectory of Articles**




*Source: Author's own work and compilation*

The above Figure 1 clearly shows that the research work is increasing in the field since 2015 and growing furthermore in years after 2017.The first article being published in 2009. 39 articles have been published and added to the literature in the year 2021 till 19 Sep 2021(the date of extraction from Scopus) with an Annual growth rate of 58.08%.

**Figure 2: Most Relevant Sources**

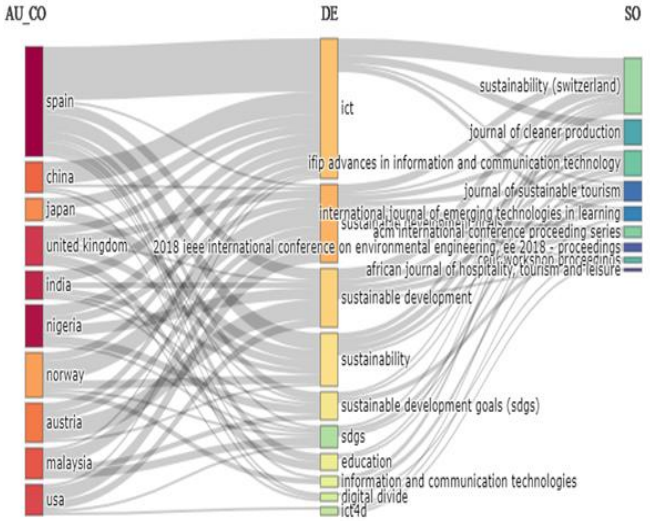



*Source: Author's own work and compilation*

The above figure shows that Susatinability journal (Switzerland) is producing maximum work in this area with 22 number of documents being published by the journal so far. After that the conference proceedings are producing the

next higest documents. Journal of Cleaner Production is ranked fifth having published 4 documents so far in this domain. Fujitsu Scientific and Technical Journal, International Journal of Emerging Technologies in Learning, Journal of Sustainable Tourism are also having publications where role of technology in achieving SDGs is worked upon.

**Figure 3: Three Field Plot using Source, Keyword and Countries as Parameters**



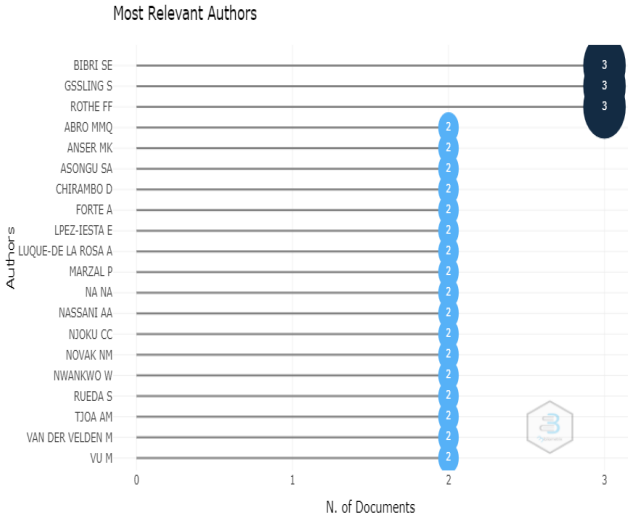

*Source: Author's own work and compilation*

This Field plot is showing a confluence of which country is writing the maximum papers related to the keyword in middle and which journals/sources are producing in this domain.

Three field plots have been prepared on the basis of Sankey diagrams which show show a particular flow depending on the variable chosen. The thickness of each edge also has a meaning showing that thickness is in proportion to the flow quantity that passes through that edge. The above plot takes countries, keywords and source into account as three parameters. The above Plot shows that Spain is working in a huge manner in topics like ICT, Sustainability, SDGs, sustainable development and education. Spain which is producing maximum work in ICT is publishing in journals viz. Sustainability, Journal of Cleaner Production and International Journal of emerging technologies in Learning. India is working in areas like ICT, sustainable development; SDGs. China and UK are also working on digital divide being used as keyword. Nigeria is also working on SDGs, sustainability.

The keyword ICT is proportionally more found in journals viz Sustainability, Journal of cleaner Production and International Journal of emerging technologies in Learning. The keyword Sustainable development goals are being highly proportional to publications in journals viz. Sustainability, Journal of Sustainable Tourism and International Journal of emerging technologies in Learning. For a clearer version, Three Field Plot was developed taking 10 items in each parameters viz countries, keyword and source for the above Plot.

**Figure 4: Most Relevant Authors**




*Source: Author's own work and compilation*

The above figure 4 shows the most relevant authors in the field of ICT and its achievement of SDGs. Bibri Se, Gssling S and Rothe FF have produced three articles each in this domain, followed by many authors who have two publications in this area.

**Figure 5: Author's production over time**


*Source: Author's own work and compilation*

Bibri Se has worked in the domain of smart cities and data driven smart urbanism from 2017 to 2020.Gsslings is working the area of sustainable tourism in the years 2019, 2020 and 2021. Rothe FF is working the area of ICT and SDGs in the years 2018, 2019, 2020. Abro MMQ is working in the area in 2019 and 2020. Novak NM is working in the area of ICTs for education in the year 2019 and 2020.

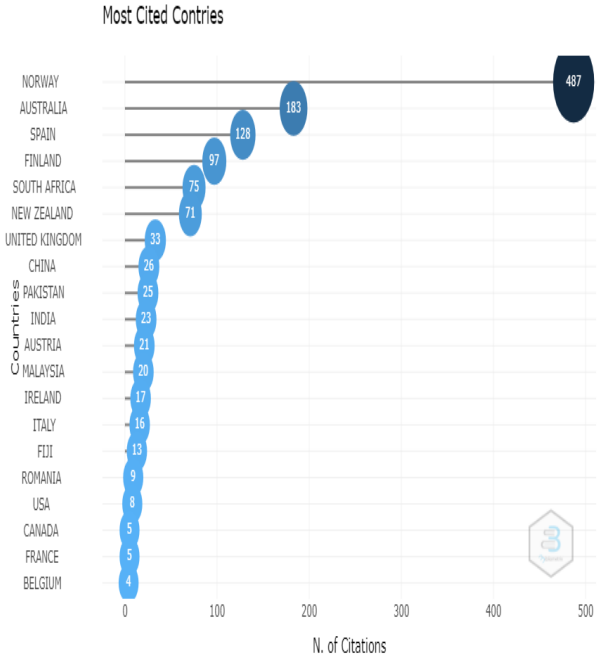
**Table 2: Top 20 Country's Scientific Production**

| Region | Freq |
|---|---|
| SPAIN | 42 |
| NIGERIA | 19 |
| INDIA | 18 |
| UK | 17 |
| USA | 16 |
| MALAYSIA | 15 |
| CHINA | 14 |
| AUSTRIA | 13 |
| JAPAN | 11 |
| NORWAY | 11 |
| FINLAND | 9 |
| PAKISTAN | 9 |
| SWEDEN | 9 |
| AUSTRALIA | 8 |
| NEW ZEALAND | 7 |
| SWITZERLAND | 7 |
| BELGIUM | 6 |
| FRANCE | 6 |
| ROMANIA | 6 |
| SOUTH AFRICA | 6 |

*Source: Author's own work and compilation*

Spain is leading in the number of publications in role of ICT in achieving SDGs followed by Nigeria and India. The top three countries from different continents are clearly giving a view that not only the European countries but countries in Asia and Africa are also significantly producing work in this area. This shows that countries across the globe are taking the 2030 agenda seriously and authors are working in the right path to include technology as a facilitator to achieve SDG agenda.

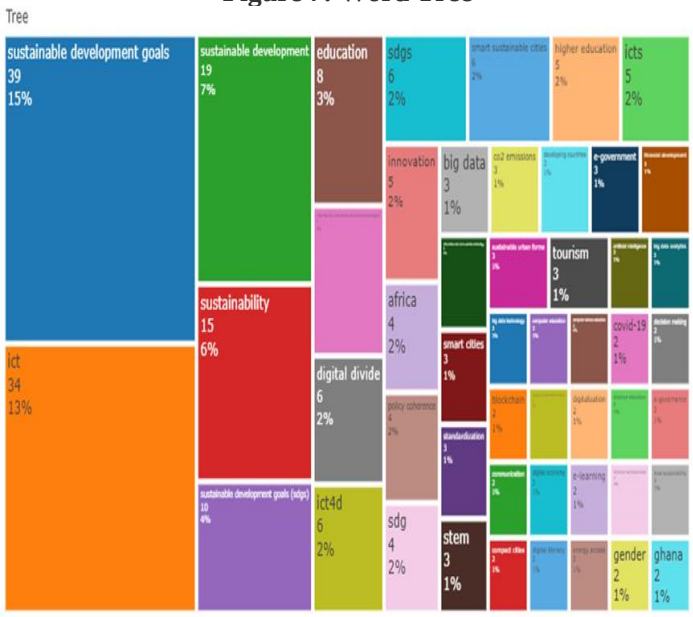
**Figure 6: Most cited countries**




*Source: Author's own work and compilation*

Norway has topped the list with highest citations (487). The other productive countries were Australia with 183citations followed by Spain with 128 citations. India was the tenth most cited country as far as work from role of ICT for SDGs is concerned

**Figure 7: Word Tree**




*Source: Author's own work and compilation*

Clearly, the Figure 7 shows sustainable development goals quoted 15% and ICT (13%) as the most relevant words by the

Word tree. These words were followed by sustainable development, sustainability, sdg, education, ict and digital divide. Word tree clearly areas of interest in which authors are working elucidating the most used author's keywords. The assistance providing by such a Tree Map is that it provides insights into main topics and research trends. The number of keywords was restricted to 50.

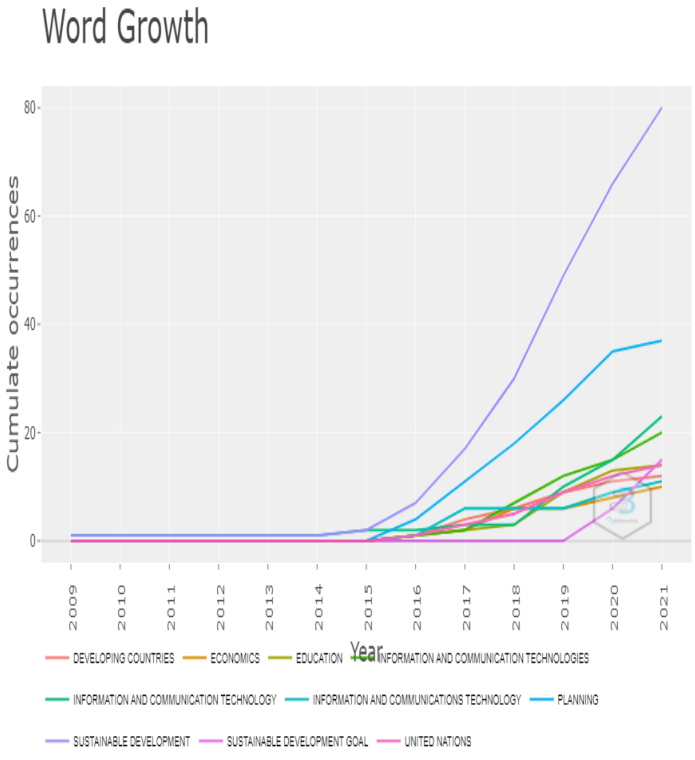
**Table 3: Most Global cited Publications**

| Paper | DOI | Total Citations | TC per Year | Normalized TC |
|---|---|---|---|---|
| BIBRI SE, 2017, | 10.1016/j.scs.2017.02.016 | 440 | 88.000 | 16.3975 |
| TCHAMYOU VS, 2019, | 10.1016/j.techfore.2018.11.004 | 166 | 55.333 | 9.7647 |
| HUOVILA A, 2019, | 10.1016/j.cities.2019.01.029 | 95 | 31.667 | 5.5882 |
| GSSLING S, 2019, | 10.1080/09669582.2018.1560455 | 68 | 22.667 | 4.0000 |
| ASONGU SA, 2019, -a | 10.1002/sd.1929 | 47 | 15.667 | 2.7647 |
| CHIN A, 2016, | 10.1016/j.jclepro.2015.08.061 | 36 | 6.000 | 3.7895 |
| ALONSO-GARCA S, 2019, | 10.3390/su11247150 | 31 | 10.333 | 1.8235 |
| KOSTOSKA O, 2019, | 10.3390/su11071961 | 26 | 8.667 | 1.5294 |
| BIBRI SE, 2020, | 10.1016/j.landusepol.2020.104703 | 22 | 11.000 | 6.4872 |
| CHIEN F, 2021, | 10.1016/j.techsoc.2021.101587 | 19 | 19.000 | 9.5000 |

*Source: Author's own work and compilation*

The above table clearly shows the varied dimensions in which they are working as far as role of ICT and achieving SDG is concerned. The top authors are working on smart tourism, smart cities and role of ICT in education. The detailed list shows the most globally cited research articles in the domain.

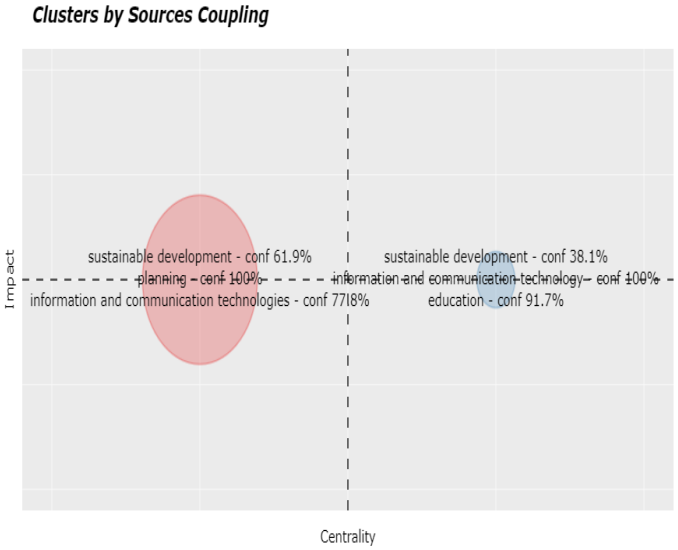
**Figure 8: Word Growth**




*Source: Author's own work and compilation*

Figure 8 depicts the growth of words over the years. Sustainable development, Information and Communications Technology can be precisely seen to be growing leaps and bounds post 2015 when United Nations announced SDGs. Clearly, the researchers are progressing in the domain and the searched Topic "TITLE-ABS-KEY ("ICT" AND "Sustainable development goals") has gained momentum amongst researchers. Even the Word Growth is showing "Developing countries" as one of the word which has shown growth. Evidently, countries not only from developed world but also developing countries are using ICT in fulfilment of SDG and authors are working in the domain.

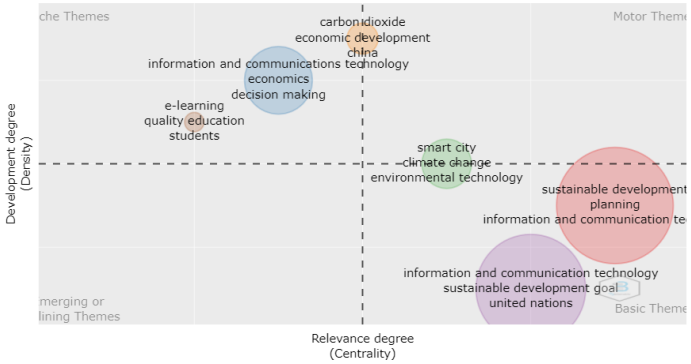
**Figure 9: Coupling map**




*Source: Author's own work and compilation*

The figure 9 shows coupling measured by keyword plus. Its impact measure was prepared using Local Citation score. The above figure 9 shows two clusters being formed. The red circle being the bigger one shows that, these are high on impact then the other cluster. The red cluster shows the work in the area of ICT, SDG and related to planning. While the other cluster focuses more on education. So, again, to conclude we can say, researchers are working on the planning and education aspect more and being more impactful when coupled with these keywords.

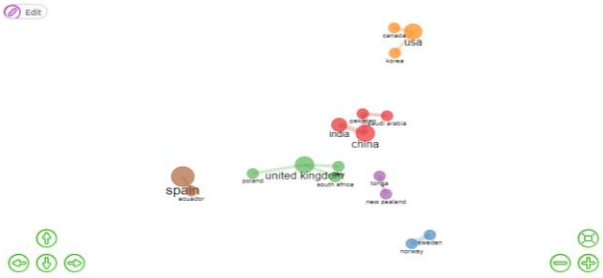
**Figure 10: Thematic Map**




*Source: Author's own work and compilation*

Figure 10 explicitly shows that role of ICT in SDGs is coming either in Niche area of research or on the Basic Theme. The Emerging theme quadrant is empty. It emphasizes that the research in this domain has started picking up fast. Sustainable development, planning, United Nations, climate change, environmental technology are getting reflected in the Basic theme quadrant. This shows that researchers are working in this area. The upper left quadrant shows Niche topics, indicated by high density and centrality; these topics, which includes e-learning, Quality education and to some extent "economic development" and "carbon dioxide showing role of ICT in environment" should be developed further given their importance for future research intersecting in between Niche and Motor themes showing high relevance to work upon further in future.

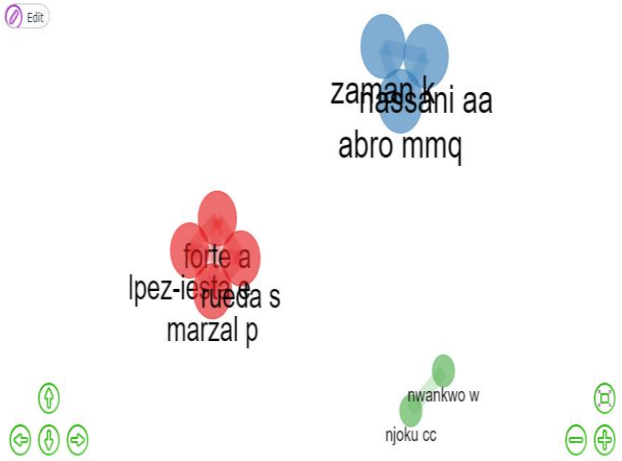
**Figure 11: Collaboration Network by Countries**




*Source: Author's own work and compilation*

Figure 11 shows collaboration network by countries. Six collaborations can be seen from Figure 9. Prominent countries collaboration as seen from above Figure 11 are, firstly India, China, Pakistan and Saudi Arabia being together in one cluster. The next cluster in Green colour, shows United Kingdom, Poland and south Africa collaborating together in this kind of research. USA, Canada and Korea are collaborating. Norway and Sweden are collaborating as far as research in ICT and its role in SDG is concerned.

**Figure 12: Collaboration network by authors**




*Source: Author's own work and compilation*

Figure 12 is depicting researchers who are coming together and collaborating in the domain of ICT and its role in SDG. Three collaborations can be seen from Figure 12. It shows, Lpez, Marzal, Forte, Rueda collaborating in the domain of Gender diversity and role of ICT. Also another prominent collaboration network by Zaman, Abro are working in the area of ICT and environmental sustainability.

## IV. Conclusion

The findings revealed that publications around this area have enhanced considerably since 2015 and Norway is the most dominant country as per maximum citations. Furthermore, the thematic map shows that ICT and SDG and its varied related area are presently Basic themes of research i.e it is an area on which researchers have started working upon. Researchers are focussing on wide-ranging dimensions viz. tourism, smart cities, education etc. and exploring the role of ICT in fulfilment of 17 SDGs. This initial research towards role of ICT in achievement of SDG shows that this is an emerging area of research and not only the developed countries but developing countries like India, Pakistan and Nigeria are pursuing research in this domain and using ICT in various SDGs.

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# WORKING CAPITAL MANAGEMENT, LIQUIDITY AND PROFITABILITY RELATIONSHIP IN INDIAN REALTY SECTOR- A VECM APPROACH

**Shivakumar***

**Purpose:** *Working Capital Management is an integral part of financial performance of every organization. The working capital management can have significant effect on profitability and liquidity can affect the profitability of the organization. This study mainly aims to examine the relationship between working capital management, liquidity and profitability in Indian Realty Sector using econometric models.*

**Design/Methodology/Approach:** *To examine the relationship between working capital management, liquidity and profitability, the study employed econometric models such as panel unit root stationery test, panel co-integration test, VECM model and Wald test using panel data of 13 Indian real estate firms listed in National Stock Exchange for a period of 2012 to 2021. Cash cycle, return on assets, current ratio and debt equity variables were used.*

**Findings:** *The findings indicate both the long run and short run relationship between working capital management, liquidity and profitability. It is evident from the study that the working capital management has strong relationship with current ratio and return on assets in both short run and long run as indicated by the VECM model and Wald test from both the models. The other findings indicate that the optimal policies of working capital management can boost both the liquidity and profitability. It was suggested that the firms should concentrate more on efficient management of working capital to improve liquidity and profitability.*

**Originality/Value:** *The studies in the past have mainly focused on examining the relationship of working capital management with liquidity and profitability using traditional method of analysis such as ratio analysis, correlation, simple regression model etc. In comparison, the previous studied were not comprehensive in the use of advanced econometric tools for the analysis of the relationship between working capital management and profitability, relationship between liquidity and profitability. It is also worth mentioning that the working capital plays very vital role in real estate sector. The uniqueness of this study is that there are not studies on working capital management of Indian realty sector for the study period using econometric models.*

**Keywords:** Panel Analysis, Working Capital, Liquidity, Realty Sector, Profitability, Autocorrelation

**JEL code: G32**

The manufacturing sector is a key sector contributes significantly to the growth of economy of the country. The Realty sector of India is one such sector plays a predominant role in the growth of Indian economy. The sector is expected to contribute 13% to India's GDP by 2025 with the present estimated value of USD 1.72 billion in 2019. The estimated value of the sector at USD 120 billion by 2030. The CAGR of the sector is also expected to grow at 19.5% by 2028. The sector is growing significantly with the growing needs of India's infrastructure. These numbers shows how predominant the sector is for the growth of economy.

The profit and wealth maximization is the key aspect of any firm which can be attained by managing the resources effectively. Working capital and liquidity are among the factors which affects the profitability. The working capital is about managing the inventory, cash and receivables effectively to generate higher profits. Liquidity is another factor which affects the profitability directly. The firms need to design the suitable policies of liquidity management.

