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The Journal of Indian Management & Strategy

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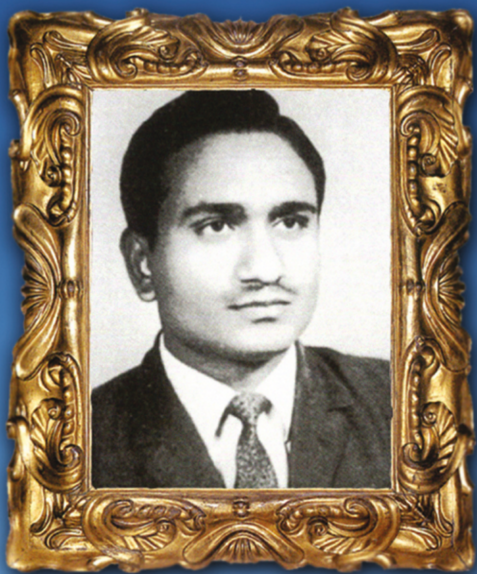
A TRUE VISIONARY

"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**

Navigating Corporate Governance Seas: Lessons from Byju's Journey

In the dynamic world of corporate governance, few case studies offer as compelling a narrative as that of Byju's. As this educational technology giant scales unprecedented heights, its journey has been marred by governance challenges, underscoring the vital interplay between governance practices and organizational performance.

Byju's ascent to the summit of the EdTech industry is nothing short of remarkable, propelled by a vision to revolutionize education through technology. However, behind the facade of success lie deeper complexities, particularly in the realm of corporate governance, which have left an indelible mark on its trajectory.

One of the most glaring issues confronting Byju's has been the composition and independence of its board of directors. With the company's founder wielding considerable influence, questions arise regarding the board's ability to provide robust oversight and strategic guidance free from undue influence. The absence of sufficient independent voices has raised concerns among stakeholders about potential conflicts of interest and the adequacy of checks and balances within the organization.

Transparency, or the lack thereof, represents another stumbling block in Byju's governance framework. As a publicly traded entity, the company is tasked with upholding the highest standards of disclosure and accountability. Yet, instances of opaque financial reporting and limited transparency regarding key operational metrics have cast a shadow over its credibility, fostering mistrust among investors and stakeholders alike.

Ethical considerations further complicate Byju's governance landscape. Allegations of misleading marketing practices and concerns surrounding data privacy have tarnished the company's reputation, inviting regulatory scrutiny and legal repercussions. While Byju's is not alone in grappling with governance challenges, its experiences serve as a cautionary tale for industry peers, including emerging players like Paytm. At its core, effective corporate governance is about fostering a culture of integrity, transparency, and accountability. Boards must be truly independent, comprising diverse perspectives capable of challenging the status quo and safeguarding shareholder interests. Transparency should be ingrained in the company's DNA, with clear communication channels and robust reporting mechanisms ensuring stakeholders are kept informed every step of the way. Moreover, a steadfast commitment to ethical conduct is paramount, with companies upholding the highest standards of integrity in all their dealings. By embracing these principles, In the ever-evolving landscape of corporate governance, the journey is far from over for Byju's and its peers. Yet, by embracing the lessons of the past and charting a course guided by principles of integrity and transparency, they can navigate the challenges ahead and emerge stronger, more resilient, and better equipped to fulfill their lofty ambitions.

(**Madhu Vij**)

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A BIBLIOMETRIC REVIEW OF WOMEN ON CORPORATE BOARDS: TRENDS AND FUTURE DIRECTIONS

Dr. Jyoti Paul*

Purpose: *The LODR 2015 in India has widened the move of gender diveristy with not only merely the presence of women on board but also the new legislation mandates presence of one non-executive female on the board of director in India. With such new regulations and research focussing on role of women and their impact on various dimensions, it becomes pertinent to explore the vast literature about gender diversity on corporate boards. The purpose of this paper is to do a bibliometric analysis and find out trends in this area.*

Design/Methodology/Approach: *The paper has taken 959 papers from Web of Science to present a Bibliometric review. The study is a novel attempt to find out the growth trajectory in this area and to decipher new avenues for research.*

Findings: *After data analysis, it is found that the utmost contribution in Women on corporate board is obtained from Journal articles. It is observed that the publications are steadily increasing but their dimensions have changed, focussing particularly on the role of women on corporate boards on firm performance to newer areas as to their role on environment and social issues. The thematic map reveals niche areas like gender diversity and its impact on CSR being lately researched upon by researchers. Researchers were initially focussing on gender differences, gender diversity and firm performance and now newer variables in relation to women on corporate boards are being studied upon.*

Originality/Value: *Ten most productive countries in terms of scientific production were identified. USA, UK, Spain are the three countries producing maximum research in this domain. The bibliometric study also found prolific authors producing in this domain. The paper contributes to reviewing a three-decade old topic with the latest research works in the area..*

Keywords : *Women, Gender Diversity, Board, Science Mapping*
JEL Classification Code: *G300, M10,M140*

I. Introduction

Various nations across the globe have different rules for representation of women on Board. A very important variable of corporate governance that is gender diversity is dealt across countries in varied manner. Few countries have quotas, few have fixed number for presence of Women directors on Board. Further, The MSCI World Index has shown an increase in the percentage of companies that have reached the tipping point of at least three female directors — from 51.1% in 2019 to 57.6% in 2020. Still, in the MSCI Emerging Markets Index 31% of the companies in the constituent index had all-male boards in 2020 which is down from 34.3% in 2019. The McKinsey Report on Women in the Workplace exhibits for every 100 men promoted to manager, only 86 women are promoted. The facts still confirm that women on moving up the corporate ladders still have a long way to go with the Pandemic making situations worse.

Motivation of study: Research has shown the linkages between presence of women on corporate boards and better firm performance. The possibility of performance benefits coupled with non-financial studies suggesting diversity could improve decision-making have been cited by both global asset owners and advocacy groups in support of efforts to promote a 30% global female director goal. MSCI ESG Research estimates that, based on current "business as usual" trends, women are unlikely to comprise 30% of directorships in publicly held companies until 2027.

Besides these current trends, long before there has been research proving that women representation is low on corporate boards. Appointment of women in the time of crisis has been extensively researched. (Francoeur, Labelle, & Sinclair-Desgagné, 2008). Studies like by Cook and Glass (2014) have taken reputational signals of presence of women and its impact on performances. Women are more likely than men to serve in precarious management positions, a phenomenon Ryan and Haslam (2005; 2007). This phenomenon has been described as glass cliff. The representation of women on boards is essential to reach Sustainable Development Goal 5 of gender equality and the presence of women on board has been proved to be beneficial in contemporary area like towards environmental concerns by firms. With all this information on gender diversity and seeing how pertinent it is in corporate governance, the motivation of the study was to find out key areas belonging to this decades old stream, key authors and countries contributing to the same using novel Bibliometric approach. This paper is a comprehensive bibliometric analysis in this

* **Associate Professor, Dyal Singh College, University of Delhi**

research. In the first run, 1388 documents were retrieved from Web of Science database with search term Results for (ALL=(women on corporate boards)) OR ALL=(GENDER DIVERSITY ON BOARDS). After refining the search and limiting it to Web of Science Categories of Business or Management or Business Finance or Economics or Ethics, finally only 959 papers were considered for final bibliometric analysis. The study is a novel attempt to find out the growth trajectory in this area and to decipher new avenues for research.

Contribution/Implications: After data analysis, it is found that the utmost contribution in Women on corporate board is obtained from Journal articles. It is observed that the publications are steadily increasing but their dimensions have changed focussing particularly to role of women on corporate boards on firm performance to newer area as to their role on environment and social issues. Ten most productive countries in terms of scientific production were identified. USA, UK, Spain are the three countries producing maximum research in this domain. The bibliometric study also found prolific authors producing in this domain. The purpose of this study is to analyse the literature on Women on corporate boards by applying technique of science mapping that is Bibliometric analysis. The results and discussions will give an extant review of work done so far in the area and provide guidance for future research works.

Objectives

The main objective of this study is to analyse the publications of women on corporate boards indexed in the Web of Science database. Specifically, the study aims to find:

- What is the bibliometric profile of database, the growth trends, 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 in this field.
- Based on review, elaborate on key dimensions in this area of research.

II. Review of Literature

Women on boards is a hugely researched upon topic with dimensions changing in the last three decades of literature. From being very low representation on boards and on emphasising their positive impact on boards and not merely being a token, women on board research has come a long way. The newer research focuses on the presence of women on board and their positive impact on firm performance and off lately their role in corporate social responsibility.

One of the seminal works in women on corporate boards by Ryan and Haslam (2005) at that time argued that women are more likely to find themselves on a glass cliff and focussed in various hurdles that women on corporate boards had to face. Hillman, Cannella Jr. and Harris (2002) found how men and women on corporate boards differ as to education background, board affiliates etc. These were the times when the research used to find out their basic differences rather than focussing on the presence of women and relating it to performance.

Carter, Simkins and Simpson (2003) gave first empirical evidence showing board diversity improving financial results. Adams and Ferreirs (2009) reiterated the findings with presence of female directors having a significant impact on board inputs and firm outcomes. Campbell and Minguez- Vera (2008) presented that gender composition of the board can affect the quality of this monitoring role and thus the financial performance of the firm. They investigated the link between the gender diversity of the board and firm financial performance in Spain. Miller and Triana (2009) found that reputation and innovation both partially mediate the relationship between board racial diversity and firm performance and explained how board diversity is related to performance. Around this time, many countries had started having quotas on board, so a prominent work by Torchia, Calabro and Huse (2011) tested about what should be considered “critical mass” that can substantially contribute to innovation in firms.

Few famous studies also did not find any linkages between women on corporate board and firm performance. Nielsen, S. and Huse, M. (2010) did not find evidence for a positive association between women directors. Rose (2007) also did not find any link between between board diversity and firm performance in Danish firms. Ahern and Dittmar (2012) when even work quota was imposed in Norweign firms which led to inexperienced boards and deteriorated the performances.

Bear, Rahman and Post (2010) investigated the issue of gender diversity and corporate social responsibility. In a recent study by Colakoglu, Eriylmaz and Ferrero (2020) found that ratios of female and foreign board members do not have any significant effect on CSR performance in 500 biggest Turkish companies. .Velte (2022) has again shown through a structured review that gender diversity does have a positive impact on CSR. Sosa-C, Fernandez M , Torres Y and Gil, M.T. (2021) examined degree of CSR commitment towards sustainable development goals and found boards with greater gender diversity are more committed to attaining sustainable development goals. Singh , Sealy and Terjesen (2009) did a comprehensive review on women on corporate boards. They concluded that corporate governance improves in general because of the diversity and use of talent in totality. With this background in mind, since many decades of literature, this paper attempts to have a comprehensive review on women on corporate boards and where this field is furthering now.

Research gap: The research gap as found by the author was that this vast literature on Women's role on corporate boards has been studied globally by taking different variables by authors from long time. Each country has a different set of rules for women quota in leadership positions and each country has different culture too. This has been studied in different contexts. The present paper has tried to fill the gap on a bibliometric review and presents how and where this field of research is moving ahead. The main aim of the paper is to summarise the research work in the area of women on boards by using the keywords women on corporate boards)) OR ALL=(GENDER DIVERSITY ON BOARDS) and analyse where the research in this domain is heading and what are the new areas in which authors are contributing in the domain of women on corporate boards. Further, an attempt has been made to find out the new areas of research within this framework.

III. Research Design And Methodology

Data source and Search strategy: The Web of Science database was used to perform a bibliometric analysis of women on the Board in this research. Documents published between 1994-2022 were included in the analysis. When the term was searched preliminary, it yielded in 1388 results. After data screening related to the domain of Business or Management or Business Finance or Economics or Ethics, a total of 959 results were obtained as on10-5-2022. The complete search strategy including keywords and string search is as follows:

Topic: Women on Corporate Boards

Scope and area: Web of Science

Time : 1994-2021

Language: English

Search term: (ALL=(women on corporate boards)) OR ALL=(GENDER DIVERSITY ON BOARDS)

Screening: Data extracted on 10-5-2022

Preliminary Records identified n=1388

Screened by categories (Refined by: Web of Science Categories: Business or Management or Business Finance or Economics or Ethics)

Records removed: n=429 on the basis of refined categories

Records taken for Bibliometric Analysis n= 959

Data analysis: Mao et al. (2018) has substantiated about the main aim of bibliometric analysis which is a science mapping technique to elaborate on the key themes, trend in the area researched, prolific authors, growth of the field and collaboration network between countries or authors. This paper as this primary aim in mind to focus on the impact of research publications, primary authors in the area and the expansion of the field of study and also to show the domains of research in the area of women of corporate boards to help in future research agendas. Many extended indicators of the research impact, such as average citations per publication, h-index, and g-index were used in this research. The data from Web of Science database was used for Bibliometric 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). It was used to visualize and analyse the co-authorship of authors, institutions, and countries, citations, etc., of bibliometric data. Zou et al. (2018) have shown importance of co-authorship which is of paramount importance in research and knowledge exchange between countries, institutions, and authors.

IV. Results and Discussion

Table 1: Bibliometric Profile

MAIN INFORMATION ABOUT DATA

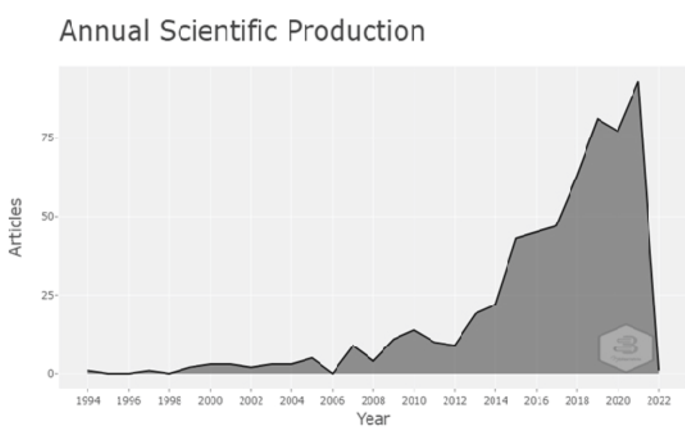
Timespan	1994:2022
Sources (Journals, Books, etc)	218
Documents	959
Average years from publication	4.48
Average citations per documents	42.31
Average citations per year per doc	6.031
References	34854
DOCUMENT TYPES	
Article	834
Article; book chapter	2
Article; early access	85
Article; proceedings paper	11
Review	25
Review; early access	2
DOCUMENT CONTENTS	
Keywords Plus (ID)	1385
Author's Keywords (DE)	1805

AUTHORS	
Authors	1991
Author Appearances	2735
Authors of single-authored documents	77
Authors of multi-authored documents	1914
AUTHORS COLLABORATION	
Single-authored documents	87
Documents per Author	0.482
Authors per Document	2.08
Co-Authors per Documents	2.85
Collaboration Index	2.19

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 2022 published in the said domain. The maximum academic contribution in the domain of women on corporate boards comes from research articles category. There were 87 single-authored documents in the entire set. The average citations are steadily growing with 42.31 being average citation per document.

Figure 1: *Growth trajectory of Articles*



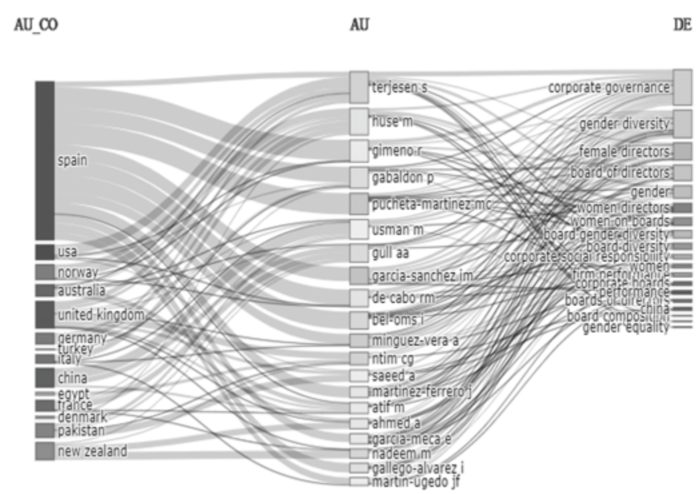
The above Figure 1 clearly shows that the research work is increasing in the field since 2008 and growing furthermore in years after 2012.The first article being published in 1994. 70 articles have been published and added to the literature in the year 2022 till 10-5-2022 (the date of extraction from Web of Science) with an Annual growth rate of 18.52%.