Working capital is referred to the firms' investment made in cash, inventory, and receivables. It is one of the important financial metric shows the operating efficiency of the firms. It establishes the relationship between the current assets and liabilities. The main purpose is to ensure the smooth functioning of the routine activities and contributes significantly to the profitability (Sonano, (2007); Hill et al., (2010). CCC is the key aspect which is the comprehensive measure of working capital (Deloof, 2003). The efficiently managed working capital helps in avoiding the finance distress and also key for the long run survival (Padachi and Howorth, 2014). The survey conducted by the research firm KPMG in 2010 shows the firms focused more on the cash and working capital to manage the crisis period.

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The working capital plays key role in enhancing profits of the firms as it affects the profitability directly. It is the most important short term decision for the firms. Each of these needs a special attention in this competitive era.

The working capital management is the fundamental aspect of the firm and it needs to be managed on a regular basis. The issues and problems of working capital are different to industries which need to be studied in detail for a better decision making. There are studies available on working capital management and its issues. But studies on working capital from Indian perspective especially in realty sector are very few. There exists the need of the study on working capital management of Indian Realty sector. There are also rare studies available on using the econometric models in the said area.

## I. Review of Literature

The profitability is the key factor for every firm and how the firms attain it is always challenging. One such area which attracts the attention of the academicians is WCM and liquidity. The profitability of the firm is generally affected by working capital management and liquidity. Here the author studied the WCM-profitability and liquidity-profitability relationship. The profitability of the firm has direct effect from WCM and its components (Rajesh & Reddy, 2011). They key aspect of WCM is to manage the operating cycle which is derived from receivables, payables and inventory days. The firms need to design the appropriate financing and investment policies for better results of WCM on profitability. Charitou et al. (2010), studied the relationship between CCC and ROA of Turkish firms and found that the CCC is negatively related to profitability. O¨ner (2016), Sen and Oruc (2009), and Vural et al. (2012) used the panel data for the analysis and found the negative effect of working capital on the firms' performance. However, Smilog lu and Akgun(2016) found the significant relationship between the WCM and profitability of the selected firms. The WCM studies in emerging markets shows the adverse effect on the profitability in Iran. (Alavinasab and Davoudi 2013, Zayanderoody 2011). Gill et al. (2010) studied the effect of CCC and its subcomponents on the profitability of America using weighted OLS method and found the significant negative effect. It is consistent with the studies (Akoto et al. (2013), Mathuva (2010). Another study by Charitou et al. (2010) on how inventory, cash and receivables management enhances the profitability of selected firms of Cyprus stock exchange using multiple regressions and found by shortening the CCC, profitability can be enhanced. The results are in line with Erasmus (2010), Mathuva (2010), Deloof (2003). Enow and Brijlal (2014) made an investigation on how WCM affect the profitability of SMME's of South Africa using the similar methodology of Sharma and Kumar (2011), Nazir and Afza (2009) and found the inverse relationship between CCC and ROA. The study also suggested for detailed investigation of sub components of CCC helps in enhancing profitability. The majority of the studies used ROA as a measure of profitability includes Dalayeen (2017), Meena and Reddy (2016), Ayako, Kungu, and Githui (2015), Enow and Brijlal (2014), Akoto et al. (2013). F. Shakoor, A. Khan and S. Nawab (2012) studied the WCM and profitability relationship of manufacturing firms of Pakistan. The econometric methods such as Augmented Dickey Fuller, Johansen Cointegration, and OLS found the inventory days and quick ratio shown positive relationship with ROA.

## II. Research Design and Methods

The study was conducted to analyse the working capital management, liquidity, and profitability relationship of the Realty Sector in India. First, study identifies the effect of working capital management on profitability and secondly, it identifies the effect of liquidity on profitability. The study attempts to know whether there is bidirectional or unidirectional effect of working capital and liquidity on profitability. The study covers annual data of 13 firms for the period from 2012-2021. The justification behind the sample is the availability of data. The audited annual data is collected from Ace-Analyser. For detailed analysis, the variables are grouped into two groups. Group one includes variables of WCM and profitability. In the group-1, cash conversion cycle (CCC) is taken as independent variable and ROA as dependent variable followed by debt-equity as control variable. In the group-2, ROA as dependent variable and current ratio as independent variable followed by debt-equity as control variable.

The table no 1 shows the definitions of selected variables.

**Table 1: Variables Definition**

| Variables | Symbol | Definitions | Expected Sign | Formula |
|---|---|---|---|---|
| Cash Cycle | CCC | Working Capital | + | CCC=DSO+DRO-DIO |
| Return On Assets | ROA | Profitability | +/- | ROA=Net Profit/ Total Assets |
| Debt-Equity | DE | Control Variable | + | D/E=Debt/Equity |
| Current Ratio | CR | Liquidity | + | CR=CA/CL |

## III. Results and Discussion

**Econometric Models**

As per the main aim of the study appropriate model have been applied for the analysis. The panel cointegration test is performed to confirm the long run relationship among the variables and VECM is also used to ascertain the long run, short run relationship among WCM, liquidity on profitability.

**Panel Unit Root test:**
Panel unit root test is performed on the variables of the study to find out whether the variables are stationary or not. The augmented Dickey-Fuller (ADF) test is important for determining the stationary of the data. The author mainly used LLC and IPS test as they provide good results for small sample. These two tests are used as suggested by the literature.

Firstly, the panel based LLC test gives better results than the unit root for separate time series variables. Secondly, Im, Pesaran and Shin (IPS) test is performed as it is based on the ADF regressions for each cross section. Monte Carlo experiments shows the IPS revealed better results than LLC.

LLC test assumes the unit root in the data with identical Pi in the cross section. The LLC tests consider the general ADF specification.

This test null hypothesis assumes a unit root in the data. The LLC test for stationary model is given below:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{p_i} \beta_{ij}\ \Delta y_{it-j} + X_{it}\delta + \epsilon_{it}$$

Where $\alpha = \rho - 1$, different term lag order allows, $p_i$ varies in cross section.

Hypotheses are,
$H_O$: $\alpha = 0$, There is unit root
$H_1$: $\alpha < 0$, No unit root

IPS test of stationary specifies the ADF repressor for individual cross section separately.

**Panel Unit Root Results**
Panel unit root test conducted to find out the stationary of the variables in the study. It helps in finding the order of integration of the variables.

**Table 2: Panel Stationary Test**

| Variables | LLC | IPS |
|---|---|---|
| **At Level** | | |
| CCC | -3.44437(0.0003) | -1.43793(0.0752) |
| DE | -5.93684(0.0000) | -0.79648( 0.2129) |
| CR | -1.02552(0.1526) | 0.74523(0.7719) |
| FS | 0.08299(0.5331) | 2.67634(0.9963) |
| **At First Difference** | | |
| D(CCC) | -7.65376(0.0000) | -4.77712(0.0000) |
| D(DE) | -7.48558(0.0000) | -4.01638(0.0000) |
| D(CR) | -4.01189(0.0000) | -3.08042(0.0000) |
| D(FS) | -8.08495(0.0000) | -3.47723(0.0003) |
| D(ROA) | -17.6475(0.0000) | -7.70721(0.0000) |

* Value in the parenthesis denotes p value.

The table 2 shows the results of panel unit root test of the selected variables. As per the LLC test variables are stationary at the level itself except CR (Current Ratio) and the CR is stationary at the first difference. While in the IPS results, variables are non stationary at the level and stationary at their first difference.

**Panel Co-integration Results:**
The non stationary variables are said to be co-integrated if they cannot deviate from the equilibrium in the long run. To test the cointegration of the variables, Pedroni residual cointegration test is used as it is widely accepted by the researchers. The Pedroni residual cointegration test is performed with intercept on the variables of the study at their level. After examining the stationary of the variables using appropriate unit root test, the next step is to perform the cointegration test to confirm the existence of long run relationship from WCM-profitability and profitability-liquidity. Pedroni test is employed for checking the cointegrating relationship which uses Engle-Granger method. Pedroni test allows cross section heterogeneity and also permits fixed effect, slope and trend for each section individually.

$H_0$: There is no cointegration among the variables
$H_1$: There is cointegration among the variables

The model is given below:

$$\boldsymbol{Y_{jt} = a_j + \delta_{jt} + b_t + \beta_j X_{jt} + e_{jt}}$$

The various tests developed by Pedroni is divided into two groups such as four tests in one group named “within dimension” and three tests in another group named “between dimensions”.

**Table 3a: Pedroni Residual Cointegration Test: Model-I: (CCC, FS, DE, and ROA)**

| Pedroni Residual Cointegration Test(with intercept) | | | | |
|---|---|---|---|---|
| | Statistic | Prob. | Weighted Statistic | Prob. |
| ADF-Statistics | -2.028196 | 0.0213 | -1.933706 | 0.0266 |
| Group | Statistic | Prob. | | |
| ADF-Statistics | -1.641974 | 0.0503 | | |

The findings of the cointegration are shown in the table no 3ausing Pedroni cointegration test. The null hypothesis is rejected as PP and ADF tests statistics are significant within dimension and group PP and ADF test statistics are significant between dimensions. Hence, it confirms the cointegration in the group-I.

**Panel Vector Error Correction Model (VECM):**
Panel VECM model: **Group-I (CCC, FS, DE, and ROA)**

The panel VECM model is given below for working capital management and profitability relationship.

$$\Delta In\ ccc_{it} = a_{1j} + \sum_{k=1}^{m} a_{11ik}\,\Delta \text{In ccc}_{\text{it}-\text{k}} + \sum_{k=1}^{m} a_{12ik}\,\Delta \text{In fs}_{\text{it}-\text{k}} + \sum_{k=1}^{m} a_{13ik}\,\Delta \text{In de}_{\text{it}-\text{k}} + \sum_{k=1}^{m} a_{14ik}\,\Delta \text{In roa}_{\text{it}-\text{k}} + \text{b}_{1\text{i}}\,\text{ect}_{\text{it}-1} + \mu_{\text{it}}$$

**VECM Results:**

**Table 4: Long Run Relationship (WCM-ROA)**

| Error Correction | CointEq1 |
|---|---|
| D(CCC) | -0.27889 |
| | -0.0927 |
| | [-3.00856] |
| D(FS) | -0.04214 |
| | -0.08108 |
| | [-0.51968] |
| D(DE) | 0.031062 |
| | -0.1411 |
| | [ 0.22014] |
| D(ROA) | -1.00742 |
| | -0.73474 |
| | [-1.37111] |

**Table 5: Short Run Relationship (WCM-ROA)**

| **Wald Test:** | | |
|---|---|---|
| Equation: WCM-ROA | | |
| Statistics | Value | Prob. |
| Chi-square | 12.81368 | 12.81368 |

The results of VECM are shown in the table no 4 and 5 in the long run and short run respectively. The table no 4 shows the relationship between CCC and ROA in long run indicated by t-value of -3.008 which is significant at 5% level. FS and DE are used as control variables. The table no 5 shows the short run relationship between CCC and ROA indicated by Wald test and the chi-square result shows significant at 5% level. It shows the short run relationship between CCC and ROA.

**Table 6: Panel Cointegration Test: Group-II (CR, DE, ROA)**

| Pedroni Residual Cointegration Test | | | | |
|---|---|---|---|---|
| | | | Weighted | |
| | Statistic | Prob | Statistic | Prob |
| ADF-Statistic | -4.109392 | 0.0000 | -2.459219 | 0.0070 |
| | | | | |
| Group | Statistic | Prob | | |
| ADF-Statistic | -3.898041 | 0.0000 | | |

The results of the panel cointegration are shown in the table no 6 using Pedroni cointegration test. The null hypothesis of no cointegration is rejected as PP and ADF tests statistics are significant within dimension and group PP and ADF test statistics are significant between dimensions. Hence, it confirms the existence of cointegration among the variables in the group-II.

**VECM model: Group-II (CR, FS, DE, ROA)**
The panel VECM model is given below for liquidity and profitability relationship.

$$\Delta In\ cr_{it} = a_{1j} + \sum_{k=1}^{m} a_{11ik}\,\Delta \text{In cr}_{\text{it}-\text{k}} + \sum_{k=1}^{m} a_{13ik}\,\Delta \text{In de}_{\text{it}-\text{k}} + \sum_{k=1}^{m} a_{14ik}\,\Delta \text{In roa}_{\text{it}-\text{k}} + \text{b}_{1\text{i}}\,\text{ect}_{\text{it}-1} + \mu_{\text{it}}$$

**VECM Results:**

**Table 7: Long Run Relationship (Liquidity-ROA)**

| Error Correction | CointEq1 |
|---|---|
| D(CR) | -0.77633 |
| | -0.28352 |
| | [-2.73812] |
| D(DE) | -0.81768 |
| | -0.51332 |
| | [-1.59293] |
| D(ROA) | 2.075416 |
| | -2.8866 |
| | [ 0.71898] |

**Table 8: Short Run Relationship (Liquidity-ROA)**

| **Wald Test:** | | |
|---|---|---|
| Equation: Liquidity-ROA | | |
| Statistics | Value | Prob. |
| Chi-square | 8.75245 | 0.0676 |

The results of VECM are shown in the table no 7 and 8 in the long run and short run relationship between liquidity and profitability measured by CR and ROA respectively. The table

no 7 shows the relationship between liquidity and ROA in long run indicated by t-value of -2.738 which is significant at 5% level. The table no 8 shows the short run relationship between liquidity and ROA indicated by Wald test and the chi-square result shows significant at 10% level. It shows the short run relationship between liquidity and profitability.

**Autocorrelation:**

**Cash Conversion Cycle-Firm Size, Debt Equity, Return on Assets**

LM-Tests
$H_0$: No Autocorrelation

| Lags | Statistics. | Prob. |
|---|---|---|
| 1 | 18.77428 | 0.2805 |
| 2 | 8.836758 | 0.9238 |

The above result of the LM autocorrelation test shows that the H0 of "no autocorrelation" is accepted. It shows no autocorrelation exists among CCC, FS, DE and ROA since the p is not significant at 5% level.

**Autocorrelation:**

**CR, FS, DE, ROA**

LM-Tests
$H_0$: No Autocorrelation

| Lags | Statistics. | Prob. |
|---|---|---|
| 1 | 4.476693 | 0.8773 |
| 2 | 7.587534 | 0.5762 |

The above result of the LM autocorrelation test shows that the H0 of "no autocorrelation" is accepted. It shows no autocorrelation exists among CR, FS, DE and ROA since the p is not significant at 5% level.

## IV. Conclusion

The author attempted to examine the relationship between working capital management-profitability and liquidity-profitability both in the long run and short run for a period of 2012-2021 in Indian Realty Sector. The stationary test is performed to know whether the variables are stationary at level or first order which revealed that all the variables are stationary at levels except current ratio which is stationary at first order. The Pedroni panel cointegration test is used to find out the long run relationship between two specified groups of the study. The results of panel cointegration showed the existence of long run relationship between the selected variables in both the groups. Next part of the analysis shows the panel ECM for both groups. The panel ECM shows the long run relationship between working capital management and profitability and liquidity and profitability. Then, to examine the short run relationship between specified groups Wald test is used. The results of the Wald test also revealed the short run relationship between working capital management and profitability and liquidity and profitability. The above analysis highlights the importance of management of working capital management in Indian Realty Sector which has strong relationship with profitability and liquidity both in the long run and short run. The results also show the importance liquidity for enhancing the profitability. Hence, it is suggested that the firms in the sector needs to design the optimal policies of working capital and liquidity in order to improve the profitability. The researcher can further study the components of working capital in detail to provide better insights of working capital management.

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# EVALUATING THE CREDIT RISK OF SMEs USING MIXED METHOD APPROACH: EVIDENCE FROM INDIA

**Vandana Gupta***

**Purpose:** *This paper attempts to identify the key drivers of default on a dataset of 112 Indian SMEs spanning over the years 2014-2020 using the mixed method approach.*

**Design/Methodology/ Approach**: *For the quantitative analysis, logit model is applied with ratings as dependent variable and size of firm, profitability, solvency, operational efficiency and liquidity ratios as independent variables. In the second stage of analysis, content analysis is done to identify keywords and themes from a select sample of annual reports of the SMEs to validate if the key default drivers as identified by our logistic regression can be validated by the thematic analysis.*

**Findings:** *The empirical findings reveal that profitability (operating profit margin, net profit margin, return on equity), liquidity (receivables turnover), asset efficiency, solvency (net worth to total assets, market capitalization to total debt) and size (log of total assets) are significant predictors of default. Key themes of operational efficiency, financial performance, management quality and strategic decisions are significant which are in sync with our findings from logit model and validate our findings.*

**Originality/ Value:** *The significant variables identified by mixed method approach would help SMEs to formulate a strategy to reduce credit risk and can be used by lenders to forewarn against impending default.*

**Keywords:** SMEs, Mixed Method, Default, Logit, Content Analysis, Lenders

**JEL Classification Code:** G21, G24, G33,

Small and Medium Enterprises are considered the pillar and mainstay of an economy and contribute to its overall economic development (Ayyagari et al, 2011). For emerging markets as India, SMEs contribute significantly to the economy with their trickle-down effect and positive impact on employment generation, boost to export earnings, regional development, and contribution to the country's overall GDP. Since SMEs are believed to be one of the key drivers of a country's economy, it is imperative that banks lend to the SMEs for their growth and develop models to assess their creditworthiness.

SMEs have predominantly depended on short-term credits and faced difficulties accessing medium and long term credits (Ciampi and Gordini, 2008). Beck (2006) highlighted that the problems of lending to SMEs pertain to the inability to access complete financial information and to provide collateral, which warrants banks to undergo more rigorous process in evaluating SMEs' creditworthiness. Further, with lack of transparency and insufficient information in the public domain, banks often deny credit to SMEs. Thus, lending to this segment has been limited when seen from both the demand and supply side. Maiti (2018) in their research emphasized on the huge opportunity of lending to the SME segment in emerging markets as India and China.

The global financial crisis of 2008 impacted the SMEs adversely, with several of them being on the brink of bankruptcy. This led to an increasing focus on developing default prediction models for the SME segment (Schwaiger 2002; Altman and Sabato 2005). Ciampi and Gordini (2013) and Gordini (2014) highlighted the challenges in developing risk prediction models for SMEs because of insufficient information on them, making it more difficult to measure these companies' risks than large corporates.

Against this backdrop this paper attempts to identify the key drivers that define the default and thereby the credit risk for a select sample of SMEs in India. using the mixed method approach. Our study is an attempt to follow the mixed method approach by validate the quantitative methods by qualitative analysis and to identify the key information from corporate disclosures that can help in evaluating the credit risk of SMEs in future.

The rest of the paper is structured as follows. Section II elucidates the literature on credit risk and on SMEs while Section III describes the research methodology. Section IV presents the results and discussion and Section V gives the conclusion.

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## I. Review of Literature

**Prior Studies on Credit Risk Models on SMEs**

The pioneers in developing accounting-based credit risk models were Beaver (1966, 1968) and Altman (1968). The seminal works in modeling credit risk for SMEs was by Edmister (1972) who predicted small firms' failure using multivariate discriminant analysis Altman and Sabato (2007) developed a default prediction model on SMEs using logistic regression on US firms' using five financial ratios. Altman et al. (2010) factored in non-financial variables in addition to compliance information and developed a distress prediction model on a sample of UK SMEs.

Research studies conducted in other regions on SMEs' credit risk were broadly using discriminant analysis and logistic regression. These included by Lugovskaya (2010) on SMEs in Russia; Gupta et al. (2015); Ciampi and Gordini (2008, 2009) on Italian SMEs; Yazdanfar (2011) on firms in Sweden; Jain et al (2011) on SMEs in India; Cultrera (2016) on Belgian SMEs; Ekes and Koloszár (2014) on Hungarian SMEs and Georgios et al. (2019) on European SMEs. Kacer (2019) applied the re-estimated Altman's Z-score model on a sample of private SMEs in Slovakia. Their findings were that while non-financial variables improved the performance, macro variables did not improve the model's performance.

**Qualitative Research on Bankruptcy Prediction**

Though the research using qualitative methods for bankruptcy prediction is scarce, there have been works on large corporates using qualitative methodology. Abrahamson and Amir (1996) emphasized the significance of textual content of annual reports to investors. Tennyson et al (1990) explored the relationship between the firm's narrative disclosures and bankruptcy using a content analysis approach. D'Aveni and MacMillan (1990) used content analysis of shareholder letters to analyze the differential strategic responses to demand crises by the top managements of surviving and subsequently bankrupt firms. Clatworthy and Jones (2001) examined the possible determinants of readability variability of annual reports. Other research works extended to those by Bucky et al. (2015) and Haralambie (2016) on risk management information in annual reports. Hu et al. (2018) analyzed whether annual reports readability impacts credit default swap (CDS) market participants and to what extent CDS impacts firms credit risk evaluation.

**Research Using Mixed Method Approach**

Mixed method approach is used in applied research and entails using both quantitative and qualitative methods. Researchers have advocated some theories and rationale for using this approach. Cresswell (1999) advocated that using mixed method provides explanation to contradictory results. Shorten and Smith (2017) advocate for mixed method in that it can explain better of any connections or contradiction between qualitative and quantitative data. Devasiri et.al (2018) debated that confirming the results by two separate approaches increase the completeness, rationality and soundness of findings than a single approach.

We also echo with the researchers of mixed method and agree with them and the founder of mixed method Jick (1979). We have used mixed method in our research following the opinion of Cresswell, 2003, looking for convergence across qualitative and quantitative methods within social science research on credit risk. We have followed this approach to formulate our first objective to identify the key drivers of default risk for SMEs in India and then supporting the findings with qualitative method for validation and reliability of research findings, Hasse-Biber (2010).

Building on these works, we use binary logistic regression to identify the key variables that impact the default risk on SMEs. We support our study by content analysis using annual reports of the SMEs. For this, we evaluate the classification power on the words and underlying themes to assess to what extent corporate disclosures explain financial failures.

## II. Research Design and Methods

**Dataset**

We collected data on 176 companies of small and medium enterprises (SME) from ACE Equity Database for FY 2014-2020. FY 2014-2020 was chosen as this was the period of rising stock market with minimum volatility. After removing missing data on financial ratios, we were left with a total of 810 observations, after filtering and removing observations where ratings were missing, the data set was a final set of 121 SMEs with 726 observations ranging from the financial year (FY) 2014-2020. The data on credit ratings assigned by the leading credit rating agencies in India was collected from the same database.

**Selection of Variables**

**Dependent Variable**

Though the ratings given for SMEs are denoted by separate symbols by the leading credit rating agencies in India, we mapped the ratings and classified them under the 'investment grade' and 'speculative grade' based on the degree of risk (Figure 1) so that we could assign a dichotomous variable with 0 assigned to firms that are under investment grade and 1 for speculative grade to segregate firms as 'high risk' and 'low risk' to identify the 'default event.'

**Figure 1: Classification of firms into investment grade and speculative grade based on ratings**

| | |
|---|---|
| AAA-Highest safety<br>AA-High Safety<br>A-Adequate Safety<br>grade=0<br>BBB-Moderate Safety | Investment |
| BB-Inadequate Safety<br>B- High Risk<br>C-Substantial risk<br>grade=1<br>D-Default | Speculative |

*Source: author*

**Independent Variables**

In the first stage of analysis we selected the ratios based on the criteria; (1) those that have been used in similar research; (2) can be calculated and determined in a convenient way from the databases and (3) have been theoretically identified as indicators for measuring default. We identify ratios under four broad themes: profitability, liquidity, solvency and operational efficiency. Specifically, we follow Altman (1968) and Altman et al. (2010), as their selection of explanatory variables (Table-1).

Profitability ratios focus on the firm's ability to generate earnings and assess the financial performance. The higher the ratios, the better the ability of the firm to manage its risks

$H_1$ Profitability is associated with credit risk.

Liquidity ratios measure a company's ability to pay off its short term debt obligations. Adequate cash resources are necessary to preempt any financial distress and therefore the credit risk.

$H_2$ Liquidity is directly associated with credit risk.

Debt Management ratios measure the long term solvency of a company. These ratios measure the ability of the firm to meet their long term commitments.

$H_3$ Higher solvency ratios denote high credit risk.

Efficiency ratios measure the ability of a company to utilize its assets to generate revenues or returns. A company with high efficiency in assets utilization is expected to earn more revenues and net incomes and is less likely to face financial difficulties thereby reduces credit risk.

$H_4$ High efficiency ratios denote low credit risk

**Control Variable**

Dang et.al. (2018) considered firm size as a major variable and mentioned that any difference in firm size, may have a significant effect on the results. We have taken log of total assets as proxy for size

$H_4$ size of the firm is associated with credit risk.

**Table 1: Independent Variables used for Analysis**

| THEME AND RATIOS | THEME | FORMULA |
|---|---|---|
| PBITDM<br>PATM<br>ROA<br>ROE<br>ROCE | PROFITABILITY | Profit before interest, tax, depreciation/Net sales<br>Profit after Tax/Net Sales<br>Profit before interest and tax/Total Assets<br>Profit after Tax/Shareholders Funds<br>Profit before interest and tax/ Shareholders Funds+ Long-term debt |
| Debt/Equity<br>Interest Coverage<br>Market Cap/ Long-term debt | SOLVENCY | Total Borrowings/ Shareholders Funds<br>Earnings before interest and tax/ Finance costs<br>Market Capitalization /Long-term debt (Mkt Cap/LTD>1=1, else 0) |
| Current Ratio<br>Quick Ratio<br>Cash/TA<br>NWC/TA | LIQUIDITY | Current Assets/Current Liabilities<br>Current Assets-Inventories –Prepaid/ Current Liabilities<br>Cash/ Total assets<br>Profit before interest and tax divided by total assets |
| Total Assets Turnover<br>Receivables Turnover<br>Fixed Asset Turnover<br>PBIT/TA<br>NW/TA | OPERATIONAL EFFICIENCY | Net Sales/ Total Assets<br>Net Sales/ Average Receivables<br>Net Sales/ Fixed Assets<br>Net worth Net Working Capital / by total assets<br>Net worth /total assets |

*Source: author*

**Check for Multicollinearity**

Multicollinearity analysis on 18 variables was performed through the variance inflation factor (VIF) by choosing the variables with greater predictive power A high value of the VIF indicates high multicollinearity and, therefore a high correlation between the variables (Montgomery and Peck, 1992). Our final set of variables included 9 financial and one dummy variable (Table 2).

**Table 2: Multi collinearity through Variance Inflation Factor**

| MODEL | | t | Sig. | COLLINEARITY STATISTICS | | |
|---|---|---|---|---|---|---|
| | | B | | | Tolerance | VIF |
| 1 | (Constant) | 4.773 | 28.742 | .000 | | |
| | Cash/TA | -1.631 | -2.975 | .003 | .823 | 1.214 |
| | Receivables Turnover | -.001 | -.292 | .770 | .847 | 1.180 |
| | Fixed Asset Turnover | .004 | 5.315 | .000 | .860 | 1.162 |
| | PATM | -.010 | -3.082 | .002 | .301 | 3.318 |
| | PBIDTM | .006 | 1.717 | .086 | .315 | 3.178 |
| | ROE | -.001 | -.984 | .325 | .812 | 1.232 |
| | Debt/Equity | -.026 | -1.280 | .201 | .635 | 1.575 |
| | Log TA | -1.008 | -16.220 | .000 | .730 | 1.370 |
| | MKT/DEBT | .096 | .980 | .328 | .579 | 1.726 |
| | NW/TA | -.339 | -1.238 | .216 | .469 | 2.130 |

*Source: generated from SPSS*

**Descriptive Statistics**

Summary of statistics of companies is shown in Table 3. It was inferred that turnover ratios and profitability ratios have high standard deviation indicating that the values are spread across a wider range. This further explains the variability of profits and turnover ratios across companies over the years. The range of fixed asset turnover ratios is very high, indicating the variability of sales and fixed asset size of the firms under study. Market capitalization to debt ratio ranges between 0 and 1, reflecting on the market capitalization of the firms and borrowing strategy of the firms.

**Table 3: Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic |
| PBITDM | 724 | -360.21 | 94.93 | 12.7636 | 18.35695 |
| PATM | 724 | -506.14 | 31.24 | 2.8337 | 21.52140 |
| ROE | 724 | -893.62 | 111.52 | 11.0172 | 38.57860 |
| Debtors Turnover | 724 | .00 | 290.87 | 9.8615 | 22.58976 |
| Asset Turnover | 724 | .06 | 224.73 | 10.0075 | 24.67842 |
| Debt/Equity | 724 | -18.12 | 16.40 | 1.4596 | 2.10697 |
| NW/TA | 724 | -.84 | .98 | .3850 | .19675 |
| Log TA | 724 | .68 | 4.19 | 2.0637 | .69640 |
| Cash/Total Asset | 724 | .00 | .57 | .0512 | .07389 |
| Valid N (list wise) | 724 | | | | |

*Source: generated from SPSS*

**Logistic Regression**

In the present study, logistic regression analysis is applied in first stage of analysis. Statistical forward stepwise selection procedure of the selected ten variables for logistic regression was applied using SPSS version 26.0

**Qualitative Methodology**

To support the quantitative results, qualitative analysis was done using content analysis of annual reports of the companies. The content analysis helps to find out the purpose, message and effect of communication content. It also helps to make a qualitative inference by analyzing the meaning and semantic relationship of words, themes or concepts (Bengtsson, 2016).

**Sampling for Qualitative Analysis**

To select the company for qualitative analysis, systematic sampling was applied. The selected 126 companies were categorized in 6 rating groups based on degree of risk. One of the most significant positive financial variables of logit analysis was 'size of the firm' (log of total asset). Average 'size of the firm' for rating group was calculated and arranged in descending order. Top five companies from each group was selected. In group 5 and 6, only 4 companies were there, hence all of them were selected. Total 28 companies were selected. Annual report of each firm was searched for 7 years, i.e., 2014 till 2020 on company's respective website or ace-equity database.

**Content Analysis of Annual Reports**

Content analysis can be done using many tools like words analysis, themes analysis or text analysis. The authors identified 60 words which explained firm risk profile. The frequency of each word was calculated for all 126 annual reports. For content analysis, the Chairman's message, Director's Report, Management Discussion and Analysis, Auditor's Report and Report on Corporate Governance were accessed. In the next step, the words were categorized into different themes with positive and negative connotation. Thus, both form-oriented (counting frequency of word occurrences)

and meaning-oriented (identifying themes) content analysis was done.

**Discriminant Analysis**

The objective of applying discriminant analysis (DA) was to analyze whether significant difference of information disclosure exists among the different groups of credit ratings in the company's annual reports. To validate if significant difference between the means of independent groups should exist, we ran discriminant analysis with the different themes identified. The proposed hypothesis form is as follows: -

Ho: -The combination of keywords and themes from the annual reports, derived from a form of content analysis, is associated with company's ratings

Ha:- The combination of keywords and themes from the annual reports, derived from a form of content analysis, is not associated with company's ratings.

## III. Results and Discussion

**Empirical Findings from Logistic Regression**

The H-L goodness of fit test holds as the model with predictors was significant at .164, which is significant at >0.05, thus rejecting the null hypothesis (H0, model with no predictors). The Pseudo R-square demonstrated a moderate to strong association between the dependent variable and the predictors and the classification accuracy improved to 78.7 percent in Ha.

Fixed assets turnover ratio is negatively related to defaults indicating that the efficient firms are less likely to default. Our result showed that receivables turnover ratio is significant and positively related to default risk. Firms that are efficient in realizing receivables would reflect better short-term liquidity and less reliance on short term borrowings. The results justify the positive sign in our output as the firms that had a good receivables turnover ratio might not have borrowed short term but it does not indicate that it did not go for long term borrowings. Net Profit margin and return on equity ratios were positively correlated with default risk indicating that higher value of these two ratios should increase the default risk. We explain the positive sign as an outcome of higher tax rates couple with interest payment being high further corroborating that borrowings were high, or the cost of borrowing was high for SMEs, thus increasing the degree of credit risk associated. Our result showed that cash operating profit was negatively correlated to default risk indicating that firms that are comfortable earning cash operating margins have lower default risk. Size is positively related to default risk indicating that larger companies are more prone to default risk (Laitinen,1992). This is true for highly levered larger companies. The ratio of market capitalization to debt has a negative relation with default risk. Higher market capitalization indicated that the shareholders are optimistic about the future growth prospects of the company, and the market perception is positive for the companies. The ratio of net worth to total assets indicates the proportion of total assets financed by the owner's capital. A high ratio showed less of borrowings and thus a lower credit risk. The empirical findings reveal that all our hypothesis for the explanatory parameters are validated. Significant variables as identified in Table -4 covered profitability, liquidity, efficiency and also solvency ratios.

**Table 4: Variables with Step-wise Logit Regression**

| | | B | S.E. | Wald | df | Sig. | Exp (B) |
|---|---|---|---|---|---|---|---|
| Step 8[h] | PBIDTM (%) | -.033 | .011 | 8.469 | 1 | .004 | .967 |
| | PATM (%) | .117 | .031 | 14.427 | 1 | .000 | 1.124 |
| | ROE (%) | .020 | .009 | 4.847 | 1 | .028 | 1.020 |
| | Receivables Turnover(x) | .036 | .016 | 5.199 | 1 | .023 | 1.036 |
| | Fixed Asset Turnover (x) | -.024 | .007 | 10.565 | 1 | .001 | .976 |
| | NW/TA | 2.363 | .757 | 9.756 | 1 | .002 | 10.627 |
| | MKTCAP/DEBT | -.598 | .248 | 5.801 | 1 | .016 | .550 |
| | Log Total assets | 2.704 | .272 | 98.947 | 1 | .000 | 14.943 |
| | Constant | -6.024 | .607 | 98.478 | 1 | .000 | .002 |

Source: generated from SPSS

*** significant at 1 % level; ** significant at 5% level

**Empirical Findings from Content Analysis**

8 different themes were identified and each theme was categorized as positive (news/events) and negative (news/ events) and the 60 identified words were placed under different identified themes (Table-5). Using a manual coding approach, the meanings of sentences are judged better (Deumes, 2008). Capturing information from all parts of the annual report increases the reliability of assessment (Beattie et al., 2004).

These words and themes were separately verified by an independent consultant with Ernst and Young. The reliability of data was tested using correlation function in excel. The word frequency of 60 words was again calculated and the average of each word frequency was calculated. The

correlation between both the word frequency was .90. As depicted in Table-5, each theme was categorized as positive events and negative events and words were placed respectively. The average of each theme for each year and each company, categorized as positive and negative, was calculated. The normality of data was checked using a normal Q-Q plot.

**Table 5: Words and Themes Generated**

| THEMES | POSITIVE EVENTS/NEWS | NEGATIVE EVENTS/NEWS |
|---|---|---|
| **Operational Efficiency** | Increase, activity, new | Risk, recession, downturn, fail, decrease, difficult |
| **Solvency Status** | Repayment, not default | Borrowing, overdraft, loan |
| **Profitability** | Profit, turnover, earnings, operating profit, net profit, reduce loss | Loss, reduce profit, finance cost, interest rate |
| **Restructuring** | Buyback | Corporate debt restructuring |
| **Future Prospects** | Beneficial, expected, competition, future outlook | Unexpected, adverse, future loss |
| **Risk Mitigation** | Mitigation, hedging, insurance, risk committee, risk | Forward contract, futures, derivatives |
| **Management quality** | Growth, expansion, productivity, dividend, training and development, governance, employee, employee stock option plans (ESOPs) | Resignation, retrenchment |
| **Strategic Decision** | Short term debt, acquisition, merger, joint venture, acquire, benefit, new | Long term debt, foreign currency, deferred payment |

*Source: author*

**Table 6: Tests of Equality of Group Means**

| | Wilks' Lambda | F | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Average Positive Op Eff | .887 | 15.737 | 1 | 124 | .000 |
| Average Negative Op Eff | .969 | 3.927 | 1 | 124 | .050 |
| Average Positive solvency | .947 | 7.008 | 1 | 124 | .009 |
| Average Negative Solvency | .965 | 4.454 | 1 | 124 | .037 |
| Average Positive Profitability | .900 | 13.775 | 1 | 124 | .000 |
| Average negative Profitability | .953 | 6.060 | 1 | 124 | .015 |
| Positive Restructuring | .981 | 2.438 | 1 | 124 | .121 |
| Negative Restructuring | .995 | .593 | 1 | 124 | .443 |
| Average Positive Outlook | .870 | 18.531 | 1 | 124 | .000 |
| Average Negative Outlook | .961 | 5.075 | 1 | 124 | .026 |
| Average Positive Risk Mitigation | .914 | 11.694 | 1 | 124 | .001 |
| Average Negative Risk Mitigation | .952 | 6.239 | 1 | 124 | .014 |
| Average Positive Management Quality | .813 | 28.528 | 1 | 124 | .000 |
| Average Negative Management Quality | .979 | 2.724 | 1 | 124 | .101 |
| Average Positive Strategic decision | .923 | 10.290 | 1 | 124 | .002 |
| Average Negative Strategic decision | .996 | .465 | 1 | 124 | .497 |

*Source: generated from SPSS*

To validate if significant difference between the means of independent groups should exist, we ran discriminant analysis with the different themes identified. The two identified groups were binary in nature 0 and 1 (Table-6). The discriminant function was found to be statistically significant (Wilk's $\wedge$ = .664) and p value is .000 (Table 7). Canonical correlations indicate that 58 per cent of variances were explained by relationship between predictors variables and group variables. Operational efficiency, profitability, solvency, risk mitigation, outlook, management quality and strategic decisions emerged as significant themes.

**Table 7a: Summary of Canonical Discriminant Function**

| Function | Eigen value | % of Variance | Cumulative % | Canonical Correlation |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | .559[a] | 100.0 | 100.0 | .599 |

*Source: generated from SPSS*

**Table 7b Wilks' Lambda**

| Test of Function(s) | Wilks' Lambda | Chi-square | df | Sig. |
|---|---|---|---|---|
| 1 | .641 | 51.525 | 16 | .000 |

*Source: generated from SPSS*

It can be seen that the significant themes as operational efficiency (receivables and fixed assets turnover), financial performance (profitability-ROE, net profit margin), management quality (net worth/total assets) and strategic decisions (mkt cap/debt) are in sync with our findings from logistic regression in the ratios that are statistically significant.

## IV. Conclusion

Sample of 121 SMEs were selected with the objective of identifying the key variables that impacted SMEs' creditworthiness in India and validate the results using qualitative analysis. Our results of logistic regression showed that turnover, profitability, size, market cap divided by debt and net worth divided by total assets are significant variables. These ratios corroborate our hypotheses that profitability, liquidity, efficiency and solvency impact credit risk of SMEs. The empirical findings from our content analysis are in sync with the significant financial ratios. Themes of operational efficiency, management quality, strategic decisions are reflected in our turnover ratios, ROE, market cap to total debt and profitability ratios that our statistically significant as per our findings from logistic regression. Additionally, the specific themes of restructuring, management quality and strategic decisions go beyond quantitative ratios and evaluate qualitative aspects of the business.

Our study contributes in identifying key themes from textual analysis and financial variables for Indian listed SMEs which can be used by lenders to shed some light on the creditworthiness of SMEs and provide them an early warning signal against impending default. The robustness of results here suggests the possibility that narrative information might improve the explanatory power of multivariate models based on financial variables alone. This would help SMEs to formulate a strategy to reduce credit risk.

The study's limitations are that the period identified could have been extended, and the sample size could have been more. Moreover, finding the companies' annual reports was a challenge for the time-period identified since many of the companies were earlier private limited companies. Further, content analysis using words and identifying themes is judgmental based on the interpretation of the researcher. An extension of this research paper could be a comparison of SMEs of a few countries to understand whether the strategy of having a good rating and to avoid credit risk is the same across the globe.

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# DETERMINANTS OF SUCCESS IN THE EQUITY DERIVATIVES MARKET: AN EMPIRICAL STUDY

**Deepika S.R* Sathish Pachiyappan****

**Purpose:** *Equity Derivatives is gaining huge popularity among the Indian retail traders. Derivatives are high leveraged instruments that lure participants who desire to make quick profits. Derivatives are mainly a risk management instrument but it is widely used as a speculative instrument. These instruments are like a doubled edged sword leading to extraordinary profits/losses. It is not easy to be a successful derivatives trader; in reality literature reveals that less than 1 percent of day traders beat the fixed deposit interest rates over a period of 3 years. Hence, it is crucial to study the factors that determine success in the equity derivatives market.*

**Design/methodology/approach:** *The study adopted survey based method and data has been collected from 382 active equity derivative traders in Bengaluru city in India. Structural Equation Modelling (SEM) was used to construct and test a model of factors to accomplish the objective.*

**Findings:** *The result of the study reveal that 59 percent of the variance in Trading Success in the derivatives market is significantly determined by four factors such as the trader's knowledge about the market, his trading behaviour, risk management skills and emotional control. Whereas factors such as tech-savviness, social interaction and personal habits do not have a significant influence.*

**Originality/value:** *The study provides unique insights to the derivative traders to get positive return in the market after analysing the various factors. Also, this study helps the academicians in understanding the major factors that determine success in the derivatives market.*

**Keywords:** Equity Derivatives, Day trading, Success in Derivatives trading, F&O Market, Knowledge

**JEL Code: G10, G40, G41, D53, C83**

Retail traders are fond of trading derivative products as it is often considered as a tool to make quick money. Black (1975) Traders would prefer the derivatives market over the cash segment because of the lesser requirement of capital, reduced transaction cost, absence of short selling restrictions and limited downside risk. Back (1993) and Cherian (1993) point out that the options market is the only place where traders can bet on volatility.

There are conflicting claims about the success of individual derivative traders in the Indian equity market. According to Hindu Business Line (2022, May 18) the market regulator SEBI is worried that the majority of inexperienced individual derivative traders indulge in excessive speculation and suffer huge losses but, the National Stock Exchange (NSE) assert that most of the derivative traders in the market are professionals and are successful after an initial learning period. Neither of them has adequate proof backing their claims. Other countries that face similar issues have resorted to curbing retail participation in the equity F&O market. Instead of following the footsteps of other countries, in India, it is better to understand what drives success in trading and educate the participants in the market so that it will be win-win situation for all the stakeholders. Hence, the outcome of the study would provide tremendous insights for the retail/individual traders in the equity derivatives market about the traits that are required to be successful in trading derivatives and thus enable them to work upon honing the required traits. Also, the study would be helpful for the market regulator SEBI and the stock exchanges in framing their regulations and designing training/education programmes with regard to individual traders in the Indian equity derivatives market.

## I. Review of Literature

Jordan and Diltz, (2003) studied a sample of day traders in the U.S. and analysed if they are successful traders in the derivatives market. They found that two third of the traders fail by losing money. Less than 20 percent of the day-traders

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manage to make decent profits. This indicates that it is not as easy as what the industry claims to be a successful day trader. Aspiring and novice day-traders should carefully think about why they will be among the 20 percent of them who are successful. The new traders should ensure that they have sufficient early capital to endure the first few months of the learning period that the industry recommends is essential to become successful. Barber et al. (2004) analysed the trading performance of individual traders in Taiwan Market and report that in a period of six months' time, eight out of every ten trader lose money by trading in the market. Only very few of them who trade heavily possess the ability to make consistent profits in the long run. Barber B.M., et. al. (2008) analysed the complete trading history of all type of investors in the Taiwan market and found that the trading losses incurred by the retail individual investors are equal to 2.2 percent of the country's Gross Domestic Product or 2.8percent of the total individual income. This loss can be attributed to the aggressive nature of the retail traders. Institutional investors (active and passive) on the other hand are quite profitable and there is a rise in their yearly performance of 1.5 percent points. Barber, B. M., et. al. (2014) again stated that less than 1percent of the day trading population in Taiwan market is able to predictably and reliably earn positive abnormal returns after transaction cost.Lefevre, E. (2018, p.256 and 245) Jesse Livermore, the most popular stock trader says that it is impossible for any trader to consistently and endlessly beat the market no matter how experienced he is. Speculation can never be safe 100 percentand therefore the possibility of losing trades is always present. There are thousands of traders who speculate in the market but very few are eventually successful. Ignorance, fear, greed and hope are the four deadly enemies of a speculator.

Nordstrom (n.d.) explains that success in trading is a part of a balanced life. Success is so much more than being a profitable trader. One cannot neglect: Health, Wealth, Family, Love, Lifestyle and Spirituality. The best traders strike a good balance between these. Outlining one's goals in each of the above areas will pave the way for his/her life as a trader.

Heinke, S. (2017) traders with high analytical and mental characteristics tend to make highest trading gains. Being good in either of the one skill does not translate into higher trading gains in fact it is highly detrimental to profit making. Raut, R. K. et. al. (2020) documented that investors in the Indian Equity market are highly swayed by herding behaviour, information cascades, anchoring, representativeness and overconfidence. Alongside, the study has also provided strong indication of investors' irrationality as well as inefficiency of the financial market. El-Chaarani, H. (2016) investor's portfolio performance is highly influenced by his/her ability to Perceive and tackle emotions. Higher emotional intelligence is strongly correlated with better portfolio performance. Phan, T. C., et. al., (2018) Investors who trust on recommendation from friends and family members tend to under-diversify their portfolio.

From the above literatures it is evident that factors such as trading knowledge, trading behaviour, risk management skills, emotional control, balanced life, etc. plays a key role in determiningone's success as a day trader.