Table 2: *Country Scientific production*

Region	**Freq**
USA	439
UK	256
SPAIN	247
CHINA	189
AUSTRALIA	141
ITALY	105
FRANCE	98
GERMANY	77
CANADA	66
PAKISTAN	55

The Table 2 shows USA is clearly leading in terms of scientific production of papers. It is followed by UK and Spain.

Figure 2*: Three Field Plot using Author, Keyword and Country*

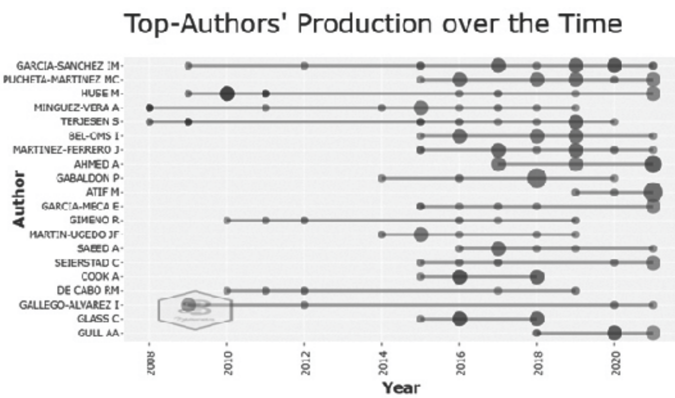


*T*his Field plot is showing a confluence of which country is writing the maximum papers related to the keyword in the right end and which authors are producing maximum literature in this domain.

Three field plots have been prepared on the basis of Sankey diagrams which 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 authors into account as three parameters. The above Plot shows that Spain is working in a huge manner in topics like corporate governance, gender diversity, women directors, board composition, gender equality to name a few. Terjesen S. is a leading author in this area and is working on corporate governance, women directors, Intraboard behaviour determinants and is working with authors from different *countries like Norway, USA, Australia. India is lacking in prominent research in the area and the study could not find confluence of authors from India with prominent authors in the area in the Three Field Plot.*

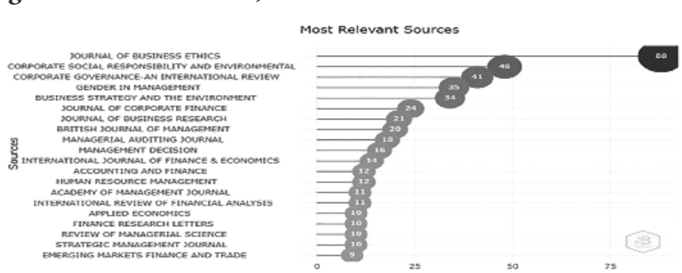
The keyword board directors, women on board, female directors, board gender diversity and performance are the most used ones by different authors in the area of research of women on board. Few authors have also used China, Corporate social responsibility in the area of research showing authors are doing research on women on corporate boards in China and relating presence of women on board to corporate social responsibility too. Spian, UK, China ,USA are the countries where authors belong to who are doing research in this area prominently.

Figure 3: *Top Authors' Paper over Time*



The above figure 4 shows the volume of research being undertaken by top authors in the field. According to producing research in this domain, Garcia Sanchez who belongs to Spain is the top author. The author is steadily growing the publication base in the area. The above figure depicts the number of articles produced per yer by the top authors and the X axis showing the publications in the year from where these authors have started writing in the area of gender diversity. Pucheta – Martinez is the second top author in respect of production of articles. The authors work in the area of corporate governance and gender diversity. Huse M, Terjesen also has various famous works in the domain of women on corporate boards.

Figure 4: *Most Relevant Journals*

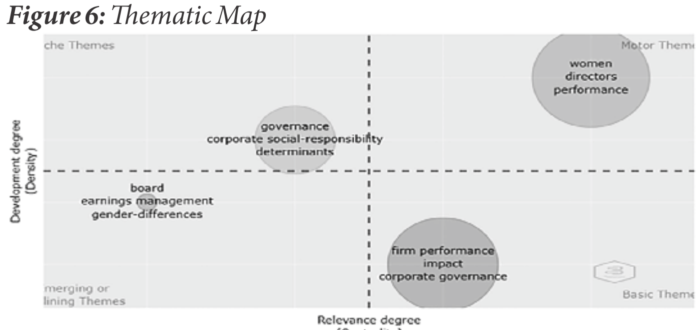


Journal of Business Ethics (Springer publication) is the leading journal which has maximum publication i.e 88 related to the domain of women on corporate boards. This journal also has the highest h-index of 43 as local impact source. Corporate Social Responsibility and Environmental Management Journal (Wiley Publication) and Corporate Governance- An International Review (again a Wiley Publication) are the next two journals where maximum publications relating to the domain of gender diversity is found. This shows that a new dimension of research that role of women in CSR, environmental and social performance is another widely researched area now a days beyond the women and its impact on corporate performance as Corporate Social Responsibility and Environmental Management Journal is the second most popular journal in this domain. This journal was found to have next highest h-index with value of 28 considered as local impact source.

Figure 5: *Most Global Cited Documents*

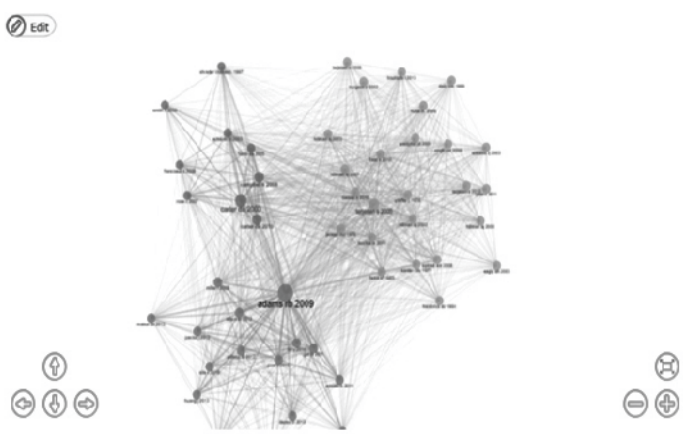
The above figure shows the most cited documents globally. The work of Adams RB(2009) titled Women in the Boardroom and their impact on governance and performance is the most cited paper globally. It has been cited 1579 times. The above figure shows the top 20 most cited articles in the area of women on corporate boards. Campbell (2008), Bear S (2010), Terjesen S (2009) etc. are few of the important researches in this direction. It tells us about the seminal works in this domain for reference for future researchers in this area. These important papers have few empirical papers and also review papers too.

Figure 6: *Thematic Map*



The figure 6 exhibits the new and basic themes in this domain of research. The size of the circle, its placement in the different quadrants and colour all depict some points related to research in this domain. The red circle which is the biggest one is place in the basic theme quadrant, which shows that majorly research is focussing on relating women on corporate board to its impact viz. firm's performance. Maximum authors have work in this area since long so this is the basic theme. Similarly, the motor theme also delves into similar lines of research focussing on directors and their linkages with performance. The niche area where recently the work has begun which has been inferred from the review section as well is the one in green, where authors are working on other determinants and authors are delving into presence of women on corporate boards to corporate social responsibility too. Presence of women on board has been researched to find out how socially responsibly companies behave when women are present on board. The emerging line of research as could be inferred from the above Figure shows that gender differences and their relation to earnings management are area either where the work is little less or is still emerging.

Figure 7: *Author's collaboration network*



Clearly the above figure shows three clusters of research focussed by authors. The main cluster in red showing works of Adam RB (2009) , Srinidhi (2011) Croson R (2009) are focussing on analysing the role of women directors and their impact on firm performance . Another cluster in blue where we have articles like those of Carter 2010 and Erhardt 2003 , Fama E F1983, Farrell 2005 focus on presence of female on board and their effect on financial performance at times when the presence of women on board was not so common and mostly countries were not having law for such representation. The third stream of research belongs to likes of Terjesen 2011, Huse M (2006), Singh Val 2008 who have focussed on varied parameters viz boardroom dynamics viz gender diversity, how men and women differ, ethnic diversity on board, women on board and various aspects of managing gender diversity, presence of women and environmental performance etc.

Figure 8: *Collaboration between countries*

The above figure shows three set of collaborations among countries worldwide. The first cluster has USA, Italy, Germany , Canada, Norway, Finland, Denmark, Poland, Singapore, Switzerland and India. Norway is the country where there is minimum 40% representation of women on the Board. Interestingly, Germany and Denmark too have 30-40% quota for women on Board. India has mandated at least one women Director on board.

The second cluster has UK, Spain, France, Kuwait, Morocco, Saudi Arabia, Egypt, Netherlands, Tunisia. Spain is working on number of issues in gender diversity on board as per earlier mentioned Three Field plot.

The third cluster has collaboration between countries like China, Australia, Pakistan, UAE, Russia, Bangladesh. UAE too has mandated presence of one women director on Board.

This shows an interesting collaboration of research among developed countries and developing countries on the other hand in each cluster. Countries like USA and Canada are collaborating with countries in Asia viz Singapore and India. UK, Spain , France is having collaboration with Middle east countries Saudi Arabia and Kuwait. And the third cluster shows collaboration China, Russia, Pakistan and Australia. The good collaboration among countries shows that women on board which is a diverse topic depends on number of factors in each country like law, culture, developed or developing country etc. is being tackled by countries with having such collaborations.

V. Conclusion

The findings revealed that publications in this domain of women on corporate boards started around three decades ago. The author in the findings finds the first paper in this review from the year 1994. There has been a steady growth in the production with the scientific production increasing steadily with an annual growth rate of 18.52%. USA, UK and Spain are the countries producing maximum research in this domain. The thematic map reveals niche areas like gender diversity and its impact on CSR being lately researched upon by researchers. Researchers were initially focussing on gender differences, gender diversity and firm performance and now newer variables in relation to women on corporate boards are being studied upon. This research which takes 959 documents from the Web of Science database since 1994 is a comprehensive review on the subject till date. The paper contributes to reviewing a three decades old topic with the latest research works in the area till May 2022. The findings can be useful to researchers to find out the most prolific authors in the area and the new areas to focus upon.

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EVALUATING TRACKING ERRORS AND ITS DETERMINANTS AMONG INDIAN EXCHANGE TRADED FUNDS

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Purpose: *Presence of tracking inefficiencies among Exchange Traded Funds (ETFs) reflects the effectiveness of managerial capabilities thus understanding of such inefficiencies is of importance to investors longing to invest in ETFs. Thus, this study explores; the extent of tracking errors and thereby identify factors causing tracking errors among performance of ETFs and its underlying benchmark.*

Design/Methodology: *TFor the purpose of study sample of 29 Indian ETFs have been selected which include Equity ETFs, Gold ETFs, Debt ETFs as well as World Indices ETFs .Tracking errors of ETFs have been computed through three methods which are average absolute difference between returns, standard deviation of difference between returns and standard error of regression. Further, Panel data analysis has been applied to understand the factors affecting tracking errors.*

Findings: *Empirical analysis suggest that out that tracking errors exits for almost all the ETFs and majority of ETFs show sign of underperformance with respect to their underlying benchmark indices. Further, on scrutinizing the factors affecting tracking error, it has been brought out that volume ,age of fund, risk associated, expense ratio and volatility are noteworthy factors behind the tracking errors.*

Originality/Value: *Results of this study will be helpful to investors and other players of markets particularly arbitrageurs and hedgers who try to time the market. Moreover, this study will also be beneficial to prospective researchers.*

Keywords : *Exchange Traded Funds, Tracking Error, Panel Data Analysis, Random-effect model, Fixed-effect model*
JEL Classification Code: *G1,G11,G12*

I. Introduction

Exchange Traded Funds (ETFs) have revolutionised the investment strategies pursued by individual investors as well as large market players. These passive financial market instruments are designed to mimic the underlying benchmark providing a viable alternative to investors looking to increase their exposure to countries, sectors and styles(Fuhr, 2001).Their hybrid nature of both mutual funds and stocks along with inherent unique creation and redemption process has made them an appealing investment choice. ETFs have low expense ratio and are more tax efficient thus regarded as cost effective alternative to closed-end mutual funds (Harper et al., 2006) Due to their unique features and benefits being offered, asset under management (AUM) of ETFs have witnessed tremendous growth. As of 2008, the U.S. had $716 billion of AUM in ETFs which increased almost eight times by the end of year 2019 i.e., the U.S. $6181 billion. Parallel to substantive ETFs development in the U.S. markets, sufficient growth has been observed in other capital markets as well.

Another essential aspect of ETFs is their tracking error. Tracking error is described as the difference in performance of ETFs to that of its underlying benchmark. Assessment of tracking error indicates managerial capabilities. Over the years, various studies have been conducted across different geographical regions to assess the tracking efficiency of ETFs and majority of the studies reported underperformance of ETFs in comparison to its benchmark. Through past studies conducted by several authors such as Milonas & Rompotis (2006), Chu (2011), Drenovak et. al.(2014), Qadan & Yagil (2012), Drenovak et al. (2014), Sethi (2016), Osterhoff & Kaserer (2016), it has been brought out that management fees, risk, age of fund, size of the fund, market volatility, volume , number of constituents, exchange rate and bid-ask spreadaffect the tracking ability of ETFs. These studies although bring out mixed results consequently providing no conclusive evidence till now.

The present study assess the tracking errors of Indian ETFs and identify the factors affecting tracking errors for selected 29 ETFs comprising all the categories of ETFs for the period of 2012-2019. The outlay of the paper is as follows. Section 2, details out the studies related to tracking error and factors affecting tracking error are discussed. Section 3 and 4, discuss the data and research methodology in detail. Interpretations of results is provided in section 5. Finally, Section 6 draw conclusion and provide future scope of research.

II. Review of Literature

Being passive form of investment, tracking error of ETFs are of utmost importance for investors as any deviation from the

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underlying benchmark cannot be overlooked in long run. Over the years, numerous authors have addressed this issue in different markets also they have subsequently made an attempt to identify factors causing tracking errors. This section of study summarise the findings of previously available literature. Elton et. al.(2002) studied tracking errors of first ever ETFs i.e. SPDRS and concluded that SPDRS underperform benchmark by 28.4 basis points. They also identified that management fee and reinvestment in a non- interest bearing account as the cause of underperformance. Parallel results were obtained in a study conducted by Milonas and Rompotis (2006) on 36 Swiss ETFs for the period of 2001-2006. Svetina (2010) conducted a broad study on selected sample of 584 ETFs across the globe and produced similar results i.e. underperformance among ETFs. Shin and Soydemir (2010) conducted study on 26 U.S. ETFs again supporting the results of previous studies i.e. ETFs underperform their benchmark .Chu(2011) conducted study on 18 ETFs traded on Hong Kong stock exchange and found that ETFs underperform benchmark and this tracking error was found to be higher than the U.S. and the Australia. Blitz and Huiz(2012) in their study concluded that emerging market ETFs have higher tracking error than developed market ETFs. Similar results have been documented in studies conducted by other researchers in different markets(Bueatow and Henderson, 2012; Drenovak et. al. , 2014; Elia, 2012; Johnson ,2013; Li,2013; Valle et. al. ,2014;Purohit et. al. , 2014; Garg, 2014; Nazli and Serra, 2015; Guo and Leung , 2015; Sethi, 2016;Pan and Li ,2016; Osterhoff and Kaserer , 2016; Chen et. al. 2017;Miziolek and Federsempach, 2019;Steyn, 2019;Zawadzaki,2020).Contrary to these results, David and Segara(2006) examined the Australian exchange traded funds for the period of 2002-2003 whereby it was observed that returns of ETFs equates the return of underlying benchmark. Similar results were found in studies conducted by (Harper et. al. 2006; Narend et.al. 2013).On the other hand , Wong and Shum (2010) examined 15 ETFs of 7 different countries and brought out that ETFs outperform benchmark not much literature is available in support of this study except study conducted by Rompotis(2011) and Rompotis(2012) on Swiss ETFs and German ETFs respectively.