**Research Gap and Need for the study:**

There are a good number of studies on trading success conducted in the U.S., Taiwan and Korean markets. Even the classic books on trading behaviour, psychology and trading success that are available in the market are written by western authors but to the best of the researchers' knowledge, there are hardly any research studies in the Indian scenario. The Indian equity derivatives market is growing at a rapid pace and the largest in the world in terms of volume and the Individual investors account for major participation in the market. Unlike the western world, less than 10 percent of the Indian population have Demat Account but their sudden interest in highly speculative instruments like derivatives is quite alarming. Many informal sources claim that 95 percent of traders in the market fail, so what sets apart the rest 5percent is an elusive quest. Therefore, it is important to understand what determines trading success in the equity derivatives market.

**Research Objectives:**

- To identify the factors that determine one's success in trading equity derivatives
- To construct and test a research model that explains the amount of influence of each factor in determining the success of a trader in the equity derivatives market

**Hypothesis**

**$H_1$-** Trader's knowledge about the market does have a significant influence on their trading success in the equity derivatives market

**$H_2$ –** Trading behaviour of a trader does have a significant influence on their trading success in the equity derivatives market

**$H_3$-** Risk management skills of a trader does have a significant influence on their trading success in the equity derivatives market

**$H_4$-** Emotional control of a trader does have a significant influence on their trading success in the equity derivatives market

**$H_5$** -Tech-savviness of a trader does have a significant influence on their trading success in the equity derivatives market

**$H_6$** .Social Interaction of a trader does have a significant influence on their trading success in the equity derivatives market

**$H_7$** . Personal Habits of a trader does have a significant influence on their trading success in the equity derivatives market

## II. Research Design and Methods

To accomplish the objective, a survey was conducted among382 active equity derivative traders in Bengaluru city of Karnataka State using snowball sampling technique. The initial respondents were requested to provide multiple referrals to identify potential subjects required and each referral gave some more and the process continued until necessary sample size was reached. Well-structured questionnaire has been used which consists of 5 –point Likert scale for each item covering all the explanatory factors such as personal habits and lifestyle, trading behaviour, knowledge, risk management skills, emotional factor, technology and social factor. The last part of questionnaire includes items which are relevant to measure the trading success of the retail investors and considered the same as outcome variable. Likert scale such as 'strongly agree' (5), 'agree' (4), 'neither agree nor disagree' (3), 'disagree' (2), 'strongly disagree' (1) has been followed throughout the instrument other than demographic characteristics.

## III. Results and Discussion

**Data Analysis**

To test the hypotheses,the researchers used the Partial Least Squares (PLS) approach. At present, Partial Least Square (PLS) path modelling is widely applied in the business research. PLS-SEM is a covariance structure analysis (Jakobowicz, 2006) and more suited for studies with many latent variables (Henseler, 2012). Initially the study has tested the reliability and validity of the empirical model. According to Nunnally and Bernstein (1994) Cronbach alpha need to be more than 0.7 and the in present study, all the constructs have alpha value more than 0.7. The earlier literature confirmed the use of Composite Reliability (CR) as a proxy of Cronbach's Alpha (Hair et al.2010). The study confirms that the CR values are more than 0.6 and hence it is concluded that the latent variable chosen for the study have superior levels of reliability and internal consistency as shown in Table 1.

**Table 1: Summary of Reflective Outer Models**

| Latent Variables | AVE | Composite Reliability | Cronbach's Alpha |
|---|---|---|---|
| Trading Behaviour | 0.742 | 0.953 | 0.942 |
| Emotional Intelligence | 0.631 | 0.911 | 0.883 |
| Personal Habits | 0.787 | 0.949 | 0.932 |
| Knowledge | 0.714 | 0.952 | 0.943 |
| Risk Management | 0.695 | 0.932 | 0.912 |
| Social Interaction | 0.667 | 0.857 | 0.751 |
| Tech-Savviness | 0.693 | 0.9 | 0.852 |
| Trading Success | 0.568 | 0.84 | 0.747 |

The Average Variance Extracted (AVE) for each latent variable has to be assessed to test the convergent validity. According to Hair et al. (2013) convergent validity defined as the extent to which measures are related positively with another measure of the similar construct. Column 2 in Table 1 shows that the obtained AVE values are good and more than the threshold value of 0.5, hence it is concluded that the construct has a superior convergent validity. To determine the convergent validity, the outer loadings of the indicator, as well as the Average Variance Extracted (AVE), are considered. Higher outer loadings signify that the variables are associated in common. Outer loadings below 0.40 have been removed from the scale (Hair et al., 2010).

Fornell and Larcker (1981) suggest that the square root of AVE in each latent variable can be used to establish discriminant validity, if this value is larger than other correlation values among the latent variables. Table 2 depicts the output of discriminant validity.

**Table 2: Discriminant validity**

| Latent Variable | Emotional Intelligence | Knowledge | Personal Habits | Risk Management | Social Interaction | Tech Savviness | Trading Behaviour | Trading Success |
|---|---|---|---|---|---|---|---|---|
| **Emotional Intelligence** | **0.794*** | | | | | | | |
| **Knowledge** | 0.507 | **0.845*** | | | | | | |
| **Personal Habits** | 0.467 | 0.45 | **0.887*** | | | | | |
| **Risk Management** | 0.517 | 0.5 | 0.459 | **0.834*** | | | | |
| **Social Interaction** | 0.557 | 0.51 | 0.466 | 0.509 | **0.817*** | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Tech Savviness** | 0.494 | 0.451 | 0.449 | 0.498 | 0.49 | **0.832*** | | |
| **Trading Behaviour** | 0.517 | 0.448 | 0.436 | 0.469 | 0.47 | 0.447 | **0.862*** | |
| **Trading Success** | 0.597 | 0.629 | 0.469 | 0.599 | 0.513 | 0.492 | 0.598 | **0.754*** |

*Discriminant values

As per the Fornell-Larcker criterion table, the square root of AVE appears in the diagonal cells in bold and correlations appear below it. Therefore, in absolute value terms, if the top number (which is the square root of AVE) in any factor column is higher than the numbers (correlations) below it, there is discriminant validity. From the above it could observe that AVE of each Latent Variable is larger than other correlation values among the latent variable.

**Table 3: Model Hypothesis Testing**

| Hypothesis Testing | T Statistics | P Values |
|---|---|---|
| Emotional Intelligence -> Trading Success | 3.734 | 0.001* |
| Knowledge -> Trading Success | 6.056 | 0.000* |
| Personal Habits -> Trading Success | 0.757 | 0.449 |
| Risk management Skills -> Trading Success | 4.186 | 0.000* |
| Social Interaction -> Trading Success | 0.278 | 0.781 |
| Tech Savviness -> Trading Success | 1.121 | 0.263 |
| Trading Behaviour -> Trading Success | 5.165 | 0.000* |

* indicates significance at 1 per cent level

The model testing hypothesis output is depicted in Table 3. It could be inferred that factors such as Emotional Intelligence, Knowledge, Risk management, Trading Behaviour have significant ($p<0.01$, $t>2$) influence in determining one's success in trading equity derivatives. Hence, H1, H2, H3 and H4 are accepted. On the other hand, Personal Habits, Social Interaction, Tech Savviness does not have significant influence on trading success since the probability value is greater than 5 percent ($p>0.05$, $t<2$). Therefore, H5 is rejected.

The coefficient of determination ($R^2$) explains the model prediction precision and signifies the extent of variance in an endogenous variable explained by exogenous variable. The present study $R^2$ value is 0.598 which indicates 59.8 percent variance in the investors trading success is determined by Emotional Intelligence, Knowledge, Risk management, Trading Behaviour, Personal Habits, Social Interaction, Tech Savviness and rest 40.2 would be influenced by some other variable.

**Figure 1: Structural Equation Model – Determinants of Investors Trading Success in Equity Derivatives Market**

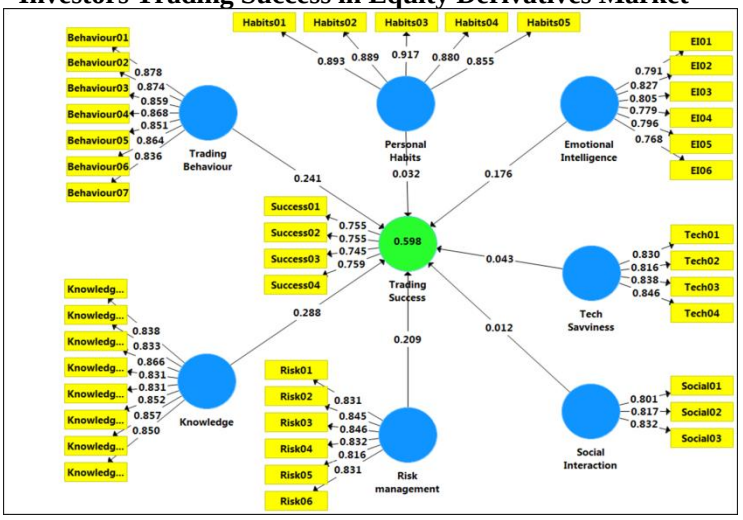


**Table 4: Inner model path coefficient sizes**

| Latent Variable | Coefficient Size | |
|---|---|---|
| Trading Behaviour | 0.241* | Trading Success |
| Knowledge | 0.288* | |
| Tech Savviness | 0.043 | |
| Personal Habits | 0.032 | |
| Risk Management Skills | 0.209* | |
| Social Interaction | 0.012 | |
| Emotional Intelligence | 0.176* | |

* indicates significance at 1 per cent level

The result of inner model path coefficient sizes in Table 4 suggests that for every 1 unit of change in the trading behaviour there is 0.241 unit of change in his/her trading success in equity F&O market. Trading behaviour includes having a clear trading objective and planning trades efficiently, managing trade like any other serious business, maintaining a trading journal for further introspection, etc. Similarly, 1 unit of change in the knowledge of the trader, there is 0.288 unit of change in his/her trading success. Knowledge includes his/her ability to make meaning out of the market movements, continuous learning coupled with his information handling skills like mathematical and analytical ability. Similarly, for every 1 unit of change in his/her risk management skills and emotional intelligence there is 0.209

units and 0.176 units of change in his/her trading success. Emotional intelligence includes not becoming overconfident while booking profits nor losing confidence while making loss, not succumbing to revenge trading, etc. The influence level of Personal Habits, Social Interaction, Tech Savviness is very less but do not have statistically significant influence on investors trading success in equity derivatives market.

## IV. Conclusion

The results of the analysis reveal that the success in the equity F&O market is significantly driven by factors such as the trader's knowledge about the market, his trading behaviour, risk management skills and emotional control. Components such as tech Savviness, social interaction and personal habits do not significantly affect the trader's success in the equity derivatives market. 59.8percent of the variance in Trading Success is influenced by seven factors that include Knowledge (0.288), Trading Behaviour (0.241), Risk Management Skills (0.209), Emotional Intelligence (0.17.6), Tech- Savviness (0.043), Personal habits (0.032) and Social Interaction (0.012).

Findings of this study reveal that knowledge is the key to success in trading equity derivatives. Ignorance in the F&O market can be disastrous. Therefore, the F&O traders have to equip themselves with adequate knowledge to predict the future movement of the market using technical analysis (charts, indicators), fundamental analysis or mostly the combination of both, Option Greeks, various option strategies for changing market conditions, etc…The traders should never fail to invest in educating themselves to gain the required knowledge and skills to ace the market.

Traders in the market have a general misconception that they only need to be equipped with the knowledge to pick up the best trades. What they fail is to be prepared for the worst. The findings of the study also expose that Risk management skills of trader significantly influence his/her trading success. One of the most important aspects of successful trading is protection of capital. As the popular saying in the market goes "If you don't bet, you can't win. If you lose all your chips, you can't bet". Due importance should be given for stop loss and exit strategy for each and every trade and be prepared for the losses well in advance. Traders should develop the knack to cut their losses short and let their profits run.

Traders should stop the herd behaviour of following the crowd, tips of brokers and news channels. Such traders are often referred to as sheep that follow the herd happily, unmindful that the majority of them end up being lambs to the slaughter. Therefore, the traders should introspect themselves to find their suitable trading style which is mostly based on factors such as one's patience level, capital availability, risk tolerance and other priorities.

Another important finding of the research is that the trading behaviour of a person has a significant influence in determining his/her trading success in the market. It is important that the participants in the market should consider trading like a serious business and not take it lightly. They should be clear with their trading objective and have a proper trading plan that specifies the entry, exit and money management criteria for every trade. With the advent of technology, it is easy to test a trading idea before risking real money. Known as back-testing, this practice allows the trader to apply his trading idea using historical data and test if it is practicable. Once a plan has been developed and back-testing shows good results, the plan can be used in real trading. The key here is to stick to the plan. Taking trades outside of the trading plan, even if they turn out to be profitable, is considered poor strategy.

The results of the study also indicate that emotional intelligence of a trader plays a significant role in determining one's trading success. Trading equity F&O is certainly stressful. There are more chances for a stressed trader to easily deviate from his established trading system and incur losses. Therefore, it is crucial for a trader to be disciplined enough to stick to his trading plan. Unfortunately, discipline can't be taught in seminars or workshops. Traders tend to spend a lot of money trying to compensate for their lack of self-control without realising that a long look in the mirror will enable him/her to achieve similar results at a much lower price. The important lesson is that, once a trader has confidence in his/her trading plan, he must have the discipline to stick to it, even when there are foreseeable losing streaks. The gullible traders in the market are driven by emotions such as fear and greed and without the right education these emotions are time and again exaggerated, thus leading to costly mistakes.

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# CRYPTOCURRENCY AND STOCK MARKET: INTERDEPENDENCE

**Prabhjot Kaur* Mukesh Kumar Meena****

**Purpose:** *Blockchain is used by different industries like banking, healthcare, law enforcement, IOT, online music, digital transfer, and real estate for transaction security purposes. Blockchain is becoming more sustainable day by day. The objective of this study is to determine the interdependence of major stock market indices and cryptocurrencies, offering investors a potential path for diversification.*

**Design/methodology/approach**: *A quantitative study will investigate the interdependency of cryptocurrencies on different stock market indices. These are selected on the basis of high market capitalization. The research will be based on secondary data collection.*

**Findings:** *Strong correlation between crypto and stocks has been seen in developing or emerging market nations, which have been at the forefront of crypto development and adoption. In 2020–21, for example, the correlation between returns of the MSCI emerging markets index and Bitcoin was 0.34, increased 17-fold from the previous years. Stronger correlation indicates that Bitcoin is becoming a risky investment. Its correlation with stocks has risen above than that with other assets such as gold, investment grade bonds, and major currencies, indicating that risk diversification benefits are limited, contrary to prior beliefs.*

**Originality/value***: Increased crypto-stock interconnectedness increases the risks of spillover of investor sentiment spillovers between asset classes. As a result, a severe drop in Bitcoin prices may encourage investor risk aversion, resulting in a drop in stock market investment. Spillovers from the S&P 500 to Bitcoin are on average of equal magnitude, implying that sentiment in one market is passed.*

**Keywords:** Stock Market; Cryptocurrencies; Blockchain; Investors; Volatility; Crypto-Stock Interconnectedness.

**JEL Classification Codes -** G32; E51; F30; G14; G17; G28; G41

A blockchain is a decentralized peer to peer software network that functions as a digital ledger as well as a platform for safe asset transfer without the use of a middleman. It has facilitated the secure digital exchange of value. On a blockchain network, anything from currency to votes to land titles can be stored, tokenized, and exchanged. In other words, Blockchain is a data format for storing transactional records while maintaining security, transparency, and decentralization. Blockchain in addition to security maintains a permanent record of transaction which is a transparent network state that can be viewed in real time. The blockchain enables all network participants to reach a consensus, often known as agreement. All data saved on a blockchain is digitally recorded, and all members have access to a common history. This eliminates the possibility of any fraudulent behavior or transaction duplication. Regardless of the type of blockchain protocol used, it has the potential to alter old business models and open new possibilities. Blockchain is used by different industries like banking, healthcare, law enforcement, IOT, online music, digital transfer, and real estate for transaction security purposes. Blockchain is becoming more sustainable day by day. There are three type of blockchain: -

**Public:** Public blockchain have visible and accessible ledgers for everyone on the internet.

**Private:** Private blockchain allows everyone to view transactions but gives permission to only specific people in any organization or group for verifying and adding a new block.

**Consortium:** In consortium type of blockchain only a group of people in an organization like bank, are able verify and add new blocks but the ledger is restricted to selected groups.

The flow of blockchain starts with an individual requesting a transaction which is further broadcasted to peer to peer network for validation purpose. Once verified by the network, the transaction becomes the part of new block for the ledger. This new block is then added to existing blocks and is called blockchain

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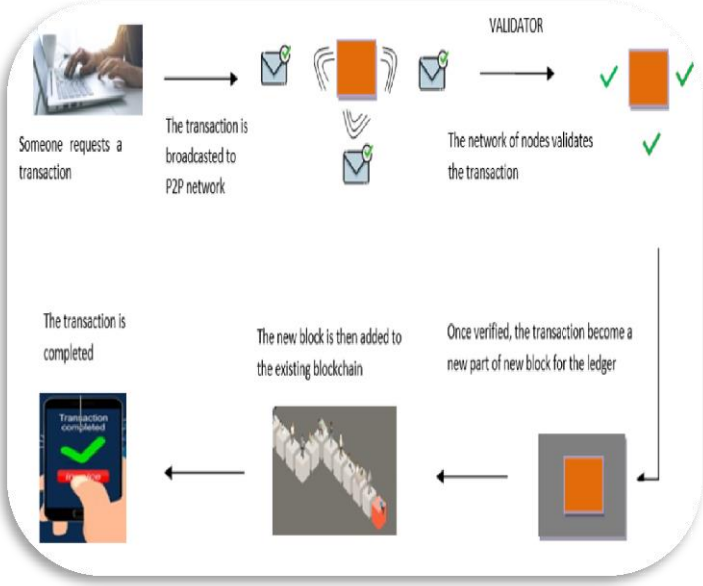
**Figure 1: Flow of blockchain**




A cryptocurrency is a digital asset designed to function as a means of exchange that use encryption to safeguard transactions, limit the creation of new units, and verify asset transfers. Because of this security feature, counterfeiting a cryptocurrency is tough. The organic nature of a cryptocurrency is one of its most appealing features; it is not issued by any central authority, making it potentially impervious to government meddling or manipulation. In simple words, cryptocurrency is defined as a form of digital token or coins that exist on distributed, decentralized and peer to peer ledger called a blockchain. Though some cryptocurrencies have entered the physical world of projects like credit cards, majorly crypto still remain entirely intangible.

Cryptocurrency was invented in the year 2008 with Bitcoin as first cryptocurrency by an unknown group of people in which the owner is named to be Satoshi Nakamoto but till date no one knows the real identity to this name, though many have claimed to be Nakamoto. According to different literature reviews Nakamoto also devised the first blockchain. The word "crypto" in cryptocurrencies signifies complicated cryptography which helps in processing and creation of digital currency and their transaction across decentralized and peer to peer systems.

Cryptocurrencies are made or created as reward for a process known as mining. Mining is a service where record keeping can be done using computer processing power. Digital currencies, alternative currencies (cryptocurrencies modeled after bitcoin are collectively called altcoin or alternative coins), and virtual currencies are all examples of cryptocurrencies. Unlike centralized electronic money and central banking systems, cryptocurrency uses decentralized control. A blockchain is used to maintain the decentralized peer to peer control of each cryptocurrency. Because of their anonymity, bitcoin transactions are ideal for a variety of criminal activities such as tax evasion and money laundering. Bitcoin was the first cryptocurrency to catch public attention and was officially launched in year 2009 by Satoshi Nakamoto. There were about 14.6 million bitcoins in circulation as of September 2015, with a total market value of $3.4 billion. The success of Bitcoin has inspired a slew of alternative cryptocurrencies, including Ethereum, Solana, XRP, Cardano, Polygon (Matic), and others. In year 2021, bitcoin was legally accepted for the first time by a country, El Salvador after a legislative assembly that voted in favour. In the same year the government of Cuba came up with a resolution 215 in order to regulate and recognize cryptocurrencies such as bitcoin. Also, china which was the largest market for crypto, made all crypto transactions illegal.

**Investors in Crypto vs. Shares: A Comparison of Psychological Status and Investment Style**

A study was conducted by Department of Psychiatry, Chung-Ang University Hospital, Seoul, South Korea which investigated the behavioral and psychological reasons of investors choosing between cryptocurrency and stock market. According to the hypothesis of the study bitcoin investors showed differences various characteristics when compared to share investors in terms of personality trait, psychological state and patterns of online behavior and investment. Based on the assumption about these differences the study determined whether investors would invest in crypto or share market. In this study total, 307 people responded to the survey, and they were divided into three groups: Bitcoin investors (n = 101), stock investors (n = 102), and non-investors (n = 104). The Fear of Missing Out (FOMO) scale, Temperament and Character Inventory-Revised-Short (TCI-RS), Mood Disorder Questionnaire (MDQ), trait anxiety part of the State-Trait Anxiety Inventory (STAI-T), the Korean version of the Canadian Problem Gambling Index (K-CPGI), demographic data and investment patterns were all administered as a self-report questionnaire. In Demographic characteristic test, the age, marital status, sex, education, and job position of individuals in the three groups did not differ significantly. However, as compared to non-investors, the share investor group reported a larger income. In personality and psychological state test, the investor group belonging to bitcoin showed higher scores in Novelty seeking and low scores in Cooperativeness when compared to the share investor group. In case of online use pattern, the number of posts on social network services in the Bitcoin investor group

was more than that of share investor group. Overall findings of this study suggested that CRYPTO investments are influenced by a variety of characteristics, with personality, psychological states, and investing habits being highly influential. The investing pattern, in particular, is the most significant determinant of CRYPTO investment. BITCOIN investors stood out in terms of novelty seeking, gambling proclivities, and unusual investment patterns. As a result, the considerable investments in CPYPTO could be explained by personality, psychological states, and investment pattern.

## I. Review of Literature

This study will explore the correlation between 5 major cryptocurrencies (i.e., Bitcoin, Ethereum, Ripple, Bitcoin cash, and Matic) and 5 major stock markets (NYSE composite Index, NASDAQ composite index, Shanghai Stock Exchange, Nikkei 225, and Euronext NV). We establish considerable time-varying conditional correlation between the majority of cryptocurrencies and stock market indices using Asymmetric dynamic conditional correlation and wavelet coherence techniques. We will determine how negative shocks play a larger role in generating this connection than positive shocks.

Overall, the objective of this study is to determine of interdependence of major stock market indices and cryptocurrencies, offering investors a potential path for diversification.

## II. Research Design and Methods

A quantitative study will investigate the interdependency of cryptocurrencies on diff stock market indices. These are selected on the basis of high market capitalization. The research will be based on secondary data collection. The closing prices for 5 major cryptocurrencies from website like Coin desk and Coin Market Cap will be obtained and for stock indices the adjusted closing price data will be obtained from Yahoo finance database from 1st Dec 2020 to 30th Nov 2021.

As mentioned In the literature review and depicted by graph above all cryptocurrencies are highly volatile in nature. Whereas, stock market indices have consistent reurns except for NIKKIE, that is stock market index for Japan. The correlation model was applied to find the correlation between the adjusted closing prices of 5 major cryptocurrencies and stock market indices. The correlation chart has been shown below in the results and discussion section.

## III. Results and Discussion

**Figure 2: Correlation between 5 major Crypto and Stock Indices using Excel**

*Correlation Between Top 10 Coins*

| CORRELATION | NSE | NIKKIE | ENX | NASDAQ | SGX |
|---|---|---|---|---|---|
| BTC-USD | 0.103704102 | 0.212069612 | 0.21206961 | 0.21206961 | 0.212069612 |
| ETH-USD | 0.135324413 | 0.740629365 | 0.74062936 | 0.74062936 | 0.740629365 |
| XRP-USD | 0.092143023 | 0.463809454 | 0.46380945 | 0.46380945 | 0.463809454 |
| SOL-USD | 0.092143023 | 0.851870525 | 0.85187053 | 0.85187053 | 0.851870525 |
| SUSHI-USD | 0.11187762 | 0.222835071 | 0.74062936 | 0.22283507 | 0.222835071 |

we can conclude that there is a mostly very low correlation between these crypto coins and stock market indices. But cryptocurrency, solano has near to high positive correlation with all market indices except for NSE i.e., nifty fifty, market index of Indian stock market. Also, there was a finding that there no negative correlation between any cryptocurrency and stock market indices, that is they don't have any inverse relation if not direct.

**Figure 3: Correlation between 5 major Crypto and Stock Indices using R Language**

```
}
> # display correlation array
> correlation_array
, , CORRELATION BETWEEN STOCK EXCHANGES AND CRYPTOCURRENCIES

                SGX    NASDAQ       EXN    NIKKIE       NSE
BTC-USD   0.2120696 0.2120696 0.2120696 0.2120696 0.10370410
ETH-USD   0.7406294 0.7406294 0.7406294 0.7406294 0.13532441
XRP-USD   0.4638095 0.4638095 0.4638095 0.4638095 0.09214302
SOL-USD   0.8518705 0.8518705 0.8518705 0.8518705 0.11505349
SUSHI-USD 0.2228351 0.2228351 0.2228351 0.2228351 0.11187762
```

According to IMF blog by Tobias Adrian, Tara Iyer and Mahvash S. Qureshi, there is a growing interconnectedness between Digital assets and Financial markets. Crypto assets are no longer on the fringe of the financial systems. Despite considerable volatility, the market value of these unconventional assets increased to roughly $3 trillion in November from $620 billion in 2017, owing to rising popularity among regular and institutional investors. The

overall market value fell to around $2 trillion last week, but it still represents a nearly four times gain since 2017.

According to new IMF research, the correlation of crypto assets with traditional holdings like equities has increased substantially as usage has increased, limiting their perceived risk diversification benefits and raising the danger of contagion across financial markets. Crypto assets like Bitcoin and Ether had negligible relation with mainstream market indices prior to the outbreak. They were considered to help diversify risk and function as a hedge against other asset class volatilities. However, after the unprecedented central bank crisis responses of early 2020, this altered. Cryptocurrency prices and stock prices in the United States have both risen amidst global financial conditions and increased investor risk appetite.

**Figure 4: Correlation between Bitcoin Price and S&P 500**

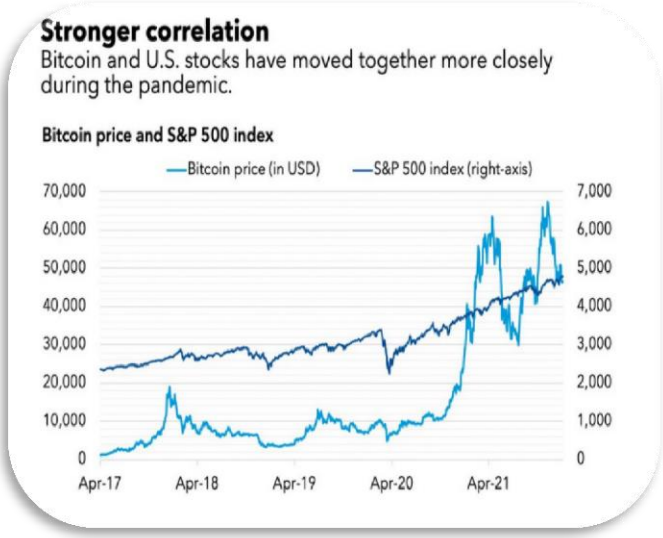
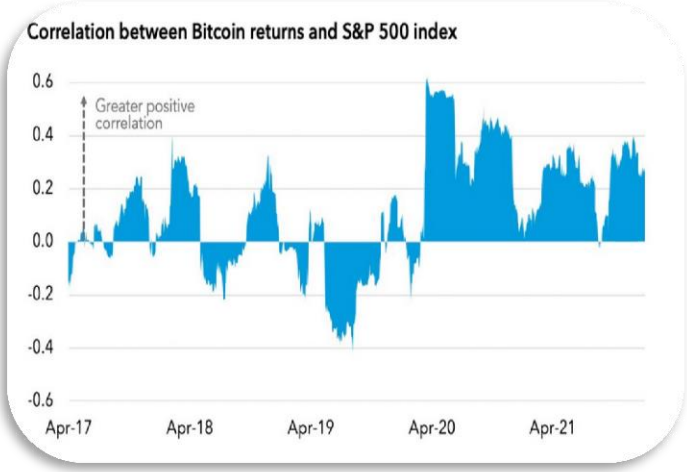



**Figure 5: Correlation between Bitcoin Returns and S&P 500**




For example, in the year 2017-19, Bitcoin returns did not move in synch with the S&P 500, the US stock market's benchmark index. The daily correlation coefficient was only 0.01, but it increased significantly to 0.36 in 2020–21 as the assets moved more in lockstep, increasing or decreasing at the same time.

Strong correlation between crypto and stocks can also be seen in developing or emerging market nations, which have been at the forefront of crypto development and adoption. In 2020–21, for example, the correlation between returns of the MSCI emerging markets index and Bitcoin was 0.34, increased 17-fold from the previous years.

Stronger correlation indicates that Bitcoin is becoming a risky investment. Its correlation with stocks has risen above than that with other assets such as gold, investment grade bonds, and major currencies, indicating that risk diversification benefits are limited, contrary to prior beliefs.

Increased crypto-stock interconnectedness increases the risks of spillover of investor sentiment spillovers between asset classes. Indeed, according to our research, which studies the spillover of price and volatility spillovers between crypto and global equity markets, spillovers from SOME MAJOR CRYPTO returns and volatility to stock markets, and vice versa, have risen exponentially in 2020–21 compared to 2017–19. IN WHICH Bitcoin volatility accounts for around one-sixth of S&P 500 volatility and one-tenth of the variation in S&P 500 returns during the pandemic. As a result, a severe drop in Bitcoin prices may encourage investor risk aversion, resulting in a drop in stock market investment. Spillovers from the S&P 500 to Bitcoin are on average of equal magnitude, implying that sentiment in one market is passed on to another market in a significant manner. Stable coins, a type of crypto currency that tries to preserve its value relative to a specific asset or a pool of assets, exhibit similar behavior. During the pandemic, spillovers from the largest stable coin, Tether, to global equities markets increased as well, albeit they remain significantly smaller than those from Bitcoin, accounting for around 4% to 7% of the variation in US stock returns and volatility. This research suggests that crypto-equity market spillovers tend to increase during periods of financial market volatility, such as the market upheaval in March 2020, or during strong price fluctuations in Bitcoin, as seen in early 2021. The rising and significant co-movement and spillovers between crypto and equities markets represent a strong correlation between the two asset classes, allowing transfer of shocks to different markets that will destabilize financial markets globally. Crypto assets, according to the research, are no longer on the peripheral of the financial system. Given their extreme volatility and valuations, their growing co-movement could become a threat to financial

stability, particularly in nations where crypto usage is prevalent. As a result, now is the moment to develop a comprehensive, coordinated global regulatory framework to guide national legislation and supervision, as well as alleviate the financial stability concerns posed by the crypto ecosystem. A framework like this should include laws targeted to the most common uses of crypto assets, as well as clear requirements for regulated financial institutions' exposure to and involvement with these assets.

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# DETERMINANTS OF STOCK RETURNS OF INDIAN BANKS: AN EVIDENCE OF BALANCED PANEL REGRESSION

**Miklesh Prasad Yadav* Aastha Khera** Neelam Dhanda*****

**Purpose:** *The stock performance of commercial banks in emerging market like India could be subjected to the risk involved in it and their prime significance to the nation. This paper examines the impact of return on assets (ROA), earnings per share (EPS), leverage and size on stock return of select Banks in India.*

**Design/Methodology/Approach:** *We employ balanced panel regression based on 10 years of panel data extending from 2010 to 2020 of 27. For the sample, 27 Indian banks are considered in which 11 are public and 16 are private banks.*

**Findings:** *It is found that ROA and EPS are significant under fixed effect model while ROA is only significant variable to affect stock return in random effect model. To decide the consistency in the model, further, Hausman specification test is employed. The result infers that fixed effect model is an appropriate model.*

**Originality/Value:** *Very few studies are witnessed on Indian banks specifically from determinants are concerned. This paper provides implications to the policy makers, fund managers and investors to decide about investment strategy in banking sector*.

**Keywords:** Stock Return, Earning Per share, Return on Assets, Leverage, Size, Panel Data

**JEL Classification:** E6, B22, E7

Stock market is an important component for the development of an economy and considered as the "mirror" of the economic activity. Its significance is well acknowledged in the economic growth that mobilizes the funds from savers to investors. It pools out the money from various investors and transfers this long-term capital to the firms and companies so that they can flourish their businesses. It equips its customers with plethora of investment options for parking their funds. Efficiency and productivity of a nation's stock market is a primary factor in shaping the comprehensive financial development (Ashaolu & Ogunmuyiwa, 2010). A proper operational of stock market encompassing structured allocation of resources assist in the economic development of a country (Junkin, 2012; Khera & Yadav, 2020). Stock return is the extent of gain or loss in the price of share in the specified duration generally represented as percentage. It is comprised of any regular gains and the capital gains. Investors assess the stock market based on risk and returns. Various factors are involved in affecting the stock returns in the market. Macroeconomic as well as company specific factors drive the prices in oscillated manner.

A stock market trades thousands of company's shares on regular basis. Banking stocks are traded prominently in the stock markets. Due to revolutionary reforms in the banking sector, this sector tuned out to be a hot choice for investors and considered as the backbone of financial strength that provides lifeline to the economy by playing important roles in the economy (Benston, 2004). Diversified range of products and services are rendered to customers thereby enabling growth and development of the nation. The stock performance of commercial banks in emerging market like India could be subjected to the risk involved in it and their prime significance to the nation (Girad, 2010). Investors could stretch the Banking markets after consideration of the risk factors involved. Apart from this, other things need to be investigated before parking their hard-earned money in stock markets. The stock price of banking sector is affected by numerous factors. It involves the profitability of Bank (Chu and Lim, 1998), Earning per share (Uddin, 2009), variations in the cost and profit efficiencies (Beccalli et al., 2006) and revenues announcement (Seetharaman and Raj, 2011). The profitability of banks is termed as important factor in determining the stock price performance. Both internal and external factors contribute in deciding the profitability of banks.

Indian banking sector comprises of nationalized, old private sector, new private sector banks and foreign banks operating in India (Banerjee, 2005). Further, the eminence of public sector banks is on the falling side due to bleeding balance

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sheets and decaying asset quality issues. However, they command positive share in Indian banking activities. It consists of twelve public-sector banks in which Indian government holds more than 51%. This high level of government domination leads to everlasting inspection of public sector banks and increased measures of under lending (Chakrabarti, 2005). There are twenty-two private sector banks and forty-six foreign bank operating in India. The Primary authority over the banks in India is Reserve Bank of India. It controls and oversees the management and functioning of banks operating in India. Indian government could not hold its ownership less than 51 %, as being specified by The Bank Nationalization Act of 1980.

During the late 1960s, Indian banks faced strict jurisdiction by the Government over them in terms of ownership. It is also referred as social leadership and due to this, Government took the reforming step of nationalization. These banks were having tighter control over them in terms of specified credit and fixed interest rates (Sathye, 2003). Before the 1990s era, Government owned banks command the Indian banking sector. More than 90% of banking assets were owned and managed by them. Despite this, majority of banks were not sufficiently capitalized. Tough regulations by RBI and Indian Government prevailed over this sector in regulating bank's business. Decisions related to deposits and lending were rigorously implemented by the supreme authority (Thomas, 2005).

Indian banking sector underwent the major transformation after 1990s era to enhance the efficiency and productivity of commercial banks (Ghosh, 2011). Next revolutionary step was undertaken by Government of India in 1998 for creating market- driven system. High-yielding economy was required for attracting higher investment levels and improved growth. The remarkable impact of this liberalization process involves the deregulation of the interest rate. Indian banking sector shifted its perspective from entirely government driven to the flexible system of interest rate being decided by market forces.

Entry of new private sectors banks was made liberal and foreign banks were allowed to operate more freely with new branches. Ownership pressures on public sector banks were somewhat released, paving the way for more competitive economy. Liberal entry of private sector in banking sector induced the healthy competition at a different level. Innovative services are being rendered, enhanced technologies are being used and new customer-centric practices have become new norm (Prasad and Ghosh, 2007). Realizing the importance of banking sector in India, National Stock Exchange launched specific sectoral index namely Nifty Bank. It was launched in the year 2003 consisting twelve most liquid and largest capitalized Bank stocks in India. It is treated as the yardstick for gauging the performance of banking stocks in India. Public sector banks hold only 10% of the weightage in this sector index. Public sector banks are being severely impacted by hard hitter asset quality issues. Still, it is being widely tracked by investors and policy maker for launching ETF funds and structured products.

The magnitude of the literature in context of exploring the determinants of the stock returns is soaring. Most of the research work has been carried out in general terms, few studies are there in the determination of factors affecting the stock returns of banking sector. The existing study aims to determine the factors influencing the security returns of Twenty-Seven commercial banks. Panel data modelling is employed for this purpose. Data of total Twenty-seven banks is pooled over the last 10 years and determinants are worked out in this panel framework. It was not appropriate to apply time series analysis on this data. To fulfil the objective, this study employs fixed effect and random effect models to examine the determinants of share prices of banks. The result reveals that profitability of banks is the significant factor in affecting the stock prices of Indian banks.

The remainder of this study is structured as follows. Section 2 includes detailed review of literature. Section 3 explains briefly about the data and econometric model to be employed for empirical estimation followed by empirical results in section 4. At last, section 5 furnishes conclusion and policy implication of the study.

## I. Review of Literature

Flannery and James (1984) examined the responsiveness of commercial banks and financial institutions' (savings and loan stocks) stock returns with respect to variation in interest rates. Correlation test proved the existence of relationship among them. Co-movement among the constituent stock returns and changes in the interest rate relates to mismatch of maturity of assets and liabilities of Banks.Beck & Levine (2004) studied the association between Banks, stock market and economic growth employing dynamic panel. Bank credit, turnover ratio, and real per capita GDP growth of 40 countries have been taken. It is found that stock markets and banks are important component of the financial system and linking to the growth of any nation.

Srinivasan (2012) applied panel data techniques for examining the factor affecting the stock prices in India. Cross-sections regarding six industries namely Pharmaceutical, Energy, Manufacturing, Information Technology and Infrastructure were analyzed using annual data from 2006 to 2012. Fixed effect and random tests were employed on the

constituent variables like DPS, EPS, PE multiple, size and book value. It was noticed that EPS and PE multiple are significant factors. Ahmad et al., (2012) examined the determinants of profitability of banks using suitable panel data model. They consider return on assets as proxy of profitability and explanatory variables are cost to income ratio, liquid assets to customers, Loan loss reserves to gross loans ratio and ratio of share capital as percentage of total assets. Hausman test confirmed the usage of random effects model and it is applied on the data extending from 2001 to 2010. Cost efficiency, equity assets ratio and loans reserve ration impacted the profitability of banks negatively and significantly while liquidity ratio is not statistically significant. Bauer et. al.,(2014) used unbalanced panel data technique in their study for predicting the stock returns. A panel of 1216 firms is taken over the period of 1985-2002.Misspecifications test were conducted for examining cross- industry heterogeneity. Cash flow to price ratio affects positively to the stock returns. Industry effects and their interactions with firm's size and momentum were also found significant variables.

Goyal (2013) studied the profitabilityof the listed public sector banks with respect to the capital structure. Profitability has been proxied by ROA, ROE and EPS while explanatory variables are short term, long term, and total debt along with two control i.e.variables firm size and asset growth. The data of the 2008 to 2012 has been taken. Short term debt is found to be positive and significant in explaining all the three variables. Total debt is causing negatively to the profitability. Ghauri (2014) studied the banking stock market of Pakistan. Determinants of stock prices of major 15 banks are studied by applying fixed effects regression model. For the same, dividend yield, ROA and asset growth have been considered for 2008-2011.Further, only the asset growth affects stock returns positively and significantly.

Beggeren & Bergevist (2015) studied the financial behavior of 50 large cap Swedish companies considering the balanced data from 2009 to 2013. Impact of leverage is examined on stock returns and it was found thatthere is no significant impact on stock return. The result revealed that profitability influences leverage negatively while growth affects stock returns significantly. In the similar direction, Salamat & Mustafa (2016) examine the association of capital structure and stock returns of firms listed in Amman stock exchange over the period of 2007-2014. For the same, researchers employed unbalanced panel for the empirical estimation. The result unfolds that there is negative and significant association between capital structure and stock return whereas ROA has positive and significant relationship but EPS affects negatively.

Venugopal & Reddy (2016) employed panel data methodology for finding the factors affecting profitability and stockowner's wealth in Indian cement industry. The proxies for the study are Tobin's Q measure, EPS, debt to equity ratio, total liability, leverage, size and rate of growth in sales. Accounting measures and debt equity ratio affect the Tobin q measure positively and significantly while there is negative relationship between firm size and profitability.

Narayan et. al., (2016) examined the factors for the determination of stock price by employing the panel data of thirteen select commercial banks operating in India. The variables selected for analysis are interest rate, exchange rate and economic activity and the study used Panel Granger-causality and panel cointegration test to examine the relationship. Economic activity and real exchange rate (RER) affect stock prices of commercial banks significantly. Mugambi & Okech (2016) examined the impact of macro-economic determinants namely exchange rate (ER), GDP interest rate and inflation on stock return of select banks of Kenya. Quarterly time series data is taken from extending from 2000 to 2015. Further, authors employed correlation, unit root testing and fixed effect regression model for analysis. GDP is not statistically significant factor in determining stock prices whereas rest three poses significant impact.

Assefa et. al. (2017) employed dynamic panel techniques to study the stock returns of twenty-one developed and nineteen developing countries. Quarterly time series data is taken from1999 to 2013. Anticipated cash flows and discount rates are studied with respect to stock returns. Fixed effects model is applied being followed by dynamic panel modeling. GMM model is chosen for analysis purpose and it observed that interest rate affects stock return significantly in accordance with the expected cash flow hypothesis. Rjoub et. al. (2017) investigated the impact of micro and macro variables namely capital adequacy, asset quality, the management quality, the earning, liquidity, size inflation. Exchange rate, industrial production, interest rates, money supply on the stock returns of Turkish banking sector. The result reveals that stock price is significantly affected by all the constituent variables.

Rawlin et.al. (2019) carried their research in working out the bank-specific factors affecting the size of sectoral index namely Bank Nifty. Which includes tenyear of datafrom 2009 to 2018. Return on assets, credit/deposit ratio, interest income/average working funds, business per employee and capital adequacy ratios have been considered. It was found that credit to deposit ratio, return on assets and adequacy ratios affect the Bank nifty significantly.Nguyen et al. (2020) employed panel data for deriving the factors affecting the stock prices of the listed steel industries in Vietnam. Quarterly data for the variables namely stock prices, GDP, Inflation, ROE, debt rate, PE ratio, Population rate and $CO_2$ rate is taken from 2006 to 2019. Feasible

generalized least square is employed for measuring the impact of these factors on share prices. Results showed that ROE and CO2 rate are the significant variables to impact the stock prices.

## II. Research Design and Methods

**Data and Econometric Model**

We have considered annual data of 10 years from 2010 to 2020of 27 Indian Banks including 11 public Banks and 16 private banks (annexure 1). Currently, India has 12 public Banks and 22 private Banks but due to the data unavailability of one public Bank and 6 private Banks have not included in this study. The annual data of stock return, return on asset (ROA), earning per share (EPS), leverage and size have been collected from National Stock Exchange (NSE) and their annual reports of considered period. The stock price of these Banks is converted into log return.

**Variables Identification**

This paper uses stock return, leverage, return on assets (ROA), earning per share and size as variables. **Stock return** is computed through the natural logarithm formula. It is arrived by dividing the natural log of today's closing price by yesterday's closing price. It is the Dependent variable in this study and the same has been used in the study of Beggeren & Bergevist (2015), Assefa et. al. (2017), Nguyen et al. (2020).Next, l**everage** is calculate dividing the total liabilities by total assets. It is termed as an important component of stock risk premiums, being positively connected with it(Bhandari, 1988). High leverage leads to increased chances of bankruptcy, thus increasing the risk for common equity holders. Due to this they demand high returns and positive relationship is expected between stock returns and leverage of company. It can be depicted as following equation.

$$\text{Leverage}_{i,t} = \frac{\text{short term liabilities+long term liabilities}}{\text{Total assets}}$$

**Return on assets (ROA)** is the depiction of company's profitability which is the prerequisite for the growth of the company (Haugen and Baker, 1996). It implies that profitable companies lead to high returns, therefore, it has been treated as the crucial factor for determining the stock returns. It is calculated by dividing net income by the total assets. Algebraically it is presented as follows:

$$\text{ROA}_{i,t} = \frac{\text{NIit}}{\text{TAit}}$$

NI refers to the net income of the company and TA denotes the total assets for the *i* bank in the year *t*.