Only analysing tracking error was not enough thus authors further expanded their studies by analysing the factors affecting tracking errors. Previous studies conducted by Milonas&Rompotis (2006), Chu (2011), Drenovak et. al.(2014), Qadan & Yagil (2012),Drenovak et al.(2014), Sethi (2016), Osterhoff&Kaserer(2016), brought out that management fees, age of fund, risk of fund,size of the fund, market volatility, volume , number of constituents, exchange rate and bid-ask spread affect the tracking ability of ETFs.

On conducting a thorough literature review, it has been observed that much of the research on ETFs is mainly concentrated in the U.S or in the Europe which are also the largest market for ETFs as they collectively comprise almost 90% of trade done in ETFs globally. In India, extensive research on the entire class of ETFs is not available as academic research has mainly covered the performance of gold and equity ETFs. Several researchers also studied the tracking error and its determinants, but these studies were concentrated towards a particular sector of ETFs. Besides, this window of study was also not long enough. This study, therefore, aims to contribute towards the existing literature of ETFs in India by conducting a comprehensive analysis of tracking error, factors affecting tracking error of all categories of ETFs listed on NSE.

III. Research Design and Methodology

This study is based on the entire class of ETFs that are listed on NSE. As on 31st March 2018, there were 68 ETFs listed on NSE comprising 56 other ETFs and 12 Gold ETFs. Out of these 68 ETFs those funds are selected that came into existence before 2012 in order to have a considerable trading history. Thus, our final sample consist of 29 ETFs comprising 14 Equity ETFs, 12 Gold ETFs, 1 Debt ETF and 2 ETFs based on world Indices.

To examine the size of tracking errors daily return data has been used. Price data required for each ETF and its respective benchmark was obtained from Bloomberg Terminal for the period of April 2012- March 2019.Further, expense ratio, volatility, volume traded, risk of funds, asset under management (AUM), and age of the fund has been regarded as determinants of tracking error. Data for these variables is collected on yearly frequency for the period of April 2012 –March 2019. Data has been collected from the database of Bloomberg, NSE, AMFI, and factsheets of respective AMCs for all the selected 29 ETFs and has been analyzed using STATA 15.

ETFs selected for study are described below in Table 3.1 – 3.4:

Table 3.1: Profile of Selected Equity ETFs

S.No.	Scheme Name	Symbol	Index	Issuer	Issue Date
1			Nifty 50 Index	Reliance Nippon Life AMC	Dec. 2001

2	ICICI SENSEX Prudential ETFs	ISENSEX	S&P BSE SENSEX	ICICI Prudential AMC	Jan. 2003
3	Reliance ETF Junior BeEs	JUNIORBEES	Nifty Next 50	Reliance Nippon Life AMC	Feb. 2003
4	Reliance ETF Bank BeEs	BANKBEES	NIFTY Bank	Reliance Nippon Life AMC	May 2004
5	Reliance ETF PSU Bank BeES	PSUBNKBEES	NIFTY PSU BANK	Reliance Nippon Life AMC	Oct. 2007
6	Kotak PSU Bank ETF	KOTAKPSUBK	NIFTY PSU BANK	Kotak AMC	Nov.2007
7	Quantum Index Fund Growth	QNIFTY	NIFTY 50 INDEX	Quantum AMC	July 2008
8	Reliance ETF Shariah BeEs	SHARIABEES	NIFTY 50 Shariah Index	Reliance Nippon Life AMC	March 2009
9	Kotak NIFTY ETF	KOTAKNIFTY	NIFTY 50 INDEX	Kotak AMC	Feb2010
10	MOSt Shares M50	M50	NIFTY 50 INDEX	Motilal Oswal AMC	July 2010
11	Reliance ETF Infra BeES	INFRABEES	NIFTY INFRASTRUCTURE	Reliance Nippon Life AMC	Sept 2010
12	MOSt Shares M100	M100	NIFTY MID CAP 100	Motilal Oswal AMC	Jan 2011
13	Religare Invesco NIFTY ETF	RELGRNIFTY	NIFTY 50 INDEX	Religare AMC	June 2011
14	Birla Sun Life NIFTY ETF	BSLNIFTY	NIFTY 50 INDEX	Birla Sun Life AMC	July 2011

Table 3.2. Profile of Selected Gold ETFs

S.No.	Scheme Name	Symbol	Index	Issuer	Issue Date
1	UTI Gold ETF	GOLDSHARE	GOLD	UTI Mutual Fund	Mar. 2007
2	Reliance Gold ETFs	GOLDBEES	GOLD	Reliance Nippon Life AMC	Mar. 2007
3	Kotak Gold ETF	KOTAKGOLD	GOLD	Kotak Mutual Fund	July 2007

4	Quantum Gold Fund	QGOLDHALF	GOLD	Quantum Mutual Fund	Feb 2008
5	SBI Gold Exchange Traded Scheme	SBIGETS	GOLD	SBI Mutual Fund	April 2009
6	Religare Gold ETF	RELIGAREGO	GOLD	Religare Mutual Fund	Mar. 2010
7	ICICI Prudential Gold ETF	IPGETF	GOLD	ICICI Prudential Mutual Fund	Aug 2010
8	HDFC Gold ETF	HDFCMFGETF	GOLD	HDFC Mutual Fund	Aug 2010
9	Axis Gold ETF	AXISGOLD	GOLD	Axis Mutual Fund	Nov.2010
10	Birla Sun Life Gold ETF	BSLGOLDETF	GOLD	Birla Sun Life Mutual Fund	May 2011
11	IDBI Gold ETF	IDBIGOLD	GOLD	IDBI AMC	Nov 2011
12	Canara Robeco Gold ETF	CANGOLD	GOLD	Canara Robeco MF	Mar. 2012

Table 3.3: Profile of selected Word Indices ETFs

S.No.	**Scheme Name**	**Symbol**	**Index**	**Issuer**	**Issue Date**
1	Reliance ETF Hang Seng BeEs	HNGSNGBEES	HangSeng	Reliance Nippon Life AMC	Mar. 2010
2	MOSt Shares NASDAQ 100	N100	Nasdaq 100	Motilal Oswal AMC	Mar. 2011

Table 3.4: Profile of selected Debt ETF

S.No.	**Scheme Name**	**Symbol**	**Index**	**Issuer**	**Issue Date**
1	Reliance ETF Liquid BeEs	LIQUIDBEES	NIFTY 1 D rate index	Reliance Nippon Life AMC	July 2003

Methodology

The following section presents the methodology for identifying tracking error and factors affecting tracking error:

1. Computing Tracking Error

Tracking Error represents the variation in performance of ETF with that of its underlying benchmark index. In previously available studies various methods have been brought out to compute tracking errors but still literature does not support any particular method thus a careful selection of following three methods has been made for estimating tracking errors;

Method 1: This method comes from the study undertaken by Gallagher and Segara (2005).Under this method tracking error has been calculated as an absolute difference between the return of ETF and its benchmark instead of the simple difference thus not differentiating between negative and positive returns in the short run.

Under this method, average absolute tracking error is calculated as follows:

Where, n is the number of observations and e is defined as the simple difference between the return of the ETF and the index.

Ri,t= Return of ETF :, Rb,t= Return of benchmark

TE1 = Tracking Error calculated under Method 1

Method 2: The second method used to estimate tracking error is the standard deviation of the difference between return of ETF and its benchmark index, which is calculated as:

Where;

e=Difference between the return on ETF and its benchmark on day t

ei=Mean of difference between the return on ETF and its benchmark.

TE2 = Tracking Error calculated under Method 2

Method 3: The third method adopted to compute tracking error is standard error of regression which comes from the study conducted by Chu (2011). The standard error of a regression can be defined as the average distance of all of the observed data points from the estimated regression line.

The regression line for the same can be estimated as: The regression line for the same can be estimated as:

$$\mathbf{R_{i,t} = \alpha + \beta * R_{b.t} + \epsilon}$$

Where;

$R_{i,t}$ = Return of ETF $R_{b,t}$ = Return of ETF

2. Determinants of Tracking Error

In order to identify the determinants of tracking error Average Asset Under Management(AAUM),Expense Ratio, Volume, Volatility, Fund's Age and Risk of Fund has been used as independent Variables Whereas, dependent variables are yearly tracking errors computed under all three methods are taken as dependent variables.

Selected data embodies both time series as well as cross-sectional elements as sample consists of 29 ETFs for the period of April 2012 – March 2019. Such form of data creates a panel data structure for which estimations can be made in number of ways. Therefore, to assess the suitability of one model over the other following tests have been employed; F-test has been conducted to examine the appropriateness of fixed effects model over pooled regression and Breusch-Pagan Lagrange multiplier (LM) has been conducted to test the appropriateness of random effects model over pooled regression. Hausman test is, then, employed to decide among the application of fixed-effects and random-effects model thus reinforcing the result of the above two tests. All other issues concerning autocorrelation and heteroscedasticity were accounted for while applying panel regression analysis and thus robust results were reported accordingly.

The model postulated to explain for the factors affecting tracking ability of ETFs has been described as follows:

$$\mathbf{d_{i,t}=\beta+\beta1Ln(Volume)+\beta2Ln(AAUM)+\beta3Ln(Age)+\beta4(Volatility)+\beta5(Risk)+\beta6(Exp.Ratio)+\varepsilon_{i,t}}$$

In this model $d_{i,t}$ is dependent variable where three different tracking errors will be considered i.e. TE1, TE2, and TE3 forming three different models whereas Volume, AAUM, Age of Fund, Volatility, Risk and Expense Ratio are independent variables which will remain same in all the models. Thus, three regression models will be formed with three different dependent variables keeping independent variables consistent for all the models.

IV. Results and Discussions

1. Tracking Error of ETFs

Table 5.1, exhibits the result of yearly tracking error computed using three predefined methods whereby TE1 represents tracking error calculated through Average absolute tracking error, TE2 represents tracking error calculated through standard deviation of the difference between return of ETF and its benchmark index and TE3 represents tracking error calculated by third method i.e., standard error of regression.

As per table 5.1, tracking error of Equity ETFs ranges from

8.520% to 11.768%, tracking error of Gold ETFs ranges from 3.590% to 4.545% for world indices ETFs average tracking error is ranging from 7.989% to 10.541 % and for Debt ETF tracking error ranges from 0.011 to 6.593%. It has also been observed that tracking error in second method is higher than the other two methods and absolute tracking error method has the lowest tracking error.

M50 (6.890%) has been the best performer among Equity ETFs having the lowest tracking error in three methods. CANGOLD (3.223%) among Gold ETFs performed better than others having lowest tracking error than others. Among World Indices, there are only two ETF among them MOSTNASDAQ (6.739%) performed better whereas LIQUIDBEES the only debt ETF has near to zero tracking error.

Worst performers i.e., those ETFs that had highest tracking error are BSLNIFTY (18.387%), RELIGAREGO (5.866%), HNGSNGBEES (12.269%) among Equity, Gold and World Indices ETFs respectively. On average lower tracking errors are witnessed among Gold ETFs than Equity ETFs. Thus, making it prudent to say that Gold ETFs track their benchmark in an effective way than Equity ETFs.

Table 5.1: Yearly Tracking Error of ETFs (in %)

S.No.	*Symbol of Fund*	*TE1*	*TE2*	*TE3*	*Average (TE1+TE2+TE3)/3*
1	*EQUITY ETFs*				
2	*BANKBEES*	*7.864*	*10.614*	*11.625*	*10.034*
3	*BSLNIFTY*	*15.732*	*18.933*	*20.496*	*18.387*
4	*ICICISENSX*	*10.142*	*14.241*	*13.466*	*12.616*
5	*INFRABEES*	*7.788*	*9.949*	*10.527*	*9.421*
6	*JUNIORBEES*	*6.609*	*8.069*	*8.831*	*7.836*
7	*KOTAKNIFTY*	*5.619*	*7.387*	*7.928*	*6.978*
8	*KOTAKPSUBK*	*11.578*	*14.98*	*16.396*	*14.318*
9	*M100*	*6.902*	*9.533*	*10.44*	*8.958*
10	*M50*	*5.615*	*7.209*	*7.845*	*6.890*
11	*NIFTYBEES*	*5.941*	*7.734*	*8.299*	*7.325*
12	*PSUBNKBEES*	*12.29*	*15.249*	*16.583*	*14.707*
13	*QNIFTY*	*5.641*	*7.642*	*8.328*	*7.204*
14	*RELGRNIFTY*	*10.128*	*12.646*	*13.695*	*12.156*
15	*SHARIABEES*	*7.425*	*9.422*	*10.286*	*9.044*
	Average	*8.520*	*10.972*	*11.768*	*10.420*
	GOLD ETFs				
1	*AXISGOLD*	*3.996*	*5.077*	*5.183*	*4.752*
2	*BSLGOLDETF*	*3.124*	*3.936*	*3.555*	*3.538*
3	*CANGOLD*	*2.478*	*3.479*	*3.712*	*3.223*
4	*GOLDBEES*	*3.675*	*4.649*	*4.73*	*4.351*
5	*HDFCMFGETF*	*3.754*	*4.733*	*4.705*	*4.397*
6	*IPGETF*	*3.207*	*4.165*	*4.212*	*3.861*
7	*IDBIGOLD*	*4.774*	*5.767*	*5.532*	*5.358*
8	*QGOLDHALF*	*3.873*	*4.707*	*4.545*	*4.375*
9	*KOTAKGOLD*	*2.779*	*3.82*	*3.894*	*3.498*
10	*RELIGAREGO*	*5.201*	*6.263*	*6.134*	*5.866*

11	***SBIGETS***	*3.207*	*4.165*	*4.212*	*3.861*
12	***GOLDSHARE***	*3.012*	*4.117*	*4.13*	*3.753*
	Average	*3.590*	*4.573*	*4.545*	*4.236*
	WORLD INDICES ETFs				
1	***HNGSNGBEES***	*10.023*	*12.813*	*13.971*	*12.269*
2	***N190***	*5.955*	*7.152*	*7.110*	*6.739*
	Average	*7.989*	*9.983*	*10.541*	*9.504*
	DEBT ETFs				
1	***LIQUIDBEES***	*6.593*	*1.552*	*0.011*	*2.719*
	Average	*6.593*	*1.552*	*0.011*	*2.719*

Through the determination of yearly tracking errors, it can be summarised that tracking errors are inherent characteristics of ETF.Also, ETFs tracking World Indices have higher tracking errors majorly due to non-synchronous trading hours and currency deviations. Results of this section are consistent with the previously conducted studies (Elton et al., 2002),(Milonas&Rompotis, 2006),(Aber et al., 2009),(Shin & Soydemir, 2010),(Chu, 2011)(Qadan &Yagil, 2012),(Blitz &Huij, 2012),(Buetow& Henderson, 2012),(Elia, 2012),(Drenovak et al., 2014),(Osterhoff&Kaserer, 2016),(Singh & Kaur, 2016).

2. Diagnostic Testing

Before conducting regression analysis, it is of utmost importance to check for various regression assumptions, namely, multicollinearity, heteroscedasticity and autocorrelation as testing of these assumptions will enable to select appropriate panel regression model.