**Earnings per share (EPS)** is taken as a symbol of growth of the company. Company's growth prospects create positive impact on its predictable stock returns(Haugen and Baker, 1996). Uddin (2009) found positive connection of earning per share and stock returns of banks. So, a positive association is anticipated of them. It is computed as dividing the total earning of the company by the total number of shares outstanding. Presented as follows:

$$\text{EPS}_{i,t} = \frac{NIi,t}{Si,t}$$

NI implies the net income after tax and preference dividend of the company and *S* denotes the number of shares outstanding for the *i* bank in the year *t*.

**Size** matters to the stock return as large companies enjoy the leverage over the small companies in terms of diversification of business, therefore, they do not experience long periods of low income. Risk factors involved in it leads to negative relationship between size and stock returns. Small size companies experience high risk, thus demanding high level of retunes in terms of compensation (Gallizo & Salvador, 2006). The size of the firms is taken as natural logarithmic of Total assets. The summary of data set is shown in table 1:

**Table1: Summary of data set**

| Variable | Explanation | Source |
|---|---|---|
| SR | Stock Return | National Stock Exchange |
| ROA | Return on Assets | Annual Reports |
| EPS | Earnings Per Share | Annual Reports |
| Leverage | Leverage | Annual Reports |
| Firm Size | Size | Annual Reports |

*Source: Author's own calculation*

**Econometric Model**

The data for this study involves both cross sectional units of 27 Banks and time seriesconcerning 10 years from 2010 to 2020. This is the perfect picture paving the way for the application of panel data modeling which is short and balanced panel. It is more efficient in comparison to pure cross-section or time-series data as it provides more informative data, uses more degree of freedom, and observe less collinearity among the variables. To apply panel data regression, first, poolability test is employed to check whether data is poolable. Then, testing of cross-sectional effect is necessary as it decides an application of suitable model for the panel data regression (Li et al., 2020). If data is poolable, we apply pooled regression which is also known as pooled regression. Further, if data is not poolable, we check the individual effect and time effect to apply fixed and random effect.

The fixed-effect model controls for all time-invariant differences between the individuals, so the estimated

coefficients of the fixed effects models cannot be biased because of omitted time-invariant characteristics (Yadav & Yadav, 2021). It is presented as follows:

$$Y_{it} = \alpha + \grave{\beta}X_{it} + u_{it} \quad \text{.....(1)}$$

Where, Yit is dependent variable of *i* at *t*, α is fixed over time and remodeling itself in accordance with different cross section units. i = number of cross sections 1,2,…..n t= time periods 1,2, ….T

In the aforesaid equation, an impact of time-invariant variables cannot be estimated under the fixed effect model. In in this model, there exists correlation between independent variables and unobserved heterogeneity and is fixed and constant across different cross-sectional units.When this assumption is not fulfilled, it paves the way for random effects model.

In the random effects model, unobserved heterogeneity behaves in a random fashion and assumed no correlation with the independent variables. They are treated statistically independent of the explanatory variables. It will calculate the impacts of variables that are not changing with the time. The equation can be represented as follows:

$$Y_{it} = \alpha_{it} + \grave{\beta}itX_{it} + u_{it} \quad \text{……} \quad (2)$$

In this model, $\alpha_i$ is treated as random variable. ai incorporates itself into the error term and start acting like error term. That's why it is known as random effect. It will follow the properties of error term as it is now being incorporated in it.

Equation of Panel data methodology for this study is

$$SR_{it} = \infty_i + ¥_1ROA_{it} + ¥_2EPS_{it} + ¥_3\ SIZE_{it} + ¥_4LEV_{it} + \mu_{it} \text{……(3)}$$

Where, SR, ROA, EPS, SIZE and LEV are stock return, return on assets, earning per share, size of total assets and leverage of banks respectively, *i* indicates the number of cross sections (commercial banks) 1,2,…..n t= time periods 1,2, ….T ( 2010-2020).

Next, we apply Hausman test to check the consistency between fixed and random effects model. It compares the estimates of these two methods and decides its consistency. In case null hypothesis is rejected then FEM is more suitable. If it fails to reject then random effect model is preferable. It implies that the sampling variation in the fixed effects estimates is to large, no statistically significant differences is there. In this study null hypothesis stating GLS estimates are consistent is rejected, thus the appropriate method to look forward is fixed effects model.

## III. Result and Discussions

**Descriptive Statistics**

We report the descriptive statistics for the constituent variables in table 2. The result reveals that EPS has the highest value of mean 22.79 with a standard deviation of 47.31 followed by Size (M =12.07,S.D = 1.33). Leverage has the mean 0.92 and standard deviation 0.023 while ROA has the mean 0.47 and standard deviation 1.203. The stock return, compared to all the other variables, is witnessed with low mean (-0.071) with standard deviation of 0.2275. Generally, for a variable to be normally distributed or symmetric, the value of skewness and kurtosis must be zero and three respectively. All the variables are negatively skewed except EPS. EPS is positively skewed which is flattered to the right, it implies that EPS is spread to the positive side of the distribution. The rest of the variables like stock returns, ROA, size, and leverage are flattered to the negative side or left side of the normal distribution. In addition, the distribution of the size and leverage is platykurtic (kurtosis value less than 3) while stock return, ROA and EPS are leptokurtic (kurtosis value is greater than 3). Having confirmed that none of the variables satisfies the conditions of the normality as aforementioned variables are either leptokurtic or platykurtic but not the mesokurtic. The result of Jarque-Bera furnishes the strong evidence to reject the null hypothesis (variable is normally distributed) of normality which is in consent with the result of skewness and kurtosis.

Next, we apply Pearson correlation testto check the degree of relationship among variables presented in table 3. It is evidenced that stock return is positively and significantly correlated with ROA and EPS while negatively related with size and leverage. There is high correlation between stock return and ROA (0.3467). ROA has statistically significant and positive correlation (0.4761) with EPS but negative correlation with size and leverage. There is evidence of positive and negative correlation of EPS with size and leverage respectively. The correlation between size and leverage is positive but not significant.Figure 1 shows the panel plot of stock return, ROA, EPS, leverage and size. The x-axis represents the year and y-axis represents values of variables while group 1 to 27 shows various cross-sectional units. It is evident from the figure that the values of each variable of Banks are different. However, few Banks have the values in same direction. It represents that there may be possibility of individual effect.

**Table 2: Summary Statistics**

| Constituent Series | Mean | Min-value | Max-value | Std. Dev. | Skewness | Kurtosis | Jarque Bera | P-value |
|---|---|---|---|---|---|---|---|---|
| SR | -0.0718 | -1.1730 | 0.3960 | 0.2275 | -1.5683 | 3.6586 | 261.26 | 0.0000 |
| ROA | 0.4720 | -6.3700 | 3.1100 | 1.2098 | -1.6796 | 5.4401 | 459.89 | 0.0000 |
| EPS | 22.7920 | -75.9100 | 266.8200 | 47.3190 | 2.1916 | 7.0402 | 773.74 | 0.0000 |
| Size | 12.0720 | 8.9110 | 15.2500 | 1.3364 | -0.2025 | -0.4847 | 4.49 | 0.0000 |
| Leverage | 0.9264 | 0.8439 | 0.9734 | 0.0233 | -1.1769 | 1.4714 | 86.68 | 0.0000 |

*Source: Author's presentation*

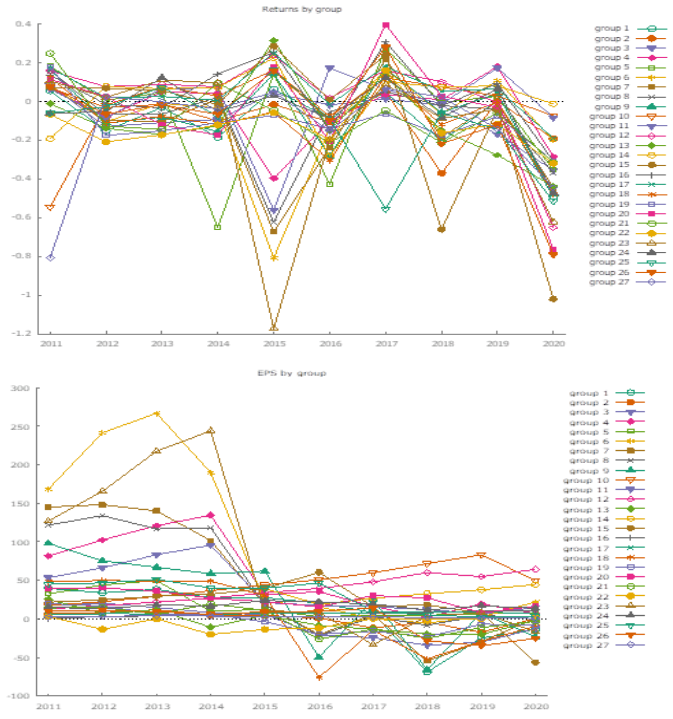
**Table 3: Correlation among variables**

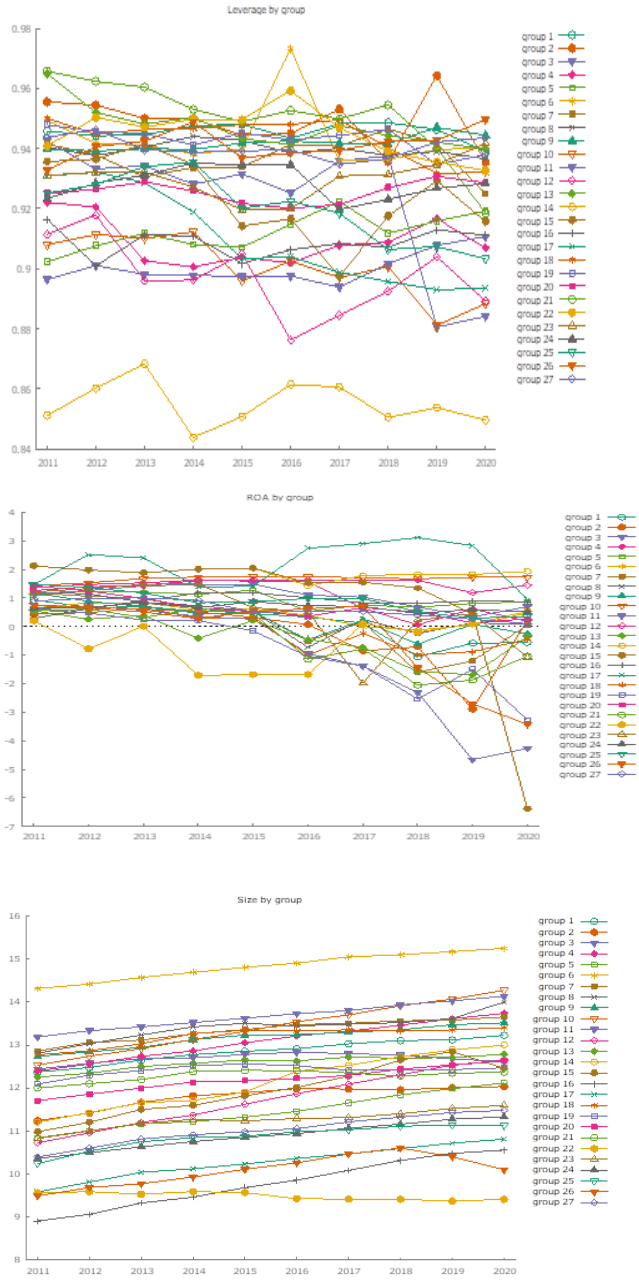
| | Stock Return | ROA | EPS | Size | Leverage |
|---|---|---|---|---|---|
| **SR** | 1 | 0.3467** | 0.2204** | -0.0826 | -0.1093* |
| **ROA** | | 1 | 0.4761** | -0.0988 | -0.4251* |
| **EPS** | | | 1 | 0.1910* | -0.1300* |
| **Size** | | | | 1 | 0.0255 |
| **Leverage** | | | | | 1 |

*Source: Author's own calculation*

**Figure 1: Panel plot of constituent variables**

Panel Plot



Next, we apply panel data regression to investigate the impact of constituent variables on stock return. To employ panel data regression, first, poolability test is employed to check whether data is poolable. Then, testing of cross-sectional effect is necessary as it decides an application of suitable model for the panel data regression (Li et al., 2020). Similarly, time effect is tested using Wald joint test in the panel data. We observe that null hypothesis (the groups of have common intercept) is rejected, therefore, it can be said that data is not poolable. Further, the study used Pesaran CD (2004) test to check the individual effect or cross-sectional effect. The result reveals that there is cross sectional effect as it rejects null hypothesis (no cross-sectional effect or individual effect). It is also worth noting time effect in the data hence, the result derived from the Wald joint test also confirms the time effect in data. Considering the requirement of the data, we have applied fixed effect and random effect estimation model which is presented in table 5. Referring the result of fixed effect model,return on assets (ROA) and earning per share (EPS) affect positively and significantly to the stock return at 5% significance level while size and leverage are not significant variables. It indicates that increase of every unit of ROA increases the stock return by 0.0551 while EPS increases the stock return by 0.0008. Further, the result obtained from random effect model infers that return on assets (ROA) is only significant variable which affects positively to the stock return, rest of variables like EPS, size and leverage do not affect stock return. As regards with R-squared value, it is found that the variance explained under fixed effect model ($R^2$=14.08%) is higher than random effect ($R^2$=12.99%). To select between the result obtained from fixed and random effect model, we must apply Hausman test (Wooldridge, 2013). The p-value of Hausman test, presented in table 5, indicates that fixed effect model is consistent compared to random effect. Our result is in the similar line with the studies of Ahmad et al., (2013), Berggren, S., & Bergqvist, A. (2014), Nalurita (2015) and Atidhira and Yustina (2017). Inferring the fixed effect model as consistent model, following is the equation for stock return:

Stock Returnit = -1.70+0.0551 ROA+0.0008 EPS-0.0400 Size+2.2393 Leverage

**Table 4: Test of Poolability, individual and time effect**

| Test Method | Test Statistics | P-value |
|---|---|---|
| F-test | 0.739325 | 0.00258 |
| Pesaran CD test | 19.7138 | 0.0000 |
| Wald Joint test | 105.542 | 0.0000 |

*Source: Author's own calculation*

**Table 5: Result of Fixed effect and Random Effect Model**

| | Fixed Effect Model | | Random Effect Model | |
|---|---|---|---|---|
| Variables | Coefficient | P-value | Coefficient | P-value |
| Constant | −1.70699 | 0.3091 | −0.3024 | 0.6121 |
| ROA | 0.0551 | 0.0018*** | 0.0588 | 0.0000*** |
| EPS | 0.0008 | 0.0404* | 0.0004 | 0.1880 |
| Size | −0.0400 | 0.3309 | −0.0118 | 0.2443 |
| Leverage | 2.2393 | 0.1612 | 0.3631 | 0.5593 |
| | R-squared 0.140838 | | R-squared 0.129967 | |
| Hausman Tet: Chi-square(4) = 13.3639, with p-value = 0.0096 | | | | |

*Source: Author's own calculation, * and *** indicate significant at 5% and 1% significance level*

To check the robustness of the results obtained from panel data regression, additional tests have been undertaken presented in table 6. The first assumption is the mean of error term must be zero. Accordingly, the residual is obtained employing FEM and checked it. We notice that the mean of error term is zero. Secondly, Breusch-Pagan Test (BP Test) is applied to check the homoscedasticity in the variance of the error terms. There is evidence of heteroscedasticity because the p-value is significant at 5% level. Further, we solve the problem heteroscedasticity issues from the variance using robust standard error. Third, we checked the autocorrelation/serial autocorrelation in error term obtained from fixed effect model using Durbin-Watson test and Wooldridge test. The null hypothesis for the both tests is that there is no autocorrelation. The null hypothesis is not rejected; therefore, it can be said that there is no autocorrelation or serial correlation. Fourth, endogeneity is checked using Hausman-Taylor test which is. Independent variables are said to be exogenous if there is no endogeneity among regressors. If $E(\varepsilon_{it}|X_i) = 0$ for all i and then independent variables, *X*, are strictly exogenous. The result obtained from Hausman-Taylor confirms that there is no endogeneity.

**Table 6: Diagnostic Test**

| Robustness | Specific Tests | Value | P-value |
|---|---|---|---|
| Residual mean | Mean | 0 | - |
| Homoscedasticity | Breausch and Pagan Test | 240.80 | 240.803 |
| Test for Autocorrelation/Serial Correlation | Durbin - Watson Test | 1.91 | 0.3327 |

| | | | |
|---|---|---|---|
| Test for Autocorrelation/Serial Correlation | Wooldridge Test | 72.126 | 0.78113 |
| Test for Endogeneity | Hausman-Taylor | 6.12 | 0.09 |

*Source: Authors' own presentation*

## IV. Conclusion

This paper investigates the impact of return on assets, earning pers share, leverage and size on stock return of banking sector in India. It pools out the money from various investors and transfers this long-term capital to the firms and companies so that they can flourish their businesses. It equips its customers with plethora of investment options for parking their funds. Without a sound and effective banking system, no country can have a healthy economy. Similarly, stock market is an important component for the development of an economy and considered as the "mirror" of the economic activity. When banking sector performs better, it will be reflected in their share price. Now, it becomes necessary to examine which variables of banking sector determine in enhancing the stock price.

We employ panel data regression to examine the impact of constituent variables on stock return. First, poolability test is applied to check whether data is poolable. Then, testing of cross-sectional effect is necessary as it decides an application of suitable model for the panel data regression (Li et al., 2020), the result reveals that data is not poolable, therefore, we apply random effect and fixed model for further analysis. Referring the result of fixed effect model, ROA and EPS affect positively and significantly to the stock return at 5% significance level while size and leverage are not significant variables. The result obtained from random effect model infers that return on assets (ROA) is only significant variable. To select between the result obtained from fixed and random effect model, Hausman test is applied which shows that fixed effect model is consistent compared to the random effect model. Our result is in the similar line with the studies of Ahmad et al., (2013), Berggren, S., & Bergqvist, A. (2014), Nalurita (2015) and Atidhira and Yustina (2017). Inferring the fixed effect model as consistent model, following is the equation for stock return:

This study provides implications to the policy makersand investors to decide about policy formulation and investment strategy in banking sector in three folds. First, increase in earnings per share and return assets increase the stock return. Second, when stock return increases, investors who believe in short gains, they start selling the stock due to which the price of banking share will fall down. Therefore, investment strategy of various investors can be formed accordingly. Third, the management must encompass on those factors which increase earnings per share and return on assets as these are linking pin to the stock return.

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# AN EMPIRICAL ANALYSIS OF EMPLOYEES' QUALITY OF WORK LIFE IN A TANNERY OF SOUTH TAMIL NADU

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**Purpose:** *Leather manufacturing encompasses a wide range of processes with a varied range of exposures, all of which may have a negative long-term influence on the quality of life of individuals who work in such environments. Despite the fact that several studies have shown a wide range of results in well-known companies and sectors, the purpose of this study is to better understand the downsides of employees working in an unorganised sector. This investigation on their working environment, corporate culture, salary, and job satisfaction is part of study that adds to the knowledge of areas that yet need to be highlighted. At the same time, it assesses their awareness of the potentially dangerous nature of their jobs, as well as their willingness to work and degree of motivation.*

**Design/methodology/approach:** *The descriptive research method is used in this study. It investigates the many aspects that influence the quality of work life of employees in the Vaniyambadi tannery business (South Tamilnadu). A basic random sampling strategy was used for collecting data without bias. The sample size for this study is 50 respondents. The researchers used an eight-dimensional standardized scale developed by Aakanksha Tyagi (2012). This instrument was re-edited to meet the context, and its Cronbach's alpha was found to be 0.875.*

**Findings:** *The analysis revealed that more than half of the employees (52 percent) indicated a poor organizational culture in the tannery. It was also discovered that more than half of the respondents (56%) indicated a poor pay package, with nearly three-quarters (74%) implying insufficient welfare facilities. An in-depth inquiry revealed that tannery workers reported to work 9-10 hours every day. The tannery's overall work life quality was found to be below average, with the majority of employees reporting poor work life quality. As a result of the investigation, employees in the tannery experience substandard working conditions despite several labour standards and government provisions for health and safety.*

**Originality/value:** *Every day, the situation at tanneries deteriorates more as a consequence of the industry's harmful impact on the environment, people, and their way of life. As previously stated, only a small number of research have been conducted in tannery units that are not in conformity with necessary legal compliances and regulations. This investigation on their working environment, corporate culture, salary, and job satisfaction is part of study that adds to the knowledge of areas that yet need to be highlighted. Thus, the findings illustrate the contemporary reality that employees confront in terms of their work-life quality when working in a small-scale tannery.*

**Keywords:** Quality of work life, Working Environment, Organizational Culture, Compensation, Job Satisfaction, Welfare Indicators, and Motivation

**JEL Classification Code:** J53

The leather sector is significant in the Indian economy. It is a high-employment sector with significant development and export potential, but it is also a polluting business that relies on cheap labour. In today's competitive market, every industry is focused on its employees' work-life balance in order to create a healthy win-win situation for both the employees and the company. Despite the fact that this is being explored, on a larger scale, leather tannery personnel are more prone to various chemicals and physical dangers simply because they are exposed to a variety of hazardous products and procedures when tanning in a precarious work environment.

In South Tamilnadu most tanning industry rely on low-cost labour, with many employees and their families lacking access to education and medical care (Piyal Adhikary, 2014). Here, tanneries are small-scale, traditional, and family-run firms, particularly in Vaniyambadi and Ambur (South Tamilnadu) which are home to some of the top tanneries and shoe manufacturing enterprises in the country (Deccan Chronicle, 2016). The quality of life at work as well as the living environment are key factors for leather tannery workers and thus this research sought to comprehend the grim realities

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that employees experience on a daily basis when working in a difficult environment. The workers in this group constitute sizable portion of the total work force. Various definitions exist for small scale industries (for example employing up to 100 employees) and so are the limitations. Drawing on an article published by Piyal Adhikary (2014), which inferred that a typical working day for a tannery labourer might range from eight to twelve hours, depending on the work load, this research delves deeper into the realities that employees face when working in a tannery.

## I. Review of Literature

In understanding the above context it is important to note that there are many organizational phenomena associated to workers' quality of work life, such as their working environment, organizational culture, remuneration, job satisfaction, welfare, and level of motivation (Gupta & Sharma, 2009). Though organizational culture and employee job satisfaction may be impacted by a range of elements such as job fulfilment, working environment quality, organizational commitment, and the quality of their connection with their superior, etc. (Bajpai & Srivastava, 2004). According to a study conducted by (Kathawala, Moore, & Elmuti, 1990), compensation was discovered to be a substantial determinant in highly renumerated employees' motivation and job satisfaction.