Diagnostic tests conducted are described as follows:

Regression Diagnostic – I : Multicollinearity Multicollinearity refers to a situation where two or more independent variables are linearly related (Gujarati,2012). This problem is severe as statistical inferences dawn from a model that suffers from multicollinearity will be spurious. Therefore, it becomes necessary to test for multicollinearity. To detect the presence of multicollinearity among independent variables Variance Inflation Factor (VIF) test was conducted. A VIF of 1 means that there is no correlation among the predictors, whereas, value that exceeds 5 require further investigation, while any value of VIF which is above 10 indicates high correlation and is a matter of concern. Table 5.2 below; suggest the absence of correlation among predictors as all the values of VIF are near to 1.

Table 5.2: Variance inflation factor for Multicollinearity

Independent Variable	*VIF*	*1/VIF*
Ln(AAUM)	1.865	.536
Ln(Volume)	1.622	.617
RISK	1.241	.806
Ln(Age)	1.135	.881
Exp.Ratio	1.122	.891
Volatility	1.073	.932
Mean VIF	1.343	.

Regression Diagnostic - II: Heteroscedasticity

Heteroscedasticity describes a situation in which the error term or random disturbance in the relationship between the independent variables and the dependent variable is non-constant across all values of the independent variables. If the error term is same across all values of the independent variables that situation is described as Homoscedastic. Absence of

Homoscedasticity has serious consequences, for the OLS estimator as estimated standard error becomes erroneous thus making test results unreliable. Thus, it is crucial to test for heteroscedasticity before beginning with regression analysis. Here, Wald Test, Likelihood Ratio (LR) Test and Lagrange Multiplier (LM) tests have been used for checking presence of heteroscedasticity. As given in Table 5.3, all the three tests give same results. In all the three models, p-value is less than 0.05.Thus rejecting null hypothesis of No Heteroscedasticity and thereby concluding that there is an evidence of Heteroscedasticity in our data.

Table 5.3: Diagnostic Test for Heteroscedasticity

Test	*Pvalue (Model1)*	*P value (Model2)*	*P value (Model 3)*
Lagrange Multiplier (LM) Test	*0.000*	*0.000*	*0.000*
Likelihood Ratio Test (LR)	*0.000*	*0.000*	*0.000*
Wald Test	*0.000*	*0.000*	*0.000*

Regression Diagnostic – III : Autocorrelation

Serial correlation /Autocorrelation is described as the relationship between a variable and its lagged value over different time intervals. Presence of serial correlation is detected when the present value of a variable affects its future value. Baltagi (2001) discussed testing for serial correlation in the presence of random and fixed effects. Although, these tests are optimal within a class of tests. A new test for serial correlation has been developed by Wooldridge, (2002) for random- or fixed-effects one-way models. This test can be applied in general conditions and is easy to apply as well. This test is also advantageous in reasonably sized samples. Therefore, considered robust than other tests.

Upon applying Wooldridge test of autocorrelation it was observed that p-value in first and second models are less than 0.05. Thus, here we reject null hypothesis and conclude that there is serial correlation in first two models. Whereas , in third model p-value is more than 0.05. Due to which we fail to reject null hypothesis of no serial correlation, thus, indicating the absence of serial correlation. Table 5.4 below, gives result of Wooldridge test of autocorrelation.

Table 5.4 : Wooldridge Test for Serial Correlation

Test	*F- Stat*	*P- Value*
Model 1 (TE1 D.V)	*25.493*	*0.000*
Model 2 (TE2 D.V)	*18.470*	*0.002*
Model 3 (TE3 D.V)	*0.035*	*0.850*

3. Selection of Appropriate Panel Estimator

Further in this section, a suitable panel data estimator is selected by conducting, Hausman Test, Breusch-Pagan Lagrange Multiplier Test (LM Test) and F- Test. Hausman test enables to decide between fixed effect and random effect regression estimator. If in Hausman test, null hypothesis is rejected then that means Fixed Effect Model is preferred over Random Effect Model.

On the other hand, LM Test enables to decide between Random Effect Model and Pooled OLS regression. The null hypothesis in the LM test is, that the variance across entities is zero. That is, no significant difference across units (i.e., no panel effect). Whereas F-Test is conducted to see if time fixed effects are needed or not in the model i.e., to decide between Fixed Effect Model over Pooled OLS model. It is a joint test to see if the dummies for all years are equal to zero, if they are then no time fixed effects are needed. P-value of less than 0.05 in F-test indicates appropriateness of fixed effect model over Pooled OLS model.

Table 5.5 below describes the result .It has been observed that, Hausman test fails to reject the null hypothesis in second and third model as the p-value is greater than 0.05 which means random effect model will be preferred over Fixed Effect Model. Whereas, in first model where dependent variable is TE1, p-value is less than 0.05 which indicates that random is not suitable in this case. Further, Breusch Pagan LM Test rejects null hypothesis for all the three models as p-value is less than 0.05 which means Random Effect model is appropriate than Pooled OLS Regression. Here, Breusch Pagan LM Test reinforces Hausman Test for second and third model as both the tests supports that Random Effect Model. Whereas, in first model this does not happen as Hausman Test and LM test gives contradictory results therefore there arises a need to further perform F-Test to see if time fixed effects are needed or not in this model. It is a joint test to see if the dummies for all years are equal to zero, if they are then no time fixed effects are needed. On conducting F test for the first model, it was observed that p –value obtained is less than 0.05. Thus, we reject null hypothesis that the coefficients for all years are jointly zero, therefore time fixed effects are needed in this case.

Hence, fixed effects model should be applied in first model where dependent model is TE1 as reinforced by Hausman Test and F–test, and random effect model should be applied in second and third model with dependent variable TE2 and TE3 respectively as supported by Hausman Test and LM test.

Table 5.5: Test Summary of Hausman Test and LM Test

Model	*Chi-Sq. Statistics*	*Prob. Value*
	Hausman Test	
Model 1 (TE1 D.V)	*46.61*	*0.000*
Model 2 (TE2 D.V)	*4.40*	*0.493*
Model 3 (TE3 D.V)	*8.85*	*0.115*
	F Test	
Model 1 (TE1 D.V)	*7.37*	*0.000*
	Breusch-Pagan LM Test	
Model 1 (TE1 D.V)	*81.61*	*0.000*
Model 2 (TE2 D.V)	*27.73*	*0.000*
Model 3 (TE3 D.V)	*251.20*	*0.000*

4. Panel Data Analysis

In this section, panel data regression has been conducted to determine the factors affecting tracking error of ETFs. Three models have been formed with dependent variable asTE1, TE2 and TE3 respectively, whereas independent variables have been kept same for all the three models. Independent variables for the analysis are Age of Fund, AAUM, Volume, Volatility of ETF, risk, and published Expense Ratio. Results presented below in Table 4.14, are robust results adjusted for heteroscedasticity and autocorrelation.

First explanatory variable used in the study is AAUM, which is a proxy for the size of the fund. The coefficient of AAUM is found to be significantly negative in first model, thus, concluding that the asset size of an ETF significantly impacts its performance. Inverse relationship indicates that funds with larger corpus exhibit lower tracking error and the one with smaller corpus of fund is likely to exhibit larger tracking error. This result is in lieu with the studies conducted by Chu (2011) and Drenovak et.al.(2012). Whereas, in other two models AAUM turns out to be insignificant which also happens in the study conducted by Drenovak et. al. (2012) where the proxy of size of fund becomes insignificant as the tracking error method changes.

Second explanatory variable used in the study is Age of the fund, that is, for how long the fund has been in market. It has been observed that the coefficient for age of the fund is significantly negative in three of the models which denotes that older the ETF better the tracking ability is. Thus, it can be said that age is a significant factor for determining the tracking error of Indian ETFs.

Another factor is average daily volume traded which has been used as a proxy of liquidity. Earlier studies as conducted by Rompotis (2012) and Osterhoff and Kaserer (2016) confirmed a positive impact of Liquidity on tracking error for German ETFs i.e., any increase in liquidity of German ETFs will also increase the tracking error of German ETFs. Whereas, in a study conducted by Buetow and Henderson (2012)negative relationship between volume and tracking error of the U.S listed exchange was observed which was also confirmed by Singh and Kaur (2016) in respect to selected Indian Equity ETFs. Similar results were obtained in this study as, it can be witnessed that coefficient of volume is negative and significant in all the three models. Thus, it can be said that volume has a significant negative relationship with tracking error of ETFs i.e., any increase in volume being traded will reduce the tracking error, thereby, improving the tracking ability.

Further, the coefficient of volatility turns out to be highly significant and positive. If an ETF perfectly replicates the risk profile of its target index the coefficient would have turned out to be insignificant in explaining the disparity between the returns of an ETF and that of its underlying benchmark. As the coefficient is found to be highly significant, the present study confers that the change in the price of an ETF (in response to the market movement) is more rigorous compared to its target index, thus, affecting the replication ability of the ETF.

Another factor considered to determine the tracking ability is the risk which is the standard deviation of returns of ETFs. Risk is supposed to positively influence the tracking ability of ETFs as documented by Milonas and Rompotis (2006) and Rompotis (2012). In this study also risk of ETF is found to be significantly positive in three of the models which implies that as risk of ETFs aggravates the tracking error of ETFs also increase. Thus, null hypothesis cannot be rejected in three of the models.

Another explanatory variable used in the study is Expense Ratio. Published expense ratio has been used for the analysis. Among previously conducted studies, Milonas and Rompotis (2012) observed positive and significant relationship between expense ratio and tracking error, whereas Chu (2011) gave mixed results, in one model negative relationship was depicted and in other models being used in the study positive relation was observed. These results were consistent with the results obtained in Frino and Gallagher (2001), whereby, positive relationship was observed between expense ratio and tracking error of ETFs i.e., higher the expense ratio lower the tracking ability. In this study also, mixed results are obtained as it has been found that in first model expense ratio turns out to be insignificant, whereas, in other two models expense ratio have a significant and positive coefficient for expense ratio implying lower expense ratio are more likely to track their benchmarks effectively. Thus, results documented by this study corroborates with the literature.

Table 5.6: Summarised Regression Result

Dependent Variable	*TE1*		*TE2*		*TE 3*	
Independent Variable	*Coefficient*	*Robust Standard Error*	*Coefficient*	*Robust Standard Error*	*Coefficient*	*Robust Standard Error*
Ln(AAUM)	*-0.053***	*0.022*	*0.043*	*0.029*	*0.002*	*0.016*
Ln(Age)	*-0.247****	*0.046*	*-0.085***	*0.040*	*-0.052**	*0.031*
Ln(Volume)	*-0.020***	*0.035*	*-0.057***	*0.025*	*-0.050***	*0.021*
Volatility	*0.000*	*0.000*	*0.000****	*0.000*	*0.000****	*0.000*
Risk	*0.220****	*0.071*	*0.999****	*0.015*	*0.996****	*0.007*
Exp.Ratio	*-0.015*	*0.055*	*0.276***	*0.110*	*0.095**	*0.056*
Constant	*2.065****	*0.397*	*0.388**	*0.225*	*0.356**	*0.213*
R2	*51.97%*		*87.5%*		*93.8%*	

Source: Researcher's Own Calculation

Note:***significant at 1%, **significant at s% , * significant at 10%

V. Conclusion

This study analyses the tracking inefficiencies of ETFs and its determinants.It has been brought out that average yearly tracking error of Equity ETFs ranges between 8.520% to 11.768%, for Gold ETFs tracking error ranges from 3.590% to 4.545%. Whereas for World Indices ETFs average tracking error is between 7.989% to 10.541 %and for Debt ETF tracking error ranges from 0.011% to 6.593%. M50 (6.890%), CANGOLD (3.223%), and N100 (6.739%) performed better than other ETFs in their respective categories. LIQUIDBEES has near to zero tracking error. BSLNIFTY (18.387%), RELIGAREGO (5.866%), HNGSNGBEES (12.269%) among Equity, Gold, and World Indices ETFs respectively had the highest tracking error in their categories.

Further, regarding factors affecting tracking error it has been observed that age of the fund and volume traded are identified to be significant factors in all the models. These two factors are found to be negatively related to the size of tracking error. Whereas, Risk, Expense Ratio, and volatility were found significant in two models. These factors are positively related to the size of the tracking error. Thus, Age of Fund, Volume Traded, Risk, Expense Ratio, and volatility can be regarded as significant drivers of tracking error.This study though undertakes all the categories of Indian ETFs but still it can be further extended by studying those ETFs that were dropped out due to insufficient history. Author's can also make cross country comparison to obtain a wider depiction about the tracking errors of ETFs.

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A STUDY OF THE CHANGE IN TRAINING TECHNIQUES USING NVIVO

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Purpose: *The purpose of the study is to illustrate how IT organizations had adapted HRD operations in response to the COVID-19 epidemic through customization of developmental programs to align with employee needs, supporting their continued growth and advancement in their professional roles along with investigation of the elements that were considered while determining training approaches and developing training designs.*

Methodology: *In this descriptive research, non-probability sampling technique has been used to reach the sample units. Through snowball sampling techniques, semi-structured telephonic interviews with L&D professionals were conducted.*

Findings: *Using content analysis, the NVivo software helped to identify the trend in the data and recognize the major challenges during the pandemic and to effectively motivate and engage learners through new learning approaches. To overcome the mind block that virtual training could also create a similar impact as physical training, appropriate actions were ascertained to provide experiential learning for the learners of all age groups through proactive measures of L&D managers to encourage learners for embracing the change. A conceptual model (PULP-Pandemic ushered learning practice) specified the factors that engaged the learners to provide experiential learning.*

Originality: *This is to certify that this research paper is my original work and does not contain any material previously published elsewhere.*

Keywords : *Covid-19, NVivo software, digital learning system, Experiential learning, content analysis.*
JEL Classification Code: *M1, M5*

I. Introduction

The work environment is dynamically influenced by the rate of transformation, the ambiguity, volatility, and uncertainty of occurrences, as well as the accelerated expansion of current technology. This has impacted trends and approaches employed in workforce development resulting in shift of expectations, development models and demand for the development of new techniques of training (Williams, 2020). According to Holton and Swanson (2008), the concept of personnel development has evolved beyond simply organizing scheduled events aimed at changing behavior. Instead, there is a noticeable shift towards abandoning formal training and emphasizing the creation of a culture that encourages lifelong personal growth (Morgan-Klein and Osborne, 2007; Jarvis, 2010; Sloman, 2007). This shift encourages ongoing learning, teaching, and the act of relearning within the framework of one's job (Wong and Aspinwall, 2004; Bersin, 2018; Gottfredson and Mosher, 2010). Employers anticipate that employees will take on more accountability for improving their current skills and acquiring new ones. This is essential for meeting the demands of their current roles, preparing for potential leadership positions, and securing their own employability. This enables individuals to effectively navigate and adapt in times of change (Noe and Molloy, 2010). The Volatile, Uncertain, Complex and Ambiguous (VUCA) environment in which firms today operate necessitates such a novel strategy. The volatility of the business environment makes it difficult to forecast events, their pace, and scale creating a global impact on business, economy, and society.

The sudden outbreak of Covid-19, a deadly illness caused by the Corona Virus (SARS-CoV-2), took the world by surprise and presented a significant challenge to the global community (Dhawan, 2020). The global crisis caused by Covid-19 altered the traditional conventions and caused technological disruption poising for innovation in their skill landscape (Coursera Global Skill Index, 2020). Some industries had to face digital transformation at an enhanced pace by redefining their business operations with a distributed workforce and virtual collaboration. Amidst the crisis, technology played a crucial role in facilitating widespread communication and remote work like never before, acting as a vital enabler (Kshirsagar *et al.*, 2020; CIPID, 2020; Raheja, 2021; *Training Magazine,* 2019; Cai and Yates, 2020). This outbreak also revolutionized the field of organizational learning and development by re-defining roles, attitudes, beliefs and competencies (Mikolajczyk, 2022). As per

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the report, companies addressed training and development amidst the epidemic using diverse approaches. In some organizations, the development sector came to a halt due to layoffs, financial constraints, and terminated contracts with trainers. Nonetheless, other companies embraced investments in remote tools and alternative methods of employee development, leading to an era of exceptionally swift digital transformation within the field of Human Resource Development (McGuire et al., 2021; Kniffin et al., 2020). Gamification became common in employee training in some circumstances (Armstrong and Landers, 2018).

Due to the pervasive impact of the pandemic, organizations realized that if a considerable investment is not made for reskilling and upskilling the workforce, they may not have the resilience to impeccably swivel through future crisis (Coursera Global Skill Index, 2020). Companies had to allocate more resources towards learning initiatives and make a firm commitment to upskilling and reskilling their employees (Agrawal et al., 2020). Leading to the widespread adoption of fully digital techniques aimed at recreating the immersive nature of in-person learning through live video sessions and social sharing. The intricacy of the processes encountered by those responsible for talent development enhanced the necessity for an in-depth qualitative investigation to clarify the impact of context, restrictions, and adjustments arising from the epidemic on existence in an online medium.

II. Literature Review

Human capital is acknowledged as a valuable and desirable asset that, when utilized efficiently, propels the market value growth of a company. Over time, it becomes evident that human capital holds greater significance than the ownership and utilization of physical resources and financial capital (Somogyi, 2020; Nadiv et al., 2017; Tharenou et al., 2007). In line with Mayo's (2000) findings, workforce development emerges as the primary catalyst for driving value growth across various industries. This encompasses the ongoing process of acquiring and sharing knowledge and experience.

A fundamental objective of L&D departments within business organizations has consistently been supporting individuals in their journey of retraining and enhancing their skills. Because of strong demographic, socioeconomic, and economic change, this demand has persisted for a long time (Mikolajczyk, 2022). However, there should be precise objectives of training, such as competency improvement for increasing employee personal effectiveness for their present work and generating future value by developing people's expertise and potential.

Training encompasses a structured approach aimed at supporting employees in enhancing their personal and professional skills, knowledge, attitudes, and behavior, enabling them to enhance their performance in specific organizational tasks (Karim, Choudhury and Latif, 2019). It is a structured approach to learning and development that enhances the effectiveness of individuals, groups, and the overall organization (Goldstein and Ford, 2002). The success of a training program majorly depends on the identification of parameters of training and systematically supported with effective programs (Singh and Malhotra, 2018). Identification of training requirements help with design and delivery which is critical for appropriate goal setting and the performance measurement tool (Aguinis and Kraiger, 2009). Thus, careful consideration and planning should be exercised while creating the training program based on the identified needs of the employees for developing competence and behavioral modification (Alwekaisi, 2015). Knowles (1980) argued that the learning needs of adults are different as compared to children because adults possess distinct experiences, motivations, and orientations, leading to different learning needs. This perspective becomes particularly significant in professional education as it emphasizes the recognition and addressing of disparities between learners' existing knowledge and what they acquire through the experiential aspect of their programs. The theory, further classified into instrumental, humanistic, transformative, social, motivational, reflective, and constructivist learning theories (Mukhallalti & Taylor, 2019), focuses specifically on instrumental, humanistic, and transformative theories for the current study. Instrumental learning theories encompass behavioral theories, cognitivism, and experiential learning. Behavioral theories concentrate on environmental stimuli triggering changes in an individual's behavior (Thorndike,1911 & Skinner,1954; Taylor & Hamdy, 2013). Therefore, controlling the learning environment is crucial to achieving a specific response (Torre, 2006). Cognitive learning theories involve mental and psychological processes that aid learning by attributing meaning to events, encompassing insight, information processing, perceptions, reflection, metacognition, and memory (Piaget,1952; Bruner, 1966; Ausubel, 1968; Gagne et al., 1992). Experiential learning and knowledge construction occur through interaction with an authentic environment (Abdulwahed, 2010), with Kolb (1984) asserting that learning and knowledge construction are facilitated through experience. Humanistic theories, also known as facilitative learning theories (self-directed learning), emerged in the 1960s, proposing that learning is self-directed. Adults can plan, manage, and assess their own learning to achieve self-actualization, self-fulfillment, self-motivation, values, goals, and independence in their learning (Mukhallalti & Taylor, 2019). Transformative learning theories, categorized as reflective learning, center on the transformation of meaning, context, and long-standing propositions. Transformative learning involves three stages: the first stage entails experiencing a confusing issue or problem and reflecting on previous perspectives about the event. The second stage involves critical evaluation and self-reflection on the experience, requiring metacognitive thinking. The third stage entails taking action on the issue based on self-reflection and previous assumptions, leading to a transformation of meaning, context, and long-standing propositions (Mezirow,1978, 1990, 1995; Brookfield,2000).

Along with thoughtful contemplation of the learning theories while designing a program, maintaining an amicable learning environment for the employees to expand their organizational knowledge and competitive ability, careful selection of suitable delivery methods and techniques for conveying content to trainees, classifying and sequencing instructional goals, and determining the required instructional paraphernalia and strategies to facilitate learning and knowledge transfer are all important steps in the design of any training program (Salas & Cannon-Bowers, 1997). According to Martin, Kolomitro, and Lam's (2013), training method is a set of systematic procedures, activities, or techniques designed to impart KASA (Knowledge, ability, skill, attitude) to participants which has direct utility in improving their job performance. Better training methods can keep trainees interested in the topic, promote effective learning, and produce better results for organizations. A well-intended training program may fail to achieve the desired outcome of improved team performance if it lacks a scientifically based methodology (Kwao, 2015). Methods of delivery are crucial in training. It is possible to maintain learner interest in the subject, promote effective learning, and improve organizational outcomes through better training approaches. Changes in training methods have occurred over the last decade because of increased learner needs and technological advancements (Jevana, 2017).

When surveyed by the Ken Blanchard Companies (2020), 17% believed that classroom training would continue to be the prevailing and preferred method of learning and development, 24% viewed live location meetings as reserved for high-impact events and 56% of the participants believed that traditional classroom activities would remain valuable and be integrated into hybrid development programs. Additionally, findings from a research study conducted by the 'Association for Talent Development' in August 2020 revealed a substantial rise in the adoption of e-learning within organizations, with a growth rate of 99% compared to 76% five years ago. The report also highlighted that all surveyed organizations planned to incorporate e-learning as a component of their HRD activities over the next five years (ATD Research Report, 2020). According to the Digital University and Great Digital Report (2020), 77% of respondents believed that online learning can offer the same experience as traditional education when enquired about their perceptions of distance learning, their experiences and preferred methods of learning, and outlook of the organization towards virtual education.

Based on desk research, it can be concluded that the global health and economic crises had a substantial impact on the level of labour capabilities. To succeed in a challenging business environment and gain a competitive advantage, organizations had to revamp their existing state of operations with an increasing demand for new skills, which could be addressed through staff reskilling.

III. Research Methodology

Research Gap

The appraisal of available evidence reveals that a considerable sum of studies has been conducted on training, the process, the methods, the types, the conditions, the strategies, and the environment, which can produce desirable outcome of training. Most training-related research in the literature focuson meta-analysis of the available secondary literature or follow quantitative method to data analysis using tools and techniques like ANOVA, factor analysis, and structural equation modelling after gathering the data through surveys or questionnaires.Studies that use a qualitative approach to data processing are quite rare. Moreover, in the context of Covid-19 pandemic no studies have been done to focus on the aspects pondered while making changes in training methods in the context of IT organizations operating in the eastern region of India. Hence this study aims to contribute new insights by addressing the research gap through a qualitative data analysis approach. Thematic analysis, facilitated by NVivo software developed by QSR International, has been used to examine the challenges encountered by organizations in re-designing physical training programs in virtual platforms. Additionally, the study has explored the attitudes of learners towards these virtual programs from the perspective of L&D practitioner. A qualitative approach reveals underlying aspects that are harder to identify using conventional quantitative methods (Goyal and Deshwal, 2022). Therefore, in order to study and better understand the perspective of the L&D practitioners towards the outcome of re-designing the training programs and the learner behaviors towards the organizational programs for workforce development, qualitative data analysis helped to provide deep insight by highlighting the various factors more rigorously that were considered while re-designing the programs.

Objective of the Study

The purpose of the study is to illustrate how organizations had adapted HRD operations in response to the COVID-19 epidemic through customization of developmental programs to align with employee needs, supporting their continued growth and advancement in their professional roles. The study also intended to investigate the elements that were considered while determining training approaches and developing training designs.

Research Method

Initially five sample organizations were selected for the study based on their operations in the eastern part of India, enlisted in the first fifty of the 'Fortune India 500 list' (FY2020). In this descriptive research, non-probability sampling technique has been used to reach the sample units. With the help of snowball sampling technique, personnels who are involved in planning, designing, creating and delivering programs for talent development of the workforce in sample organizations considered for the study were contacted. Semi-structured telephonic interviews with L&D professionals were conducted. The interview schedule consisted of open-ended questions that were initially developed from literature and then later were modified following the pilot case analysis. Inductive approach has been used to define the construct used in the study.

Data Collection

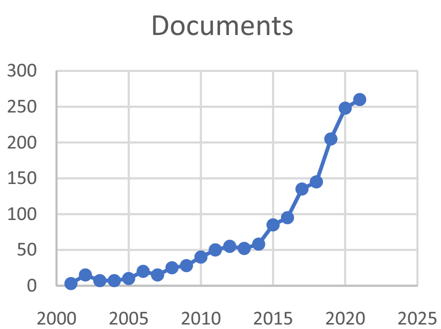
Appointments were scheduled with the concerned personnels as per their convenience. Before conducting the interview, the participants were provided with information about the study's objectives, and their consent was obtained to record their conversation. The duration of the interview was 30 to 45 minutes, and it was conducted primarily in English language.With the aid of a voice recorder, the interview responses were captured and later transcribed in Microsoft word. The data was then imported to NVivo software (Version12).

Data Analysis

The data was then analyzed with the help of a popular qualitative data analysis software program called NVivo. The software helped to carry out the analysis across all cases for different attributes along with an overall view of the distribution of the different attributes assigned for each case.

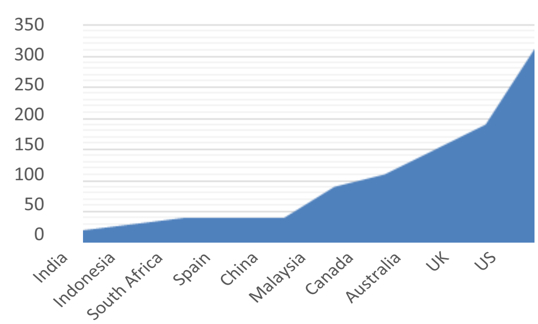
The Scopus database was searched for recent studies that utilized NVivo in order to better understand the expanding significance of this qualitative software. Scopus database, in-depth search TITLE-ABS-KEY: "NVivo" generated 4743 documents, 1378 of which were social science-related (important for this study). When results were limited to articles written in English, a total of 1266 papers using NVivo were found. Figure 1 shows the increasing pattern of NVivo-based research articles from 2000 to 2020. Figure 2 shows a chart of content analysis research by nation, showing that only countable studies have been conducted in India.

***Figure 1**: Pattern of NVivo research articles*



***Source:** Goyal and Deshwal, 2022*

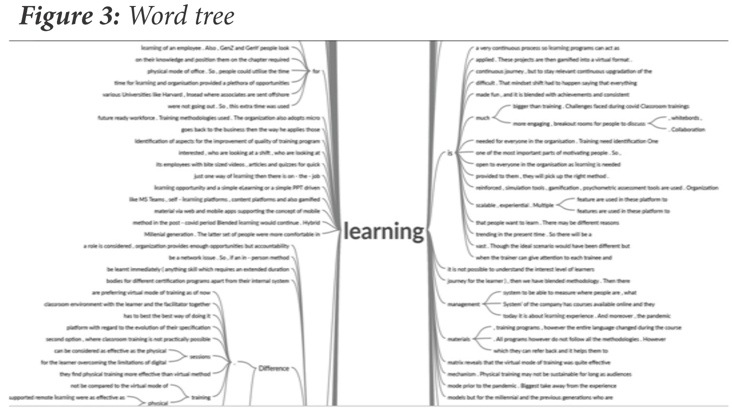
***Figure 2**: Content analysis research by nation*



IV. Findings

A word tree was created through a textual search query for the phrase 'learning.'This function serves the purpose of pinpointing words or phrases within a study, as explained by Guo in 2019. When using this feature, the query produced results across different segments of the search query. Clicking on any of these segments causes NVivo to highlight the entire path of that particular segment. This functionality proved valuable in discerning multiple factors associated with PULP. Figure 3 represents the word tree.

***Figure 3:** Word tree*



***Source:** Author*

The demographic profile of the executives who were interviewed for the study is presented in table 1.

Table 1: Respondent profile

Demographic features	Measures	Percentage
Gender	Male	68.75%
	Female	31.25%
Occupation	Program head_Training & Development department	18.75%
	Head of LMS_Training & Development department	12.50%
	Location head_Training & Development department	25%
	Head of leadership development programs_Training & Developmentdepartment	18..75%
	Head of Strategic learning initiativesTraining & Development department	12.50%
	Head of behavioural programs_Training & Development department	12.50%
Work experience	10-15 years	18.75%
	15-25 years	43.75%
	26-35 years	12.50%
	36-45 years	18.75%
	Above 45 years	6.25%

The next table 2 represents the findings from the interview grouped as codes, categories and themes.

Table 2: Findings from the interview.

Codes	Categories	Themes
Overcome the midblock of the people and redefining new ways in virtual space	Challenges faced during pandemic	Pandemic impact
Complete shift from Physical programs to virtual programs		
New eLearning modules created around unique learning needs triggered by the pandemic	Approaches to overcome the challenges	Learning Ecosystem
Introduction of games & other engagement tools		
Introduction of skill tracking system		
Collaboration with learning partners for experiential learning		
small sized modules for impactful learning		
Activity based learning		
Creating knowledge pool	Purpose of Reskilling	
Close job vacancy internally		
Business/client demand		
Mapping employee career growth aspiration		
Skill upgradation with respect to business requirement		
Creating billable associates		
Sustenance in the VUCA world		
Opportunity forecasting	Training Need Identification	
Performance appraisal of employees		
Identification of skill gap		
program goal alignment with the business requirement	Factors of training design	
Delivery method & methodologies		
Availability of internal and external resources		
Time period and cost of the program		

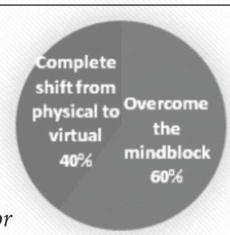
Audience profile		Training process
Duration of learning	Factors that determine training approaches	
Program outcome expected		
Target audience (learning styles, location)		
Scalability of the program		
Program content		
Organization structure, resources and cost		
Group discussion, case studies, simulation, web-based study	Training methodologies	
Self-learning materials		
Videos, articles, quizzes, reference material		
Pre read or post read materials, assignments		
Physical training more effective than virtual training	Effectiveness of virtual training via-a-vis physical training	Perspective
Virtual training as effective as physical training		
Comfortable	Comfort level of learners towards virtual solution	
Initial discomfort		
Comfortable but less focused		
Multiple learning opportunities in virtual space	Insight	Transformation
Small sized program modules for an impactful training in virtual platform		
Empathy towards learner's need for building trust		
Blending training methods for engaging the learners		
Overcoming the mind block to effectively work in virtual space		
Work etiquette	Emerging learning needs	
Time management		
Crisis management		
Digital skills		
Emotional intelligence and wellness		
People management		
Artificial Intelligence & Augmented reality for immersive learning	Forecast	
AI for content gamification, simulation		

Source: *Author*

A case classification was developed, and attribute values were assigned based on the responses of the sample units to identify the challenges faced during the pandemic. Figure 4 represents the matrix which identifies that the major challenge was to overcome the mind block of associates that virtual training can also be as effective as physical training followed by complete shift of physical programs to virtual programs.

Fig 4 represents the various measures taken to overcome the challenges.