According to the study, wage increases for performance were considered as the most important job factor for motivation, while compensation was ranked as the most important job element for job satisfaction. With a high organisational commitment, organisations must be more concerned about their employees' job satisfaction. Several studies have found that income, compensation, job stability and promotion, supervisor support and behaviour, and other work-related characteristics all have an impact on job satisfaction (Kabir & Parvin, 2011). Many researchers concluded that the best way to discover the many components of work-life quality is to assess the relative performance of each component and explore the effects of these components on employee performance and output (Qasim, Cheema, & Syed, 2012).

Quality of work life is therefore critical for employee performance, especially in such a demanding setting, because it has a beneficial influence on employee behavior and managerial effectiveness (Fonceca C.M., 2017). The end consequence is that when the quality of work life is improved, the industry may achieve its optimum level of output (Robbins & Cenzo, 2014). According to several research findings, employees or workers are influenced by work-life imbalance and are more vulnerable to work occupational accidents (Arumugam Vasumathi, 2021).

However, Gyan Chandra Kashyap (2021) concluded that tannery employees are frequently injured as a result of the nature of their employment, which includes lifting heavy materials such as rawhide and carrying goods, as well as other physical labour. Though welfare facilities and the level of motivation were intrinsic factors, even a low level of occupational stress has a significant negative association with quality of work life and work ability (Elina Bergman, 2020).

Despite the fact that tannery workers face several health difficulties, few studies have been undertaken to examine their quality of life at work (Andrea Gragnano, 2020). With this context in mind, the current study was conducted in one of South Tamil Nadu's tanning sectors with the objectives to understand the relationship between employees and their working environment, to analysis the overall quality of work life of employees based on the various factors that contribute to their working environment, organizational culture, compensation, job satisfaction, welfare, and level of motivation.

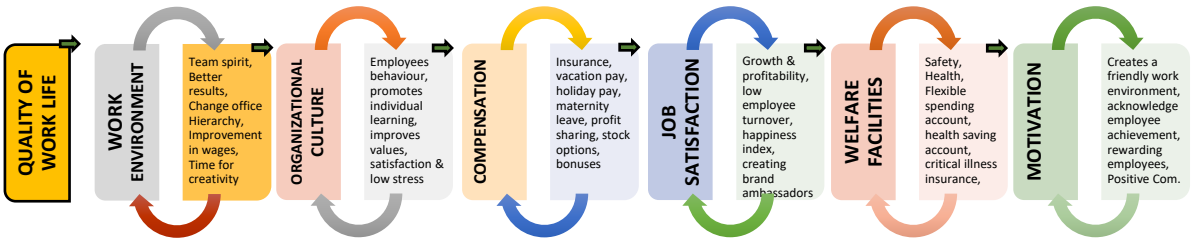
**Research Gap**

Leather manufacturing encompasses a wide range of processes with a varied range of exposures, all of which may have a negative long-term influence on the quality of life of individuals who work in such environments. Despite the fact that several studies have shown a wide range of results in well-known companies and sectors, the purpose of this study is to better understand the downsides of employees working in an unorganised sector. As previously stated, only a small number of research have been conducted in tannery units that are not in conformity with necessary legal compliances and regulations. This investigation on their working environment, corporate culture, salary, and job satisfaction is part of study that adds to the knowledge of areas that yet need to be highlighted. At the same time, it assesses their awareness of the potentially dangerous nature of their jobs, as well as their willingness to work and degree of motivation.

**Conceptual Framework**

Drawing inferences from various research articles and studies this conceptual model was developed with each dimension in the quality of work life denoting key organizational inputs aimed at improving organizational effectiveness and employee satisfaction. This also refers to the degree of happiness, encouragement, engagement, and participation that a person or a group of individuals or a group of individuals or a team of individuals have towards their job and work environment (Monisha & Fonceca., 2021).

**Figure 1: Factors contributing to quality of work life ((Monisha & Fonceca., 2021).**




## II. Research Design and Methods

The descriptive research method is used in this study. It investigates the many aspects that influence the quality of work life of employees in the Vaniyambadi tannery business (South Tamilnadu). A basic random sampling strategy was used for collecting data without bias. The sample size for this study is 50 respondents. The researchers used an eight-dimensional standardized scale developed by Aakanksha Tyagi (2012). This instrument was re-edited to meet the context, and its Cronbach's alpha was found to be 0.875. The data was imported into SPSS (Statistical Package for the Social Sciences V.21) and analyzed using a variety of statistical tests. Measures of central tendencies was used to determine the employees quality of work life with regard to their working environment, organizational culture, compensation, job satisfaction, welfare, and level of motivation in the tannery. To determine the degree of relationship between the independent variables (age and job experience) and the dependent variable (working environment, organizational culture, compensation, job satisfaction, welfare, and level of motivation), the correlation coefficient was used. Finally, ANOVA was used to find the significant variance between the different departments of the respondents and the overall quality of work life in the tannery.

## III. Results & Discussion

The most essential factor influencing employee commitment and productivity, as well as how resourceful they may be, is their working environment. Figure 2, shows that half of the respondents (50 percent) indicated a poor work environment, while the other half (50 percent) indicated an effective work environment.

**Figure 2:** Status of tannery workers and their quality of work life in a tannery


Here, equal representation was seen among tannery workers indicating both a positive as well as a negative working environment. In understanding the culture, values and work ethics of the organization it was found that, more than half (52 percent) of respondents have denoted a mediocre organizational culture, whereas more than two-fifths (48 percent) had indicated a strong organizational culture. In the analysis, more than half of the respondents (56 percent) indicated a poor pay package received, while less than half (46 percent) indicated fair remuneration. Job satisfaction as a

component to assess the quality of work life found that the majority (62 percent) of respondents had poor job satisfaction, while less than one-third (38 percent) of respondents have indicated a high degree of job satisfaction.

Welfare facilities are required to safeguard employees' health and safety in the workplace, and such facilities supplied at a tannery are critical since welfare facilities on-site cover a wide variety of fundamental health, safety, and welfare concerns. Figure 2 further shows that nearly three-fourths (74%) of respondents had inadequate welfare facilities, with more than half (52%) feeling a lack of enthusiasm to work in the tannery. An in-depth investigation indicated that tannery workers claimed that they worked practically every day 9-10 hours (average working hours in a day) and that the average working days in a week were 6.5 days. The overall quality of work life at the tannery was found to be below average, with the majority of employees indicating poor work life quality.

**Table 1: Correlation between age and various factors impacting the quality of work life of employees in a tannery**

| Factors | Correlation Value | Statistical Inference |
|---|---|---|
| Work Environment | 0.156 | P>0.05 Not Significant |
| Organization Culture | 0.117 | P>0.05 Not Significant |
| Compensation | 0.152 | P>0.05 Not Significant |
| Job Satisfaction | 0.158 | P>0.05 Not Significant |
| Welfare facilities | 0.006 | P>0.05 Not Significant |
| Level of motivation | 0.232 | P>0.05 Not Significant |
| Overall quality of work life | 0.129 | P>0.05 Not Significant |

Correlation coefficient (Table 1) used to find out the degree of relationship between the independent variable (age of the respondents) and the dependent variable (various factors affecting the quality of work life) revealed that there was no relationship between the age of the employees working in the tannery and various factors which included their working environment, organizational culture, compensation, job satisfaction, welfare, level of motivation and overall quality of work life. This revealed that, regardless of the employee's age, all were swayed by the above factors pertaining to the quality of work life that existed in the organization.

**Table 2: Correlation between the work experience and various factors impacting the quality of work life of employee in a tannery**

| Factors | Correlation Value | Statistical Inference |
|---|---|---|
| Work Environment | 0.060 | P>0.05 Not Significant |
| Organization Culture | 0.030 | P>0.05 Not Significant |
| Compensation | 0.041 | P>0.05 Not Significant |
| Job Satisfaction | 0.155 | P>0.05 Not Significant |
| Welfare facilities | 0.049 | P>0.05 Not Significant |
| Level of motivation | 0.042 | P>0.05 Not Significant |
| Overall quality of work life | 0.017 | P>0.05 Not Significant |

In the present world, technology advancements are modernising and increasing the importance of the quality of work-life balance for advances, which is becoming more crucial. Employees' experience with their work life is significant since it reflects their willingness to participate in many of the activities offered by their employers. Table 2, the correlation coefficient revealed that employees' work experience had no significant relationship with their working environment, organizational culture, compensation, job satisfaction, welfare, degree of motivation, and overall quality of work life. As a result, the work experience of the workers who work in the tannery does not have an effect on the numerous aspects that affect the overall quality of work life, as shown by this finding.

**Table 3: One way Analysis of variance among the various department and the various factors impacting the quality of work life of employees in a tannery**

| *Factors* | *DF* | *SS* | *MS* | *Mean* | *Statistical Inference* |
|---|---|---|---|---|---|
| ***Work Environment*** | 3 | | .778 | G1= 6.65 G2= 6.14 G3= 6.21 G4= 6.56 | F= 0.289 P= 0.833 P> 0.05 Not Significant |
| *Between Groups* | 46 | 2.333 | 2.695 | | |
| *Within Groups* | | 123.987 | | | |
| ***Organization Culture*** | 3 | 6.757 | 2.252 | G1= 9.65 G2= 8.86 G3= 9.50 G4= 8.78 | F= 2.440 P= .076 P > 0.05 Not Significant |
| *Between Groups* | 46 | 42.463 | .923 | | |
| *Within Groups* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Compensation*** *Between Groups* *Within Groups* | 3 46 | 13.287 101.213 | 4.429 2.200 | G1= 11.40 G2= 11.29 G3= 10.43 G4= 10.22 | F= 2.013 P= .125 P > 0.05 Not Significant |
| ***Job Satisfaction*** *Between Groups* *Within Groups* | 3 46 | 3.574 41.246 | 1.191 .897 | G1= 6.00 G2= 6.71 G3= 5.93 G4= 5.89 | F= 1.329 P= .277 P > 0.05 Not Significant |
| ***Welfare Facilities*** *Between Groups* *Within Groups* | 3 46 | 4.107 32.393 | 1.369 .704 | G1= 10.25 G2= 10.57 G3= 9.93 G4= 9.67 | F= 1.944 P= .136 P > 0.05 Not Significant |
| ***Level of Motivation*** *Between Groups* *Within Groups* | 3 46 | 21.573 233.307 | 7.191 5.072 | G1= 9.05 G2= 8.29 G3= 7.93 G4= 7.33 | F= 1.418 P= .250 P > 0.05 Not Significant |
| ***Overall Quality of Work Life*** *Between Groups* *Within Groups* | 3 46 | 365.737 2012.443 | 121.912 43.749 | G1= 74.90 G2= 77.57 G3= 72.07 G4= 69.00 | F= 2.787 P= .051 P > 0.05 Not Significant |

**G1= Tanning G2= Dyeing G3= Finishing G4= Warehouse**

ANOVA (Table 3) was used to determine whether there was a significant difference between the different departments of the respondents and their overall quality of work life in the tannery. The results showed that there was no significant difference between departments of the respondents and their overall quality of work life. The research consequently concludes that, despite multiple labour regulations and government provisions for health and safety, employees in the tannery face inadequate working conditions. Thus, the findings illustrate the contemporary reality that employees confront in terms of their work-life quality when working in a small-scale tannery.

## IV. Conclusion

India has a variety of labour laws in place to promote, improve, and safeguard employees' wellbeing and enrich their quality of work life. However, most of these labour regulations are only good on paper since neither employees nor their representative unions are fully aware of their implications, nor do they take use of them because the majority of tanneries fall into the category of small and medium-sized businesses (Dinesh Raj, 2021).

Here, emphasis on quality of work life has been lost in the pursuit of efficiency and effectiveness. Every day, the situation at tanneries deteriorates more as a consequence of the industry's harmful impact on the environment, people, and their way of life. In spite of the fact that technology and digitalization are critical to the growth of companies and whole societies, this specific sector has largely been overlooked by global change, with the consequence that people in this sector do not have appropriate living and working circumstances. In light of the gaps and employer interpretations of the policies, procedures, and framework, the government and authorities should intervene to guarantee that regulation has not been deregulated. A simple clean-up and monitoring of the medium and small-scale enterprises, as well as adequate empowerment, would help the tannery thrive even more. Collaboration and cooperation are required on a daily basis to have a positive influence as a first step toward repairing the damages. This might indicate the identification of existing gaps and the creation of a better working environment, organisational culture, remuneration, job satisfaction, welfare, motivation, and general quality of work life for tannery employees.

**Suggestions**

Tanneries may provide its employees with individualized training programmes to help them manage with stress and stay motivated in the workplace. As a result of the study's findings that workers are dissatisfied with their pay, adequate compensation on line with those of other sectors may be provided. The relevance of the quality of work life of women labourers must be taken into consideration by those engaged in work life balance policy development and professional training.

The provision of enhanced welfare measures and facilities for the improvement of the organizational culture of their work forces is required by tanneries. This may lead to increased job satisfaction among workers as well as an improvement in their overall quality of work life. Organizing seminars and picnics to foster healthy connections among workers, as well as a training programme on interpersonal relationships, are important actions for decision makers to take in order to help employees perform better at work and at home. It is possible to raise awareness among all workers about the availability of work-life arrangements in their respective industries. As a result, it is critical for businesses to maintain employee satisfaction with their occupations, and the above-mentioned debate and findings should be taken into consideration by business stakeholders.

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# MANAGEMENT OF PERSONAL FINANCIAL PRACTICES AMONG SCHOLARS: DO THEY REALLY KNOW WHAT THEY ARE DOING AND WHAT THEY NEED TO IMPROVE DURING COVID-19?

**Mekuanint AberaTimbula* Chetana Marvadi****

**Purpose:** *The rising daily expenditure, tough economic conditions and Covid 19 pandemic have made individuals and households more concern of their financial management. The study was carried out to examine major determinates of personal financial managementpracticesamong ICCR sponsored scholars.*

***Design/methodology/approach:*** *The research employed a cross-sectional conclusive research design that included both descriptive and explanatory research. The study used a self-administered questionnaire, and shared the link of Google form to respondents directly through official group social network pages which created and administrated by ICCR Gujarat office. The study employed descriptive statistics and inferential analyses such as correlation between variables and analyzed their effects using multiple regressions.*

***Findings:*** *The result of the study has shown that financial knowledge, financial behavior, financial attitude, financial planning, and financial socialization have positive and significant effect on personal financial management. Covid 19 pandemic has negative impacts on personal financial management practices.*

**Practical implications***: The study recommends financial education at a young age in order to acquire knowledge of saving, money management, and investment as early as possible by the new generation. . Training of young minds can help prepare and enable them to face the economic adversities faced by the generation globally.*

**Originality/Value-***There has been relatively little theoretically based empirical study on the association between personal financial management and financial practices of scholars in the literature, implying that further empirical research is required*

**Keywords:** Covid 19 pandemic, Financial Knowledge, Financial Literacy, Scholars, Practices

**JEL classification:** C53, E27, H56

Education has had a significant impact on the creation of effective strategies and also positively effect on the economic development of a nation throughout history(Sahatciu, 2016).Nowadays, students face a variety of issues in their daily lives, including stress related to projects, reporting, group activities, and financial management related problems. Moreover, some students face financial difficulties that can interfere with their academics. As a result, scholarship programs have been formed to assist students in reducing their fees and achieving future success(Daz et al., 2012). Scholars from developing countries have received full and partial scholarships based on the country's slot allocation.A scholarship is not only given for the people who need financial aid, it is also given to students who have academic excellence and an athletic ability (Daz et al., 2012).Furthermore, scholarships provide students with numerous benefits, including free education, housing, and pocket and study leave with salary on agreement basis between scholars and institution that he/she had served. Based on empirical evidence few scholars have supported by various scholarship opportunities should have a basic understanding of personal finance and how to apply it to their financial well-being. In contrast, college students have a hard time budgeting for personal needs, food, academics, and transportation (Dimaala et al., 2019). Unfortunately, many scholars are unaware of how to properly manage their stipend and additional study allowance. According to statistics, over US $ 3.1 billion was spent on training and scholarship grants money in 2010, about quarter of all developed country human resource development aid (UNSCO, 2015).The importance of money in human life, especially the scholars is not only related to the amount of money you have, but also the received money in the form of stipend to spend for their educational expenses (Kartikasari & Muflikhati, 2016).

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Beside, scholarship programme helps to create good diplomacy relation and cultural interaction among scholars and countries.However, Scholarship programs have been criticized because of fears that they may lead to emigration and a brain drain by relocating trainees to advanced donor countries(Tremblay, 2016). In general, scholarships focused at nurturing the seeds of pioneering and innovative ideas that can have a long-term positive impact on the lives of community at large.

**Why is Personal Financial Management Important?**

It helps in improving the financial knowledge of individuals(Patrisia & Fauziah, 2019). Individuals today are more concerned for their personal finances than they have ever been in their lives. Pension and social assistance systems are under strain as life expectancy rise(Lusardi, 2019).A number of organisations have established programs to educate personal financial management skills in order to assist families in improving their credit histories and saving (Caskey, 2011). Personal financial management helps an individual to gain a better understanding of his or her financial situation and learn how to improve it(Lee et al., 2000). It inculcates financial habits such as saving, budgeting, investing and planning, as well as guiding individuals in making sound financial decisions(Surendar & Subramanya Sarma, 2018). In fact, everyone agrees that an individual familywould be better off with higher savings rates. Personal financial management comprises applying financial knowledge and abilities to a variety of financial and economic decisions, such as saving , credit , insurance coverage , and investment opportunity , is also applicable to everyone (Refera & Kolech, 2015).Saving is one of the tasks of financial management that is highly important to consider when considering a person's productive and nonproductive periods in life (Kartikasari & Muflikhati, 2016). The capacity to deal with financial issue has an impact on one's work and personal life( Nayebzadeh et al., 2013).Financial problems have an impact on a person's day-to-day activities and the relationship existbetween colleagues and family (Narges & Laily, 2011).Therefore, financial problems affect not just individual personal life and family life, but also their professional life. Lack of good personal financial management is one of the causes of personal financial issues. Personal financial management will improve people's capacity to manage their money on a day-to-day basis and will help them avoid the negative effects of poor financial decisions that would otherwise take years to recover from. Furthermore, poor financial habits and personal and family money management practices have far-reaching, negative consequences in one's personal and professional life(Narges & Laily, 2011). However, there has been relatively little theoretically based empirical study on the association between personal financial management and financial practices of scholars in the literature, implying that further empirical research is required.As per the knowledge of the researcher; personal financial management has not been studied in the international scholars' perspective. Thus, this study is carried out to examine personal financial management among ICCR sponsored scholars.

**Research Objectives**

The main focus of the study is to examine determinates of personal financial management practices among ICCR sponsored scholars.

## I. Review of Literature

Key areas of this research include personal financial management, financial knowledge, behavior, attitude, and planning as well as the Covid-19 pandemic and financial socialisation.

This part starts with a review of the relevant literature, their relationships, and the present state of empirical research. The review's findings are then used to construct a conceptual framework.

**Financial Knowledge**

Lack of good financialknowledge is a problem in many countries, both developed and developing(Berhanu, 2019).Thus, individual's and family's financial well-being, a sufficient level of financial literacy is essential. It has an impact on both short-term and long-term goals, such as property ownership, child education, and a secure retirement(Dilip Ambarkhane & Singh, 2019).Financial knowledge appears to be more necessary than ever before and not just for family and consumer economists. Personal financial management education is a priority for financial institutions, the student loan industry, financial professionals and educators, and others(Cude et al., 2006).Chen ( 1998) argued that college students are uninformed about personal finance and their ability to make educated decisions will be limited due to their lack of understanding. Moreover,people who use payment, savings, credit, and risk management products need to have strong financial literacy skills(Hilgert et al., 2003). Financial literacy measured using standardized parameters to examine basic knowledge of four fundamental concepts such as financial decision-making, knowledge of interest rates, interest compounding, inflation, and risk diversification (Lusardi & Mitchell, 2011). Arifin (2017)pointed out that financial knowledgehas positive impact on financial behavior;the deeper financial knowledge individuals have, the better they manage their finance.The study of Herdjiono & Damanik (2016) demonstrated thefinancial literacy education has been shown to have limited influence on low-income countries and regions, with financial

literacy having no impact on individual financial management practices in these places.

**Financial Attitude**

Financial attitudes are a psychological trait that can be reflected while evaluating the recommended financial management techniques at various levels of agreement(Parrotta, 1996).Financial attitudes are defined as a financial assessment of our thoughts, views, and judgments about the society we live in(Pankow, 2003),whereas according toMien & Thao (2015) an individual's financial attitude can influence how they handle their finances, including how they invest, save, and spend money. Aperson's financial attitude refers to how they feel about money, beliefs, feelings-assessed feelings, and deliberate conduct toward people, objects, and events are all components of attitudes(Taufiq Amir, 2017 as cited in Yogasnumurti et al., 2021).Ameliawati & Setiyani (2018) pointed out the positive impact of financial attitude on personal financial management behavior through analyzing result of the level of financial attitude influencing on personal financial management behavior. However, Anthony et al (2011) stated that financial attitude has a negative relationship with managerial behavior finance.

**Financial Behavior**

Financial behavior is a person's attitude and belief in managing his/her finances(Patrisia & Fauziah, 2019).Individuals are urged to assume personal responsibility for their financial issues in many countries. Individuals and society as a whole might suffer substantial consequences as a result of poor financial decisions(Dolan et al., 2012).Savings, spending, borrowing, and investing are all examples of financial behavior. Individual habits vary, and they are influenced by a variety of elements such as family advice, financial knowledge, peer groups, advertisements, economic standing, marital status, future view, income levels, and so on(Sudindra & Naidu, 2018).One of the most widely accepted financial-management principle is to save on a regular basis, usually by setting aside a portion of one's income before paying bills (Hilgert et al., 2003). Saving behavior needs to be instilled in young children up to adulthood. Savings habits developed in children at a young age can have a variety of advantages, including the development of thrifty personalities, financial discipline, and the ability to plan for the future (Chalimah et al., 2019). Regular saving habits are critical for achieving long-term financial goals, whether for individuals or for society. Beside, money is frequently stored in modern culture in the form of bank deposits and depositors attracted by variety of depositor saving incentives, which led to the development of saving habits( Akele & Takele, 2015).