Organization: Challenges faced during pandemic-
Cases by attribute value



Source: *Author*

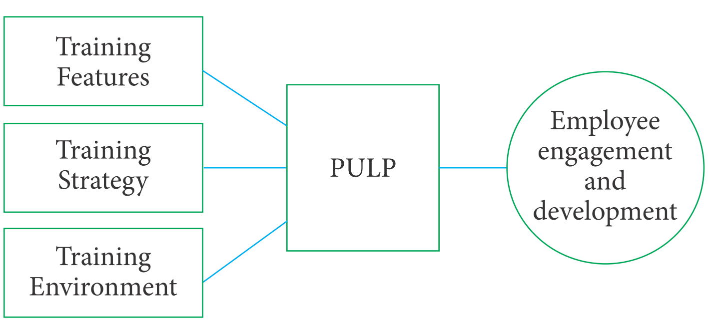
To overcome the mind block that virtual training could also create a similar impact as physical training, appropriate actions had to be ascertained so that it could provide experiential learning for the learners of all age groups. Despite encountering some initial challenges, the L&D managers took proactive measures to encourage learners to embrace the change. A detailed view of the same is presented in figure 5with the help of a hierarchy chart that helped to identify and examine the patterns in the data coded. In NVivo, there are two types of hierarchy charts: tree map and sunburst. The sunburst chart is a radial diagram that displays multiple hierarchical levels, with the innermost circle representing the highest level of the hierarchy. This chart visually illustrates the different elements influencing employee engagement and growth in a positive manner.

Figure 5: *Sunburst chart of the codes identified in the dataset.*

Source: *Author with the help of NVivo*

Considering the factors in learning ecosystem in the chart as the training features, training design and training process as training strategy and perspective and transition as training environment, it is observed thatall these factors are highlighted in the model of pandemic ushered learning practice (PULP)in figure 6 which emerged as a result of the pandemic. The pandemic prompted significant alterations in three key areas—training features, training strategy, and training environment. Substantial modifications were necessary in each category to effectively involve learners. The effective utilization of these features resulted in the emergence of novel learning practices catalyzed by the pandemic, fostering employee engagement and development amidst challenging circumstances.

Fig 6: *Conceptual model of 'Pandemic ushered learning practice'*



Source: *Author*

When L&D managers were questioned about their experience in crafting the training program, they underscored the critical significance of three factors in promoting employee engagement and development during the catastrophic situation. These essential factors are outlined below.

- Training features: In this research, it denotes the rudiments designed to tackle corporate goals while also providing a clearly outlined approach to enhance performance. These encompass training materials, sessions, modules, supplementary materials, digital learning resources, gamified activities, hackathons and learning pathways.
- Training strategy: This is a comprehensive strategy outlining how the proceedings will unfold to achieve the greatest influence on the audience while making the best possible use of available resources. It encompasses informal learning sessions, collaboration with learning partners, simulations, learning through devices, skill monitoring system, learning platforms, action-based learning and hybrid learning.
- Training environment: It is an environment or framework crafted to aid individuals in acquiring fresh skills, abilities, or understanding, fostering an atmosphere of inclusiveness and confidence. This encompasses backing from supervisors, a conducive setting for skill application, and a compassionate approach towards those who are learning.

All the above factors influencedPULP which in turn impactedemployee engagement and development focussing specifically on instrumental, humanistic, and transformative theories of the adult learning theory. In the extant literature it has been observed that careful selection of training strategies and the methodical application of paraphernalia and tactic played a vital role in creating learning experiences (Singh and Malhotra, 2018; Baldwin & Ford, 1988; Salas & Cannon-Bowers, 1997; Taylor, 2023; Aslan, 2023; Foster, 2019; Bahreini, 2017).

The effectiveness of training is impacted by three primary factors: the design and delivery of instruction, the characteristics of the trainees themselves, and the conditions present within the organization or work environment (Baldwin & Ford, 1988). While the first two factors are externally derived, the third factor is an inherent aspect related to the learners and is influenced by how they perceive their previous training encounters. In this regard, managers or supervisors play a crucial role in improving the outcomes of training endeavours (Khalid, 2015). It's important to note that the 70:20:10

framework is widely utilized byprofessionals worldwide to create efficient learning and development programs (Johnson et al., 2016).

Furthermore, the PULP model incorporated this framework to adopt a more comprehensive approach to learning, integrating experiential learning, socialization, and formal training.

V. Discussion and Conclusion

This study aimed to focus on learner's engagement during a time when the developmental procedures had been severely impacted due to the pandemic. As a significant portion of employees shifted to remote work, the necessity for incessant learning and enduring performance assistance had become increasingly critical. The conventional norms and familiar pathways of developmental activities were not the viable possibilities. Digital transformation was no longer a choice, but a necessary undertaking driven by an imperative demand. The biggest challenge was converting the contents of physical training to virtual training and overcoming the mind block that virtual training could also create a similar impact as physical training. L&D function had a critical responsibility ahead of them by managing resources to mobilize the team to adjust to changes proactively, considering team members' psychological needs to significantly increase their motivation and productivity during development procedures. Its foundation was the development of common preparedness among employees and the gradual removal of barriers, particularly at the psychological level. Though several studies emphasized on the relevance of content, methodology and appropriate environment towards effective training and developmental activities but none of them emphasized on the different aspects more rigorously using qualitative data analysis approach. Hence this study provides a comprehensive outlook on the different strategies adopted by organizations to swivel through the crisis and yet engage the workforce in developmental activities.

Among the different strategies adopted, the primaryone wasto transformfull-day training sessions into smaller micro-learning sessions that could seamlessly fit into a learner's schedule, enabling them to carry out their other essential duties. Developing compact e-learning modules proved advantageous in conserving time and resources, fostering concentrated and captivating sessions that enhanced information retention, motivation, and performance. Supplementary materials for both pre- and post-training reading were provided to assist learners in referencing during or after the training, alongside on-demand access to digital learning materials. This approach established learning paths, offering continuous learning prospects distributed across a span of time. Additionally, the utilization of social platforms aided in connecting with subject matter experts and facilitated the generation and exchange of knowledge within the organization. Moreover, incorporating action-based learning encouraged learners to collaborate in groups, working with peers to formulate strategies for addressing real issues, thereby promoting experiential learning.While the Learning and Development (L&D) sector traditionally emphasized formal learning structures, the outbreak of the pandemic compelled them to conceive and implement strategies that nurture informal learning. This encompassed the establishment of coaching and mentoring initiatives, partnerships with educational collaborators, integration of games into learning environments, and orchestration of hackathons to embrace a range of varied learning approaches for immersive educational experiences. A hybrid learning model was embraced to incorporate experiential, social, and formal learning elements. Furthermore, AI-driven technologies were integrated to simulate learning settings and leverage device-based learning, resulting in the creation of virtual classroom encounters enriched with a diverse array of captivating programs. These endeavors were orchestrated to provide learners with a remarkable and impactful educational journey. Additionally, a system for tracking skills was introduced, empowering professionals to set objectives aligned with their career ambitions. Beyond just transforming the style and methodology of employee training, organizations introduced innovative staples in the process to ensure sustained learner motivation. Most importantly the supervisor's support played a pivotal role in establishing conducive learning conditions for employees, actively aiding in their implementation, and furnishing necessary materials and developmental resources. As delineated in existing scholarly works, inadequate developmental support from supervisors influences younger and older employees differs significantly (Vianen, 2011). As older employees frequently have reduced confidence in their learning aptitude (Maurer et al., 2003), the perception of insufficient developmental aid could intensify and strengthen these diminished self-efficacy beliefs. Studies rooted in the social cognitive perspective of career development have revealed that a person's intentions to pursue specific career-related pursuits are impacted by their self-efficacy beliefs (Lent, Brown, & Hackett, 1994). Amongst several factors, these self-efficacy beliefs can be molded by verbal encouragement from influential figures, such as an employee's supervisor (Bandura, 1986). Thus, the supervisor-derived support during that crisis phase fostered a sense of empathy towards the learners' needs, consequently cultivating trust among employees towards the organization.

In respect of the above facts associated with the research, the study contributes to the following.

This research introduced a conceptual framework (Figure 6) that underscores the various actions for employee engagement and development. The model presented three dimensions that are training features, training strategies and training environment. Furthermore, this study added to the understanding of numerous factors within each dimension, which could serve as valuable resources for future researchers and academics seeking to delve into employee engagement and development within this field. As a result, it established a foundation for setting research agendas for scholars and academics to pursue in the future.

The modifications introduced to the entire training system during the pandemic aimed at enhancing employee engagement and development had a positive impact on both employees and the organization. These changes not only aided in crisis management and time optimization but also focused on nurturing the emotional well-being of individuals, facilitating their continuous learning and sustained performance support. Consequently, the research offered valuable managerial insights. It identified factors within each dimension of training features, training strategies, and training environment. These insights could guide managers across various industries in creating and shaping their training programs to enhance engagement and development within their workforce context. With the anticipation of the hybrid training model persisting in the foreseeable future, the current study would help managers to formulate concise programs that enable efficient learning, aligning with the preference of learners to seamlessly integrate learning into their work routines. While digital solutions won't replace other development methods, the advancing quality of online learning, combined with its scalability, accessibility, and customization capabilities, underscores its potential to play a more significant role in future support for workplace skill development.

The ongoing presence of hybrid learning in most businesses emphasizes the heightened significance of prioritizing the development of hybrid learning approaches. Thus, the study would help management to devise strategies that can integrate the flexibility of self-guided training and online resources with highly engaging live interactions. With the advent of rapid digitization, where trainers and participants are physically distant and connected only through screens, ensuring that learners remain attentive and engaged in this mode undoubtedly calls for additional research to achieve a higher level of efficacy and productivity. This is because building hybrid programs contemplating varied learning needs and methods, features of the target population, and organizational environment resources can yield the greatest outcomes.

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ASSESSING THE PERCEIVED BENEFITS OF GREEN APPAREL: THE ROLE OF BRAND ENGAGEMENT, BRAND AWARENESS, AND PAST ENVIRONMENTAL BEHAVIOUR IN PURCHASE DECISION-MAKING

Kapil Agrawal*, Dr. Swati Soni, Dr. Khushbu Agarwal*****

Purpose: *The current study investigates how customers' perceptions of the benefits of buying green apparel are influenced by their past environmental behaviour, brand engagement, and brand awareness, as well as how these aspects affect consumers' actual purchasing decisions.*

Design/Methodology/Approach: *An on-site survey methodology was used to gather information from cities across India. 450 questionnaires were analysed using IBM SPSS AMOS 22.*

Findings: *An SEM analysis revealed that the perception of the environmental advantages of green clothing and upcoming sales of green clothes were all influenced by past environmental behaviour, brand engagement, and brand awareness.Improving one's self-image and the feeling that one is getting their money's worth by purchasing fair trade clothing were two of the perceived benefits that customers found to be beneficial.*

Originality/Value: *The findings have strong implications for the manufacturers of environmentally friendly apparel viz. increasing customer knowledge of the ethical, physical, and aesthetic benefits associated with their products may help them garner a customer buy in for green apparels.*

Keywords : *Green apparel, Brand Awareness, Past Environmental Behaviour, Brand Engagement, Green Apparel Perceived Benefits, Green Apparel Purchase Behaviour*
JEL Classification Code: *Q56, M31, L67*

I. Introduction

India holds a position in the textile market, both in terms of manufacturing and exports. It ranks second as the cotton producer globally and contributes substantially to silk, wool and jute production. India's textile industry is highly diverse encompassing an array of products like yarn, fabric, clothing and home textiles. Furthermore India's textile sector plays a role in its economy by employing millions of people and serving as a driver for economic growth. It fosters innovation and creativity, while propelling India to the forefront of the fashion industry on a scale (ibef.org).

India has also become a player in the fashion market. The country takes pride in its heritage of textile production methods. Unfortunately the fashion industry has gained a bad reputation for being highly polluting. It contributes significantly to water and air pollution as greenhouse gas emissions. Moreover the industry often exploits workers in developing nations. Clothing that is manufactured safely and created from sustainable resources is known as sustainable apparel. Materials that are produced sustainably do not hurt the environment or exploit their workers. Sustainable production techniques reduce pollution and waste (Cho et al., 2015).The sustainable textile market in India is expanding quickly and is anticipated to do so in the years to come. Several government programmes, such as the National Mission on Sustainable Textiles, assist the nation's sustainable textile sector.India is well poised to dominate the global market for sustainable fashion. The national government is dedicated to supporting sustainable development, and it has a robust textile sector with a long history of using sustainable production techniques.

Although sustainable fashion is becoming more and more popular among global fashion celebrities and designers, Indian consumers have not yet fully embraced it. However, to produce attractive clothing lines, Indian fashion designers are increasingly taking cues from their foreign counterparts and promoting the use of natural materials, plants, and highlighting the importance of sustainable products and the growing worldwide awareness of environmental concerns. Sustainable fashion and clothes are once again receiving attention due to the increased environmental pollution brought on by the consumption of garments(Harris et al., 2016).

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A McKinsey study found that 60% of produced and purchased clothes is thrown away in landfills within a year of its production. Indian clothing manufacturers work together with regional weavers and craftsmen to lessen their carbon footprint. In spite of the global growth of the eco-apparel sector, India still has low levels of consumption and uptake. However, research indicates that younger customers like apparel brands that practice ethics or fair trade. The demand for environmentally friendly clothes has increased as people become more conscious of environmental issues, fair-trade principles, and the effects of the textile industry on natural resources. (Mckinsey, 2022).

The research aims to test the impact of brand awareness, brand engagement, past knowledge of eco-friendly clothing, and green product attributes on the purchasingbehavior of green clothing in the context of adeveloping economy.By exploring these factors, this study seeks to contribute to the existing knowledge on eco-friendly clothing. The results of this research can help apparel manufacturers and designers promote green apparel as a symbol of a sustainable lifestyle and personal identity.

II. Review of Literature

Environmentally friendly clothing is preferredover traditional clothing as it leads to less pollution and less greenhouse emissions, uses less water and chemicals and is thus also healthier(Harris et al., 2016).Besides, it is made in factories with safe working conditions and fair pay, it has advantages for the employees also. For consumers to become aware of sustainable clothing, brand awareness and brand engagement plays a crucial role. With the help of advertising and social media, brands may interact with customers. With their internal organisational policies and practices, they may also promote sustainable clothing (Weber, 2021).Brands can change the world by interacting with customers and spreading the word about sustainable clothing. They can enhance the lives of employees and lessen the fashion industry's negative environmental effects.

Literature cites a few studies exploring the impact of brand awareness, brand engagement and past environmental behaviour on customers' green apparel buying behaviour. However, all these studies have been independently administered. There is a lack of research integrating the abovementioned variables in a single study. The current research addresses the gap in the extant literature and addresses the same.

Brand Awareness and Consumer perception for Green apparel

The significance of brand awareness within the marketing discipline is in its direct influence on consumers' brand perception and subsequent impact on their purchase behaviour (Keller, 1993). Several scholarly studies have underscored the importance of brand recognition and its positive impact on consumers' perception of environmentally sustainable apparel.

The research conducted by Luchs et al. (2010) illustrates that individuals with a higher level of familiarity with a specific environmentally conscious clothing brand are more inclined to allocate a greater proportion of their financial resources towards obtaining it, in contrast to individuals with lower levels of awareness. The aforementioned discovery indicates that the way consumers perceive the value of environmentally friendly clothing may be positively affected by their degree of brand familiarity.

Furthermore, it is imperative to recognise that the development of brand awareness has a significant role in moulding customers' attitudes of the environmental advantages associated with the adoption of sustainable apparel. The study done by Lee and Lin (2022) aimed to investigate the impact of brand knowledge on customers' perceptions of the environmental benefits associated with green clothing. The findings of the study revealed a favourable relationship between brand awareness and consumers' views of the environmental benefits associated with green apparel. The authors posit that individuals with a heightened level of awareness regarding a certain green clothing brand are more inclined to hold the belief that the brand's merchandise has ecologically beneficial attributes.

H1: Brand Awareness affects consumers' perception of green apparel.

Brand Engagement and Consumer perception of Green apparel

Recent studies have revealed that brand engagement has a significant impact on consumers' perceptions of environmentally friendly apparel. In a study conducted by Joshi and Shrivastav (2019), it has been shown that brand engagement has a beneficial impact on consumers' perceptions and purchase inclinations towards environmental friendly clothes. The findings of the study indicate that those who actively participate in interactions with sustainable fashion firms on social media platforms have a greater degree of consciousness and understanding regarding environmentally friendly apparel. Consequently, this results in a favourable impact on their consumer buying patterns.

Brand involvement has the potential to augment consumers' emotional affinity towards sustainable fashion labels, hence fostering their inclination towards selecting environmentally conscious alternatives. According to Hwang and J. Kandampully (2012), emotional attachment to a company may lead to increased brand loyalty and a higher propensity to purchase on sustainable items. Hence, by active consumer engagement across many channels, including social media, sustainable fashion firms have the potential to cultivate a devoted customer base and augment their market presence within the eco-friendly clothing sector.

According to the findings of Jung et al. (2020), the implementation of effective communication methods that involve brand engagement has the potential to cultivate a favourable perception of sustainable fashion brands among consumers. This, in turn, can result in increased levels of trust and brand loyalty. Hence, via the strategic use of many communication platforms, sustainable fashion manufacturers may effectively highlight their commitment to sustainability and values, thereby cultivating a robust brand image and influencing consumers' perceptions of environmentally conscious apparel.

The current body of scholarly work has brought attention to the notable impact of brand involvement on consumers' perception and purchasing patterns in relation to environmentally-friendly clothing. Through the utilisation of diverse channels, sustainable fashion firms have the potential to augment consumers' consciousness and comprehension regarding eco-friendly clothing, cultivate emotional affinity towards their brand, and proficiently convey their sustainability initiatives and principles. Hence, it is imperative for sustainable fashion manufacturers to prioritise brand engagement as a pivotal approach in order to foster the adoption of environmentally-friendly clothing and cultivate a devoted customer following.

H2: Brand Engagement affects consumers' perception of green apparel

The Influence of Past Environmental Buying Behavior on Green Purchasing

The green purchasing behaviour of consumers is influenced by various key elements, including their prior environmentally-conscious actions, attitudes towards such behaviour, and level of understanding regarding environmental concerns (Nekmahmud& Fekete-Farkas, 2020). Mim et al. (2022) assert that the degree of eco-literacy, environmental comprehension, and dedication to environmental concerns among consumers serve as significant predictors of green behaviour. Moreover, it is observed that consumers have a higher inclination towards favouring environmentally friendly items when they actively engage in pro-environmental activities and events. The adoption of environmentally responsible conduct has been found to have a substantial influence on green consumerism (Pickett-Baker & Ozaki, 2008).

Ethical consumers exhibit a greater propensity to purchase environmentally friendly products. However, there are instances where their purchasing choices may be influenced by external factors, diversions, or engaging in automatic shopping behaviour (Carrington et al., 2010). The intention to engage in green purchasing is influenced by various factors, such as one's environmental attitude, level of environmental awareness, government initiatives, and the influence of peers. According to the study conducted by Zhao et al. (2014), in relation to the purchasing, utilisation, and recycling behaviour of consumers, disparities exist in the extent of environmentally conscious consumption and attitudes (Carrington et al., 2010). The essential components of green purchasing encompass the prioritisation of ethical concerns, a readiness to make commitments and sacrifices, and conscientious shopping habits.

The decision-making process of customers about green purchasing is multifaceted and subject to the effect of numerous factors. Based on the comprehensive analysis of the existing literature, the formulation of the following hypothesis has been derived:

H3: Past environmental buying behavioraffects consumers' decision to purchase green products.

Green apparel purchase behavior and green apparel perceived benefits

Within the scholarly literature, there has been considerable discourse about the significance of product attributes and brand knowledge/awareness in forecasting consumer behaviour pertaining to the purchase of green apparel. While certain studies have placed emphasis on the findings by Taljaard et al. (2018), there are opposing viewpoints that argue for the equal valuation of product attributes by customers.

According to Wiederhold and Martinez (2018), it can be inferred that individuals' views towards the purchase of environmentally friendly clothing could be influenced by several variables, including the availability of product information, the absence of appealing designs, and a lack of awareness regarding sustainable fashion options. The consideration of product attributes has a significant role in influencing consumer behaviour towards the purchase of environmentally-friendly clothes.

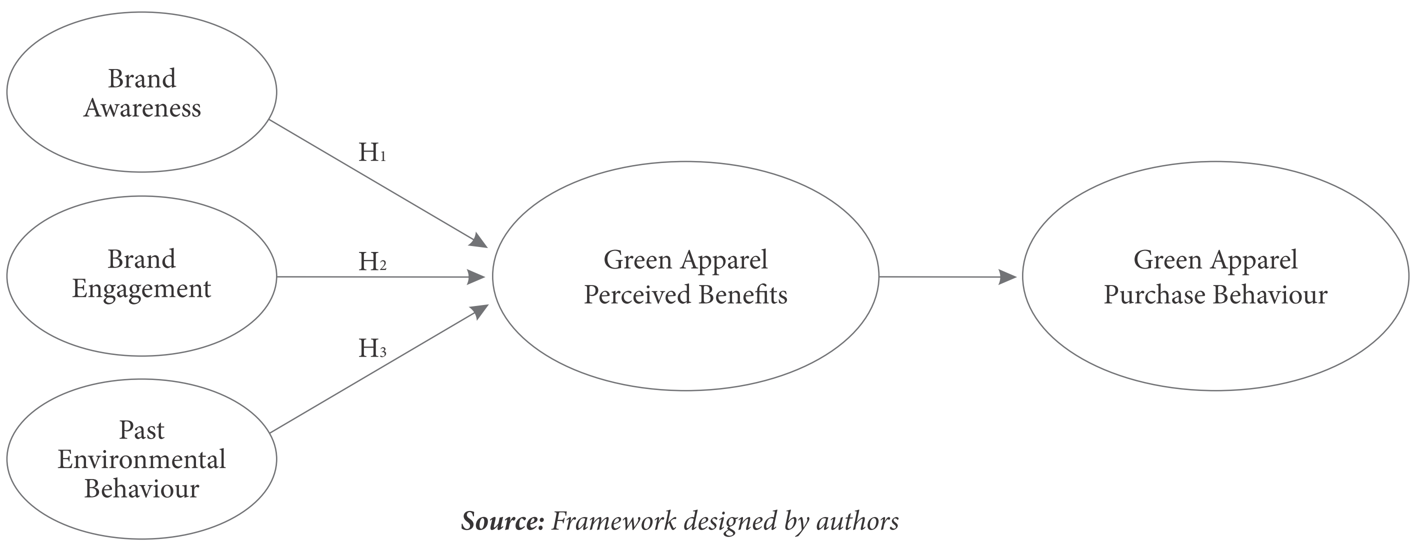
Furthermore, Schuitema& de Groot (2015) propose that customers tend to prioritise egoistic product attributes such as low price and brand identity over green traits like fair trade practices. The findings of the study revealed that attributes such as cost, extrinsic factors, and physical traits were deemed to hold greater importance compared to aspects associated with animal welfare or fair trade. Research findings also indicate that customers often see sustainable clothing as being less stylish and more costly compared to conventional fashion apparel, potentially leading to a reluctance in purchasing sustainable clothes.

In their study, Ruppert-Stroescu et al. (2015) suggest that in order to enhance the attractiveness of green garments among consumers, it is important to customise the benefits of eco-friendly clothing to align with consumers' preferences for uniqueness, innovation, and variability. The proponents argue that the act of wearing green attire should yield advantages that extend beyond personal gratification and self-enhancement.

One can posit, drawing upon extant research, that consumers' evaluations of the advantages associated with selecting environmentally sustainable clothing may exert an impact on their buying choices. This suggests that the decision to purchase green garments is impacted not just by the characteristics of the product and consumer awareness, but also by consumers' views of the advantages associated with sustainable apparel. Based on the comprehensive analysis of existing material, the subsequent hypothesis is posited:

H4: Green apparel perceived benefits affect green apparel purchase behaviour

Figure 1: *Conceptual Model*



Source: *Framework designed by authors*

III. Research Design and Methods

Sample:

To obtain a representative sample from various geographic regions of India, researchers conducted an on-site survey for five months from October 2022 to February 2023, utilizing convenience sampling in shopping malls and apparel stores. They approached 950 individuals, resulting in a final response rate of 54.70%, and received 520 completed surveys. However, only 450 questionnaires were analysed due to incomplete or illegible responses. Table 1 shows the demographic details of the analysed questionnaires. The researchers ensured anonymity to promote information sharing and minimized potential biases.

Table 1. *Sample Characteristics*

	Frequency	Percent
Gender		
Female	292	64.89
Male	158	35.11
Age(in years)		
18-24	30	6.67
25-35	174	38.67
36-45	195	43.33
46-55	51	11.33
56-65	0	0
Above 65	0	0
Monthlyincome		
Below INR 20000	16	3.56
INR 21-40K	49	10.89
INR 41-60K	92	20.44
INR 61-80K	89	19.78
INR 81-100K	108	24
Above INR100 K	96	21.33
Maritalstatus		
Married	327	72.67
Single	123	27.33
Total	450	100

Source: *Authors' computation based on primary data*

Instrument Measures

The investigation made use of dependable research scales that had been adjusted from past investigations. Using a Likert scale of 1 to 5, 1 being "strongly disagree," the respondents were asked to rate their comments," and 5 being "strongly agree." Using five different measures, the questionnaire was created to analyse green clothes purchase behaviour and collect demographic data.

The RSW green gauge past environmental behaviour scale, which was remodelled from(Pickett-Baker and R. Ozaki, 2008) was used to measure past environmental behaviour research. For measuring Brand Awareness, a scale specifically designed for green Brand Awareness by (Yoo et al., 2000), was adapted and contains eight items. To evaluate fair trade clothing characteristics like design, newest trends, consciousness, and perceived consumer benefits, a scale remodelled from (Y. Lee et al., 2014) research was used and it contains eleven items. The green apparel purchase behavior scale was remodelled from (Kim &Damhorst, 1998) research and contained six items. Lastly, the Brand Engagement scale, consisting of five items, was adapted from (Sprott et al., 2009). Four items were used in the green apparel purchase behavior scale.

Analysis & Results

The data analysis was done with IBM SPSS AMOS 22. Scales for this study were modified from those used in earlier research on green marketing. The applicability of said constructs in the setting of Indian green clothing was thought to necessitate pretesting of the scales. Confirmatory and exploratory factor analysis were performed as part of the quantitative study to determine the applicability of the scales, following (Netemeyer et al., (2003) approach.

A structural equation model was provided to investigate the connections between prior environmental behaviour, green peer influence, green knowledge, perceived benefits of wearing green apparel, and purchasing behaviour.

Scale reliability and validity

The authors eliminated three factors from the fair trade apparel feature scale, four from the green apparel purchasing behaviour scale, and eight from the prior environmental behaviour scale after pretesting. The deleted components failed to satisfy the scale development's recommended factor loading of.5 or internal consistency. The factors that were analysed are shown in Table 2.

The scales were validated using Papadas et al., (2017) methods. The underlying constructs were found using Varimax rotation, principal component extraction, and the constraint that the Eigenvalue must be greater than 1.The Kaiser-Meyer-Olkin (KMO) measure of 0.961 confirmed the factor analysis, and the 35-item, 5-factor model successfully described 74.41% of the variation.Cronbach's alpha values confirmed construct reliability and internal consistency. All constructs have alpha values above 0.7 indicating good internal consistency(Hair, 1992).

This validation method guaranteed that the study's scales measured the constructs of interest in Indian green clothing. The model accurately reflected the structures after some components were removed and their internal consistency and dependability were confirmed. This verified the data analysis and findings.

Table 2. *Exploratory Factor Analysis*

Items	Mean	SD	Factor Loadings	Cronbach's Alpha
Brand Engagement				0.91
I feel a sense of personal connection between myself and the brand of clothing I wear.	3.72	1.095	0.835	
Green apparel brand holds significant meaning to me, and I feel a sense of identification with it.	3.56	1.079	0.845	
Important clothing brands throughout my life have shaped a part of how I view myself.	3.32	1.079	0.854	
My favorite apparel brand is so integral to me that I consider it a part of myself.	3.35	1.107	0.847	

There is a connection between the brand that I favor and my s elf-perception.	3.49	1.144	0.859	
Past environmental behavior				0.917
I spend my money on products that were either packaged or created using repurposed products.	4.03	1.001	0.685	
I procure goods that come in refillable packs.	4.05	1.022	0.741	
I steer clear of buying things from businesses who don't care about the environment.	4.1	0.987	0.798	
I engage in recycling by disposing of bottles, cans, or glass appropriately.	4.26	0.984	0.786	
I engage in newspaper recycling.	4.23	1.004	0.783	
I participate in composting garden waste	4.3	0.997	0.736	
Brand Awareness				0.944
I am aware of the majority of green sustainable brands in the market.	4.02	1.026	0.75	
I am familiar with a large number ofapparel brands amidst the competition.	3.89	1.03	0.789	
I can easily associate features with brands in the sustainable apparel category.	3.96	1.033	0.781	
I am able to easily remember the logos or symbols for most sustainable apparel brands.	3.9	1.004	0.784	
It's challenging for me to visualize most of the sustainable apparel brands in my mind.	3.93	1.017	0.766	
Sustainable fashion brands often use biodegradable natural fibers in their products.	3.96	1.02	0.819	
Unsustainable fashion brands use chemical treatments on fabrics that can hinder their ability to be recycled sustainably.	3.96	1.026	0.795	
The biodegradability of natural fibers gives me confidence in making a positive environmental impact by supporting sustainable apparel brands.	3.76	1.085	0.595	
Green apparel purchase behavior				0.901
I prefer to purchase clothes items with a longer shelf life as opposed to contemporary stuff that soon goes out of style.	4.19	0.962	0.765	
My clothing purchases consist of items made from natural fibers grown organically.	4.12	0.978	0.717	
I favour buying apparel that has undergone minimal or non-existent dye processing.	4.25	0.928	0.76	
I buy clothes that are packaged or labelled in an environmentally responsible way.	4.18	0.981	0.712	
Green apparel perceived benefits				0.973
I value how fashionable environmentally friendly apparel is (fair-trade clothing).	4.06	1.031	0.678	

While looking for fair-trade clothing, I find retail exhibit to be interesting (green cloths)	4.16	0.981	0.755	
I like to look around brand-new fair-trade apparel businesses to discover their offerings.	4.04	0.984	0.752	
I regularly look for fair-trade (green) apparel to stay current on the newest items available.	4.09	1.005	0.769	
The approval of important people in my life is a motivating factor for me to buy green clothing.	4.19	1.005	0.84	
I enjoy feeling knowledgeable about my decision to purchase green cloths.	4.08	1.043	0.763	
I appreciate the individualized assistance I receive when shopping for green cloths.	4.08	1.005	0.791	
I enjoy associating myself with the issue of fair trade.	4.05	1.035	0.77	
Encouragement of large firms to stock fair-trade goods can benefit the larger community.	4.06	0.981	0.741	
I feel a greater sense of responsibility when I choose to support products that adhere to fair-trade laws.	4.06	1.004	0.746	
When I take legal action against merchants who flout fair-trade laws, I sense superior about myself.	4.1	0.999	0.782	

Source: *Authors' computation based on primary data*

IV. Results and Discussion

To evaluate model fit, Byrne (2013) suggested confirmatory factor analysis (CFA). The CFA's goodness of fit indices (CMIN/DF = 2.284; GFI 0.861; NFI 0.913; TLI 0.942; CFI 0.957; RMSEA 0.056) were within the acceptable range (Hair, 1992), confirming the analysis's adequacy.