**Financial Planning**

Financial planning is the first phase of financial management, and it entails managing total cash flows in order to provide the necessary funds, forecasting overall inflow and outflow of funds, and performing financial control not only on current financial and business events, but also on future financial and business events(Ohridski et al., 2017).Financial planning is an important part of the overall planning process because it allows you to put the company's strategic plans into action by creating specific action plans for the planned period, as well as accurately calculate the efficiency of available resources and the final economic and financial results(Azarenkova et al., 2018).Financial behavior is positively influenced by saving, spending, borrowing, and decision-making(Sudindra & Naidu, 2018).

**Financial Socialization**

Financial socialization is the process by which people learn financial aspect and actions that influence their financial behavior in addition to theoretical understanding of finance(Ameer & Khan, 2020). Individuals' financial socialization is linked to their future financial well-being as well as their relational, emotional, and physical well-being (LeBaron & Kelley, 2021).A survey conducted by Shim et al (2010), found that family has the strongest impact on financial socialization.The research has been done by Deenanath et al.(2019) found that financial socialization indicators were strongly associated with subjective financial knowledge and financial behavior.Budgeting, saving, investing, planning, managing cash and credit have linkedto parents' financial communication with their children(Jorgensen et al., 2016).

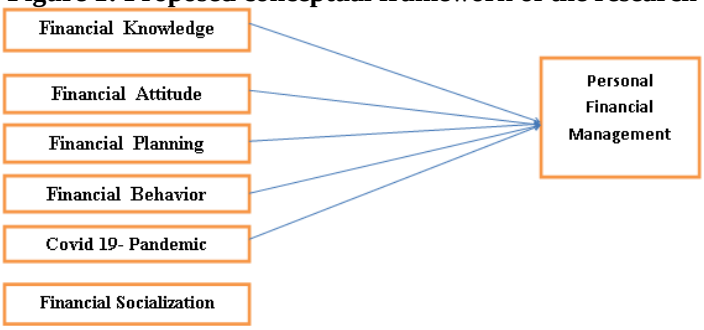
**The Covid-19 pandemic**

COVID-19 spread has changed the landscape of the world and changed our economic, professional and social lives *(GFLEC*, n.d.). Relocations, business closures, and supply chain closures are happening in almost every sector, and even governments are putting the economy on hold to store basic needs. And measures for social distance (Martin et al., 2020). The COVID-19 pandemic brings economic distance to the as well as practical social distance, putting the world economy at risk (Xiang et al., 2021).Tran et al.,( 2020) examined the impact of the COVID-19 pandemic on Vietnamese families found that their families' incomes were significantly reduced and their quality of life was reduced. Varona & Gonzales (2021) found a negative statistically significant effect of COVID-19 on the level of economic activity.

**Conceptual framework**

This research study is to examine personal financial management practice among ICCR sponsored scholars. The figure below depicts the key determinates of personal financial management practice among ICCR-sponsored scholars.

**Figure 1: Proposed conceptual framework of the research**




## II. Research Design and Methods

The study used a conclusive cross-sectional study design that includes both descriptive and explanatory studies, as it attempts to examine the determinants of personal financial management on financial knowledge. financial behavior, financial attitudes, financial planning, the Covid-19 pandemic, and socialized finance. The participants of this study are international scholars from the state of Gujarat.

An online survey was conducted among ICCR sponsored students of Maharaja Sayaiirao University of Baroda, Guiarat Technological University, Gujarat University, Hemchandracharya North Guiarat University, Sardar Patel Universityand Veer Narmad South Gujarat University. The responses were measured using a five-point likert scale. The survey used a self-administered survey to share Google Forms links directly with respondents via social media (Telegram, WhatsApp, Facebook, email, etc.). After checking for validity and reliability, completed pre-tested questionnaires were adopted from various previous studies (such as Gelaw, 2017;Refera & Kolech, 2015; Geta, 2018). It is suggested that the current study be replicated with various groups and classes of individuals and that the outcomes be compared to the current study. Stratified random sampling was employed in this experiment to compile the necessary sample. To calculate the sample size from mentioned universities, the researcher used (Yamane, 1967) formula, which is as follows:

$n$ = N /1+N e $^2$, 318/ 1+318(0.05)$^2$ , n=175. Therefore the total sample for this study is 197 scholars.Where; n is sample scale, N is population study e is margin of error (0.05)

The first section includes socioeconomic and demographic data, and the second section asks questions about seven different topics. Financial socialization, personal financial management, financial knowledge, financial behavior, financial attitude, financial planning, and the Covid-19 epidemic. Researchers calculated descriptive statistics like mean and standard deviation as well as inference statistics like the correlation between variables and their effects (financial knowledge) using multiple regression analysis., Financial Behavior, Financial Attitudes and Financial Planning, Pandemic and Financial Socialization on Covid-19 Dependent Variables (Individual Financial Management). The regression model was as follows:

$$Y = \beta_0 + \beta_1X1 + \beta_2X2 + \beta_3X3 + \beta_4X4 + \beta_5X5 + \beta_6X6 + \varepsilon$$

Where: Y = Personal financial management; $\beta_0$ =Constant Term; $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$,$\beta_5$ and $\beta_6$ = Beta coefficients;X1= Financial knowledge, X2= Financial behavior;X3= Financial attitude, X4 = Financial planning, X5=Covid-19 pandemic,X6=Financial Socializationand ε= Error term

## III. Results and Discussion

Deductive analysis should be followed by a descriptive analysis to look for any errors or outliers.

The internal consistency of the survey was also examined using Cronbach's alpha. A common guideline for alpha is that an instrument's self-consistency should be at least 0.70.

**Summary of Descriptive statistics**

**Table1: Descriptive statistics**

| **Variables** | Obs | Mean | Std. Dev. | Cronbach's Alpha |
|---|---|---|---|---|
| Personal financial management(PFM) | 175 | 4.2742 | .46534 | 0.7332 |
| Financial knowledge(FK) | 175 | 4.2143 | .41253 | 0.7054 |
| Financial behavior(FB) | 175 | 4.3135 | .40124 | 0.7241 |
| Financial attitude(FA) | 175 | 4.2561 | .54242 | 0.7432 |
| Financial planning(FP) | 175 | 4.2213 | .45341 | 0.7821 |
| Covid-19 pandemic(Covid-19) | 175 | 3.8441 | .40216 | 0.7378 |
| Financial socialization(FS) | 175 | 4.1112 | .41237 | 0.7279 |

*Source: Research Data, 2021*

As can be seen, all variables are above the specified threshold value, which implies that the measurement model is reliable. Descriptive and inferential data analysis was used in this study to achieve the research objective. The researchers used descriptive statistics such as mean and standard deviation, as well as inferential statistics such as correlations between variables and their effects using multiple regression analysis. According to the above table, there is a high level of personal

financial management practice among scholars, as evidenced by the average and standard deviation of 4.27 and 0.46 for personal financial management, 4.21 and 0.41 for financial knowledge, 4.31 and 0.40 for financial behavior, 4.25 and 0.54 for financial attitude, 4.22 and 0.45 for financial planning, and 4.11 and 0.41 for financial socialization. This suggests that the concepts of the questions asked for the required variables were almost universally understood by the majority of responders. As a consequence, we can say that there were no outliers or mistakes in any of the items.

**Correlations Analysis**

Correlation analysis can be used to identify the direction and strength of a link between independent and regressed variables (Jemal, 2019).

**Table 2: Correlation matrix among dependent and independent variables**

| | PFM | FK | FB | FA | FP | Covid-19 | FS |
|---|---|---|---|---|---|---|---|
| PFM | 1.0000 | | | | | | |
| FK | 0.587* | 1.0000 | | | | | |
| FB | 0.336* | 0.373* | 1.0000 | | | | |
| FA | 0.332* | 0.323* | 0.318* | 1.0000 | | | |
| FP | 0.721* | 0.459* | 0.521* | 0.487* | 1.0000 | | |
| COVID | -0.453* | -0.127* | -0.341* | -0.436* | -0.576* | 1.0000 | |
| FS | 0.437* | 0.384* | 0.412* | 0.565* | 0.501* | 0.389* | 1.000 |

*Source: Research Data, 2021*

According to the above Pearson correlation coefficients, r,there is a significant positive correlation (financial knowledge, financial behavior, financial attitude, financial planning, and financial socialization) and a significant negative correlation between personal financial management and Covid-19 pandemic. As it seen the relation between personal financial management, financial behavior, and financial attitude shows that significant weakpositive relationby correlation coefficient of (r = 0.332) and (r = 0.336) respectively. Whereas, the relation between personal financial management and andfinancial socialization show that significant moderate positive relation by correlation coefficient of( r = 0.437). In addition, the relation between personal financial management,financial knowledge and financial planning are significant strong positive relation by correlation coefficient of(r = 0. 587) and (r = 0.721) respectively. On the other side,Covid-19 pandemicsignificant weak negative relation.Furthermore, a regression analysis was carried out to determine the extent to which the independent variable explains the dependent variable.

**Normality Test**

It is necessary to assess the data's normality in order to pick the most appropriate statistical test.The researcher utilizedShapiro- Wilk test to determine whether the data was normal in this study.

**Table3: Shapiro-Wilk W test for normal data**

| Variable | Obs | W | Prob> z |
|---|---|---|---|
| Residual | 175 | 0.78451 | 0. 11274 |

*Source: Research Data, 2021*

The model's p-value is greater than 0.05. The null hypothesis is thereby rejected, and the residual has a normal distribution pattern.

**Multi Collinearity Test**

A condition in which two or more explanatory variables in a multiple regression model are highly linearly connected is known as multi collinearity. Multicollinearity is not an issue if the variance inflation factor is less than ten.

**Table 4: Degree of Multi collinearity for variables**

| Variable | **VIF** | **1/VIF** |
|---|---|---|
| FK | 1.80 | 0.556 |
| FB | 1.56 | 0.640 |
| FA | 1.87 | 0.534 |
| FP | 1.98 | 0.505 |
| COVID | 1.52 | 0.657 |
| FFS | 1.69 | 0.591 |

As shown in the table above, the variance inflation factor (VIF) for all variables is significantly less than 10, revealed that multicollinearity is not a concern in this model.

**Heteroscedasticity Test**

Heteroskedasticity is a pattern in which the error variances do not remain constant throughout time. When the variance of the residuals is constant, homoscedasticity is achieved, which is desirable. The Breusch-Pagan/Cook-Weisberg test was used to verify the assumption.

**Breusch-Pagan Test for Heteroscedasticity**

Variables: fitted values of PFM Chi2 (1) = 0.621
Prob> chi2 = 0.437

**Table 5: Regression Model Coefficients**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .645 | .235 | | 3.270 | .001 |
| | Financial knowledge | .489 | .059 | .240 | 3.791 | .002 |
| | Financial behavior | .466 | .039 | .200 | 4.302 | .003 |
| | Financial attitude | .345 | .043 | .278 | 4.21 | .002 |
| | Financial planning | .683 | .060 | .148 | 3.019 | .001 |
| | Covid-19 pandemic | -.320 | .219 | -.190 | -1.463 | .001 |
| | Financial socialization | .443 | .414 | .087 | .346 | .003 |
| a. Dependent Variable: Personal financial management. | | | | | | |

The regression model,

$Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + \varepsilon$

The above regression equation revealed that if financial knowledge, financial behavior, financial attitude , financial planning, Covid-19 pandemic and financial socialization, personal financial management would be 0.645; increase in the level of financial knowledge would result in a 0.489 increase in personal financial management, financial behavior would lead to an increase in personal financial management by a factor of 0.466, the level of financial attitude would lead to an increase in personal financial management by a factor of 0.345 and a unit increase in financial planning would lead to an increase in personal financial management by a factor of 0.683.The result of regression out reveals that Covid-19 pandemic has a negative relationship with personal financial management and statically significant. The coefficient on the variable shows that; 1 unit increase in Covid 19 pandemic causes the personal financial management to decrease by 0.320 units and statically significant at a 5 % significance level.The variable financial socialization has a positive relationship with personal financial management and statically significant.The result of regression analysis implies that; 1 unit increase in financial socialization causes the scholars personal financial management to increase by 0.443 units and statically significant at a 5% significance level.

## IV. Conclusion

The study came to the conclusion that establishing sage personal financial habits aids students in managing their personal finances. Having good financial habits aids students in sustaining their irrational desire for riches, hope, fear, herd instinct, and habit of prior experience with greater assurance. A greater degree of financial management and accountability is encouraged among students who have strong financial understanding. Financial knowledge affects students' decisions on investments and savings. The study found that personal financial management is positively influenced by financial mindset. The formation of a sound financial attitude helps students plan, budget, manage, use, find, and save their monthly stipend. The results show that personal financial planning significantly improves personal financial management. Their personal financial management behavior will be better the more proficient they are at personal financial planning. Financial socialization has a positive effect on personal financial management. In contrast, lower levels of academic financial planning, attitudes, knowledge, and socialization, and subsequently, lower levels of personal financial management practice. The Covid 19 pandemic is having a negative impact on personal financial management practices, individuals are more likely to spend more, earn more and boost consumption demand due to government guidance provided by the government. emergency financial assistance. The results show that the majority of respondents save a smaller percentage of their allowance. Due to the pandemic and the current economic situation, the high cost of living, as well as the additional cost of suitable accommodation outside the university, this affects the management of personal finances, resulting in a reduction in the cost of living. savings and financial stability.

**Suggestion**

People need to start learning financial literacy from an early age in order to gain knowledge about savings, money management and investment as soon as possible. As a result, financial talent management ensures that people are informed and empowered to make better financial decisions and plan for the future. Therefore, this study recommends that parents should encourage their children to start learning about finance from an early age in order to acquire knowledge of savings, money management, and investment as soon as possible. Academic institutions need to provide workshops such as training and seminars on personal financial management. People with different demographic and socio-economic characteristics recognize different levels of personal financial management. Scientists also need to understand the current economic situation and stop spending on impulse purchases. Scholarship providers regularly survey the current financial situation, determine the amount of scholarships in advance, and work with host universities to provide quality services to international students.

**Recommendations for further research**

This study was conducted with international researchers in Gujarat. Similar studies can be developed to further learn about good personal financial management practices, financial socialization, financial literacy, and the precedents and challenges of researcher participation.

**Limitation**

The sample was taken from ICCR-funded international students at public universities in Gujarat, so this study may be limited in terms of the generalizability of the results. Therefore, prospective researchers need to select a sample of respondents from different universities to compare and generalize the results of the study. All parameters used to measure personal financial management (investment aspect) were not taken into account in this study.

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# TITAN: "TRANSFORMATIONAL LEADERSHIP"

**Arul Senthilkumar S* Punitha N****

A professor, Das Narayandas, at Harvard Business School and former independent director at Titan had said that *"When a leader leaves, you see a ship with many holes. But at Titan, the system will not skip a beat as it moves on. That is what Bhaskar has done,".*

In the watch business, Titan was the fifth largest manufacturer in the world. Xerxes Desai was the first MD of Titan. When he was looking for an idea for the business of a Tata group, he figured out a watch business would be the right one and entered into the business in 1977. In 2000, Xerxes Desai identified Mr. Bhaskar bhat as his successor of him. At Titan, Bhaskar's career span was 35 years. He held a Managing director position from September 2002 to 2019. During the period, he developed diversified businesses such as Watch, Jewellery, Eyewear, Fragrance and Saree business. During his period, the company share had grown nearly 329 times and the Titan be the second most valued company in the Tata Group. Now, the important questions were, is it possible without the support of a great leader, who secured the leadership position for the last 19 years. On top of that, another six more key executives were going to leave the organization for the coming years on account of superannuation. Therefore, Will Titan continues its legacy without all the great leaders who had developed the company from the scratch?[7]. Moreover, can we believe, would the Titan's future be smooth sailing?

The Titan was the fifth largest manufacturer in the world in the watch business. "Titan" name was kept, after the Joint venture between Tata industries & Tamilnadu Industrial Development Corporation (TIDCO). "TI stands for Tata Industries and TAN for Tamilnadu". In 1983, Bhat was inducted into the Titan. After four years, Titan had launched watches in the market. *When the company was started, the objective was* **"**world-class watches for every Indian". Initially, Titan was named "Tata Watch Projects", Later "Titan watches" then became "Titan Company". In the initial period, Titan had recruited employees from HMT. At that time, HMT was overstaffed. Moreover, HMT employees' experience and talent were required for the company. Eventually, that strategy yielded a good result for the company. During 1992 – 97, Titan had tied up with Timex, which stimulated the sales growth of the company. The First MD of the Titan, Desai wanted, Titan's products should be available across the world under the "Made in India" Tag.

**Initial challenges**

In earlier days, the Titan was looking to collaborate with local and foreign partners. Those days, import was banned. Therefore, Desai and his team went to Delhi to get permission from the government to do so, but the response was poor. The government was not keen to permit private sectors. Then, the company's application was considered during the Mr. Rajiv Gandhi period. In 1990, Titan opened the office in London and Paris and entered 11 European markets as well. The company hired designers and an advertising agency in Europe. Unfortunately, that failed to yield the desired result and it was a big failure.

*"We had no idea that the 'Made in India' tag would be such a negative,"*

**Titan's Philosophy & Culture**

The company had followed some values such as Customer First, People make the Brand, Culture and Teamwork, Creativity and Innovation, Passion for Excellence and Corporate Citizenship. The motto of the Titan was "healthy, wealthy, sharing and caring company" and given more importance to value creation in the business. The philosophy of the Titan was innovation, concentrated on world-class products, value-driven culture, involved the customers and applied design thinking as well.

**About Bhaskar bhat**

In 2000, the first MD of Titan, Xerxes Desai was searching for a successor. After a lot of deliberation, Xerxes had chosen the Bhat as a successor of him. Bhat took the MD position on April 1, 2002. He was one of the inspiring CEOs of the Tata group. Bhat always believed in simplicity. In fact, due to his official commitment, he was supposed to travel from Bangalore to other places twice a week. Interestingly, in those

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days, he preferred public buses to commute to the airport and he felt *"Buses are better, safer, and convenient, and you have one every ten minutes from Mekhri Circle (in Bangalore),"*. This simplicity was energy-driven for him as well as Titan's success.

**Bhat Strategies**

When Bhat took over as MD of the Titan, the Market cap was under Rs 500 crore, approximately, it had reached Rs 96,500 crore when he retired. To reach this, the company had adopted the two strategies in the market. One was "Volume" and another one was "Value". The "Volume" segment focused on the lower-end products with a normal price and targeted more customers. Whereas, the "Value" segment focused on the design and targeted the high-end customers. The company had taken the initiative to sell the product through an E-commerce platform and increased the revenue. Later, the dynamism of the business model got changed. As a result, Titan had moved from in-house manufacturing to the combination of in-house and outsourced manufacturing models as employee costs had grown up as well as automation was available in the market.

For pricing strategy, Bhat felt, the price of the product should not be very low to reach the customers. It should be strategically driven, for the short-term period, it might be a concern. Whereas, long term it was a good advantage to us. Subsequently, he introduced another strategy called "Future shock" wherein all the employees were encouraged to share their ideas. Moreover, it brought ownership among the employees.

*Bhat believed "Any category we enter, we should pioneer, excel and be world-class, offer a value proposition to consumers, which is so different," said Bhat,.*

**Bhat leadership**

Basically, Bhat was a very curious person by nature. His curiosity brought a lot of thoughtful questions to the business. Besides, he strongly believed in simplicity of thought and common sense. Being the CEO of one of the largest brands in India, most of the time he was in the market than in conference rooms. He believed in the principle of "Marketers have to be out there in the markets". He always emphasized that marketers should have a good social connection, constantly looking for growth and product quality and knowledge.

*"He puts people at the centre of everything, believing in their full potential and looking only at their positive aspects," he says. (CK Venkataraman Said about bhat).*

In Titan, Bhaskar's career span was 35 years. He had held an MD position from September 2002 – 2019. During his period, he developed a diversified business such as Watch, Jewellery, Eyewear, Fragrance and Saree business. He developed the finest brands of India such as "Titan, Tanishq, Fastrack, Sonata, Titan Eye Plus, Skinn, Nebula, Xylys, Mia, CaratLane, and Taneira". The Titan had a customer base of 100 million and in 2018, sales had reached Rs 197 billion (US$2.75 billion). Under Bhat's leadership, the Titan's market value reached Rs 1.03 trillion (US$14.3 billion) from Rs 2.22 billion (US$30 million). During his period, the company share had grown nearly 329 times. In the same period, the NSE Nifty's had grown 9 times which made the Titan the second most valued company in the Tata Group.

***Road ahead***

Titan's expected turnover would double in the next five years through Eyewear, Fragrance and Taneria segment. The Titan had a plan that the customer database has to be increased to 50 million by 2023 with aggregate revenue of Rs 53,000 crore. Now, the important question is, is it possible without the support of a great leader, who led the company for the past 19 years. On top of that, another six key executives were going to leave the organization for the coming years on account of the superannuation. Therefore, will Titan continue its legacy without all the great leaders who have developed the company from the scratch?. Furthermore, Will Titan's future be smooth sailing?.

**Exhibit 1: Business Revenue & Profit**

| Titan's Revenues | | Titan's Profits | |
|---|---|---|---|
| **Year (Financial Year)** | **Revenue** | **Year (Financial Year)** | **Revenue** |
| 2012 | 8942 | 2012 | 601 |
| 2013 | 10224 | 2013 | 725 |
| 2014 | 11047 | 2014 | 735 |

**Exhibit 2: Titan's Value Creator among the Tata Group – Market Cap**

| Company Name | Amount (In Crores) |
|---|---|
| TCS | 8,24,646 |
| Titan | 94,835 |
| Tata Steel | 42,789 |
| Tata Motors | 34,966 |

| | | | | | |
|---|---|---|---|---|---|
| 2015 | 11984 | 2015 | 816 | Voltas | 20,832 |
| 2016 | 11383 | 2016 | 674 | Tata Global Beverages | 16,570 |
| 2017 | 13171 | 2017 | 711 | Trent | 16,383 |
| 2018 | 16245 | 2018 | 1130 | Indian Hotels Co | 15,771 |
| 2019 | 19961 | 2019 | 1404 | Tata Power | 15,688 |
| 2020 | 21205 | 2020 | 1501 | Tata Chemicals | 14,754 |

**Exhibit 1: Source: https://finshots.in/markets/titans-gold rush/Titan's Gold Rush, accessed on 16.01.2021.**
**Exhibit 2: Source:** *G Seetharaman, "Titan's journey from being Rs 220 crore company to Rs 95,000 crore company under MD Bhaskar Bhat's reign", ET Bureau, September 08, 2019, accessed on 05.11.2020.*

**Learning Objectives**

- What is Transformational Leadership and how does it support the organizational development
- What are the challenges a transformation leader should come across
- Transformation leader's role and his / her strategies toward the organizational development
- What are the critical factors and leadership traits that support Transformational leadership?

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