Table 3 provides a summary of the findings from the convergent validity assessment using factor loadings, composite reliability (CR), and average extracted variance (AVE).All measuring items had factor loadings over 0.7 on their constructs (Fornell&Larcker, 1981). All constructions had CRs over 0.7, indicating strong internal consistency and dependability (Hair et al., 2013). The AVE values of each construct were over 0.5, indicating high convergent validity.

Discriminant validity measures statistically distinct constructs. (Fornell&Larcker, 1981)imply that the correlation between the constructs should be lower than the square root of AVE for each construct. For each component, AVE square roots and inter-construct correlations are shown in Table 4.Each component's construct correlations were less than the square root of the AVE, indicating the constructs' discriminant validity.

According to the study, the measuring model did a good job of assessing construct linkages. The convergent and discriminant validity studies demonstrated the constructs' internal consistency, reliability, and distinctiveness, and the CFA demonstrated a strong fit.These data support the study's measures and outcomes.

Table 3. Confirmatory Factor Analysis

Items	Factor Loading	CR	AVE
Brand Engagement		0.935	0.746
I feel a sense of personal connection between myself and the brand of clothing I wear.	0.89		
Green apparel brand holds significant meaning to me, and I feel a sense of identification with it.	0.907		

Important clothing brands throughout my life have shaped a part of how I view myself.	0.812		
My favorite apparel brand is so integral to me that I consider it a part of myself.	0.813		
There is a connection between the brand that I favor and my self -perception.	0.917		
Past environmental behavior		0.906	0.612
I spend my money on products that were either packaged or created using repurposed products.	0.701		
I procure goods that come in refillable packs.	0.826		
I steer clear of buying things from businesses who don't care about the environment.	0.768		
I engage in recycling by disposing of bottles, cans, or glass appropriately.	0.84		
I engage in newspaper recycling.	0.809		
I participate in composting garden waste	0.782		
Brand Awareness		0.955	0.706
I am aware of the majority of green sustainable bra nds in the market.	0.817		
I am familiar with a large number of apparel brands amidst the competition.	0.826		
I can easily associate features with brands in the sustainable apparel category.	0.819		
I am able to easily remember the logos or symbols for most sustainable apparel brands.	0.815		
It's challenging for me to visualize most of the sustainable apparel brands in my mind.	0.843		
Sustainable fashion brands often use biodegradable natural fibers in their products.	0.891		
Unsustainable fashion brands use chemical treatments on fabrics that can hinder their ability to be recycled sustainably.	0.902		
The biodegradability of natural fibers gives me confidence in making a positive environmental impact by supporting sustainable apparel brands.	0.74		
Green apparel purchase behavior		0.894	0.674
I prefer to purchase clothes items with a longer shelf life as opposed to contemporary stuff that soon goes out of style.	0.802		
My clothing purchases consist of items made from natural fibers grown organ ically.	0.881		
I favour buying apparel that has undergone minimal or non -existent dye processing.	0.707		
I buy clothes that are packaged or labelled in an environmentally responsible way.	0.871		
Green apparel perceived benefits		0.96	0.705
I value how fashionable environmentally friendly apparel is (fair -trade clothing).	0.84		
While looking for fair-trade clothing, I find retail exhibit to be interesting (green cloths)	0.859		
I like to look around brand-new fair-trade apparel businesses to discover their offerings.	0.809		
I regularly look for fair-trade (green) apparel to stay current on the newest items available.	0.824		
The approval of important people in my life is a motivating factor for me to buy green clothing.	0.863		
I enjoy feeling knowledgeable about my decision to purchase green clothing.	0.816		
I appreciate the individualized assistance I receive when shopping for green clothing.	0.86		

I enjoy associating myself with the issue of fair trade.	0.893		
Encouragement of large firm s to stock fair-trade goods can benefit the larger community.	0.884		
I feel a greater sense of responsibility when I choose to support products that adhere to fair-trade laws.	0.822		
When I take legal action against merchants who flout fair -trade laws, I sense superior about myself.	0.855		

Source: *Authors' computation based on primary data*

Structural Model and Hypothesis Testing

When creating a structural model to evaluate the hypothesis, the full factor analysis and validation procedure was taken into account. Green clothes purchasing behaviour was the dependent variable, while past environmental activity, awareness of green apparel, and recognizedbenefits were independent variables. The model determined variable causality.

To evaluate the model's fit, the CFI, GFI, and root mean square error of approximation(RMSEA) were used. These are the standardised residual values, which show a decent model fit. 05. With a CMIN/DF of 2.327, GFI of 0.853, NFI of 0.923, TLI of 0.937, CFI of 0.941, and RMSEA of 0.053, the predicted model fit the data well.

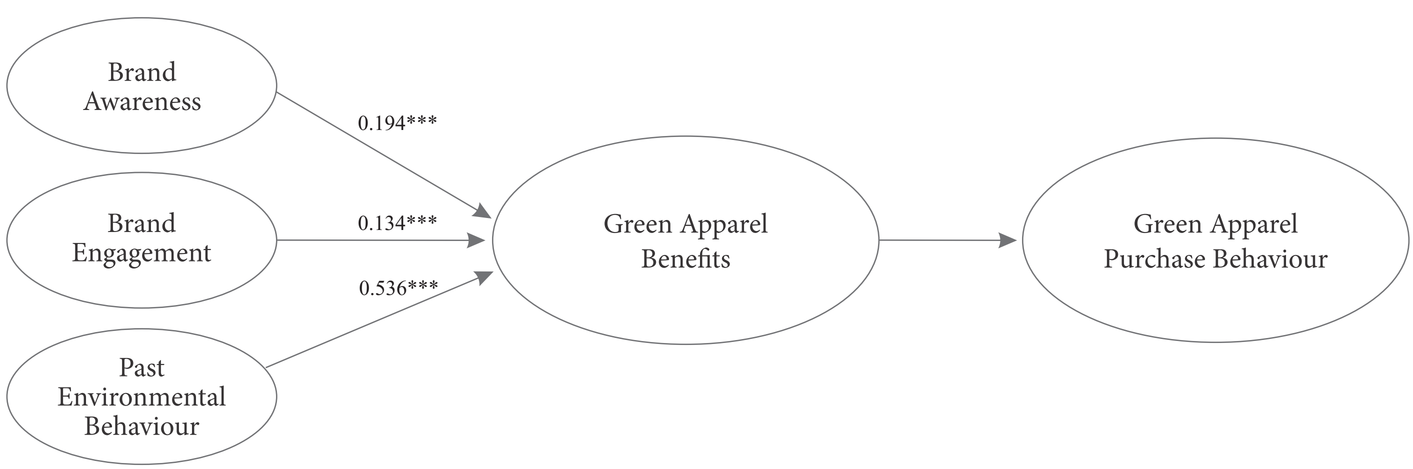
Table 4. Discriminant validity

	GrAP	BE	PEMB	BA	GrAPB
GreenApparelperceivedbenefits(GrAP)	0.839				
Brand Engagement (BE)	0.461	0.849			
Past Environmental Behaviour (PEMB)	0.564	0.494	0.782		
Brand Awareness (BA)	0.691	0.434	0.567	0.840	
Green apparel purchase behaviour (GrAPB)	0.717	0.324	0.481	0.654	0.820

Source: *Authors' computation based on primary data*

Note: Correlations between the constructs are represented by values below the diagonal components; diagonal elements display the root square of the average variance extracted (AVE) for every single construct.

Figure 2: Hypothesized Model



Source: *Authors' computation based on primary data*

The hypotheses were evaluated using standardised path coefficients and significance levels. Table 5 indicates that green clothes perceived benefits were favourably influenced by brand awareness (H1), brand engagement (H2), and historical environmental buying behaviour (H3), whereas perceived benefits (H4) positively influenced purchase behaviour.

Table 5. Standardized path estimates and Hypotheses testing

Hypotheses (H)	Paths	ß-value	t-statistics	p-value	Result
H1	BA –>GrPB	0.194	4.027	0.00	Accepted
H2	BE –>GrPB	0.134	3.132	0.01	Accepted
H3	PEMB –>GrPB	0.536	10.681	0.00	Accepted
H4	GrPB –>GrAPB	0.710	0.726	0.00	Accepted

Source: *Authors' computation based on primary data*

Discussion

In today's world, brands play a critical role in shaping consumer attitudes towards environmentally friendly clothing. This study emphasizes the significant influence of brands in promoting the benefits of dressing in eco-friendly apparel. Consumers' attitudes towards sustainable fashion are closely intertwined with their desire to cultivate a green image and align themselves with organizations that champion environmental goals(Y. Lee et al., 2014). By identifying with these brands, consumers not only endorse their commitment to sustainability but also seek to reinforce their own eco-conscious identities.

Brand engagement emerges as a key factor in evaluating the attributes of green apparel. Consumers actively seek out brands that demonstrate a genuine commitment to sustainability, such as using organic or recycled materials, employing ethical production practices, or supporting environmental initiatives. By engaging with these brands, consumers feel a sense of connection and trust, leading to increased brand loyalty and preference for environmentally friendly clothing(Yang at al., 2015).

Moreover, purchasing green apparel brands brings psychological and altruistic advantages to consumers. Wearing eco-friendly clothing allows individuals to express their values and demonstrate their dedication to environmental conservation. This aligns with the growing trend of conscious consumerism, where individuals prioritize sustainability in their purchasing decisions (Khare&Sadachar, 2017). Furthermore, by supporting green apparel brands, consumers contribute to the larger cause of promoting sustainable practices and mitigating the negative environmental impacts of the fashion industry.

The findings of this study offer valuable insights into consumer evaluation and purchase behavior of green apparel, particularly in emerging economies. Understanding these dynamics can help brands and organizations cater to the increasing demand for environmentally friendly clothing and effectively communicate their sustainability efforts to consumers. By doing so, they can not only enhance their brand reputation but also contribute to the broader goal of creating a more sustainable fashion industry.

Consumers who have had positive encounters with green clothing, such as finding them comfortable and of high quality, are more inclined to view these attributes favorably. Additionally, consumers with a higher level of environmental knowledge are more discerning in their evaluation of green apparel, considering factors such as material sourcing, production processes, and overall sustainability practices.

By actively choosing to purchase green clothing, consumers are able to demonstrate their dedication to environmental responsibility and align themselves with sustainable practices. The act of wearing eco-friendly apparel allows individuals to express their commitment to the environment and showcase their personal values. This conscious decision to support sustainable fashion serves as a tangible manifestation of their eco-identity.

Understanding these consumer dynamics is crucial for brands seeking to tap into the emerging markets. By aligning their offerings with consumer values and preferences, brands can effectively cater to the specific needs of consumers in these markets. This entails emphasizing the advantages of green clothing, such as reduced environmental impact, ethical production, and support for sustainable initiatives. By doing so, brands can successfully tap into the growing demand for sustainable fashion while nurturing a sense of environmental responsibility among consumers(Reimers et al., 2016).

V. Conclusion

Social media has emerged as a formidable platform that enables the rapid and widespread dissemination of information to a vast audience. When utilized in conjunction with social media influencers, its potential for promoting green clothing becomes even more compelling. By leveraging social media, the fashion industry can generate excitement and interest in eco-friendly apparel, effectively reaching and inspiring a substantial number of people. In recent years, there has been a noticeable shift in consumer behavior, with a growing concern for the environment. Individuals are increasingly seeking ways to mitigate their ecological impact and make more sustainable choices. Green clothing offers an avenue for consumers to align their fashion preferences with their environmental values. While environmentally conscious consumers are more likely to embrace green clothing, there is a significant opportunity to sway those who have yet to prioritize sustainability in their purchasing decisions. Through targeted social media campaigns, consumers can be educated about the multitude of environmental benefits associated with choosing eco-friendly apparel. Raising awareness about the positive impact of green clothing can influence consumer behavior and incentivize the adoption of more sustainable fashion practices. With the potential to reach a broad and diverse audience, social media platforms offer an ideal medium for disseminating information and creating conversations around sustainable fashion. The involvement of celebrities adds an influential element that captivates and engages consumers, inspiring them to explore and embrace eco-friendly clothing options. By harnessing the power of social media and celebrity endorsements, the fashion industry can catalyze a significant transformation towards a more sustainable and environmentally responsible future.

This study explored the impact of environmental shopping behavior, brand engagement, and brand awareness on consumer perceptions and purchase intentions towards green clothing. The results demonstrated the significant influence of knowledge, awareness, and engagement on consumers' overall impressions of green apparel. However, it is crucial to acknowledge that the study did not delve into how consumers perceive the quality, pricing, color, and design of green clothing. Another area of interest could be investigating consumers' willingness to pay the same price for green clothing as they would for conventional alternatives, as this can impact market demand and accessibility. By expanding research in these areas, a more comprehensive understanding of consumer behavior towards green clothing can be achieved, benefiting industry stakeholders in developing successful marketing strategies and product offerings.

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ROLE OF COMMUNICATION IN PROMOTING INNOVATIVE HEALTH CARE SYSTEMS

Mansi Chopra*, Maithili Ganjoo**

Purpose: *This paper aims to evaluate the impact of these digital tools in improving the efficiency of health care centers- primarily in terms of access, affordability and ease to the marginalised population.*

Research Methodology: *Using both primary as well as secondary data to understand the impact of ICT in public health, thereby enhancing their efficiency.*

Findings: *The study reiterates that use of rapid innovative technology has transformed the health sector.ICT tools have the capability to enhance the efficiency and effectiveness of public health.*

Value: *The research paper will create a value by highlighting the positive role ad co relation between digital healthcare support and the strengthened health care system in India especially in terms of ensured availability and accessibility of health care resources even in previously underserved areas.*

Keywords : *Public Health Centers (PHCs), ICT for Health, Improved Health care access, m-Health, Telemedicine, Digital Health*
JEL Classification Code: *I15, I18*

I. Introduction

IWith the advent of technology in the health care sector, the health of people residing in India has entered into a phase of transformation. Since the country is focused on ensuring Sustainable Development Goals (SDG), as laid by the United Nations, therefore it is imperative for the government to safeguard the health of all the citizens. Further, India shares a dual burden of both communicable as well as non-communicable diseases. Apart from the dual burden challenge another major concern for the Government of India is the lack of availability of medical resources particularly in distant locations.

However, the use of information technology in the health sector has the tendency to meet the unmet needs of the community. Rapid technological innovations in the public health sector have led to the outset of Health Information Technology (HIT). Considering the wide scope of HIT, the government has adopted the concept in the public health sector to overcome the challenges prevailing in the Indian health care system. Further, allowing both the health providers as well as the community to access health care services in several innovative ways.

Further, mobile phones which are considered as powerful communication tools have also revolutionized HIT. Since, they have a strong penetration in both rural as well as urban areas of the country, leading to the advent of m health. Therefore, several m health initiatives have been instigated by the government to transform the health sector. M health also has the scope in expanding health care services even in untouched areas of the country. Apart from ensuring access to quality health care services to people at a rapid pace.

II. Review of Literature

In a study on "AAM Aadmi Mohalla Clinic: Digitization of a Public Primary Healthcare Network", Mohalla Clinics which were launched by Government of National Capital Territory of Delhi (GNCTD) in March 2016 in urban slums of Delhi to strengthen the primary health care system of Delhi. The objective of the clinics is to cater the health care needs of the urban slum thereby reducing the load of patients from specialist health care institutions. Further, the clinics also aimed to provide the services at zero cost, thus reducing the out of pocket expenditure of medical services from weaker sections.

However, to improve the efficiency of Mohalla Clinics, Delhi Government along with WISH foundation has embedded the clinics with latest technology. The project is further supported by USAID. Some of the innovations deployed in AAMC include AAMC App which is an android based application to provide digital OPD facility to the patients. Further, the clinics are also equipped with a Medicine Vending Machine that automatically dispenses medicines. The clinics also comprise PICOLABS which has the capacity to conduct 70 tests through Biosense

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Technology. Since, the clinics witness a huge footfall of the patients, implementation of technology has ensured smooth functioning of the clinics, thus, improving the efficiency of the clinics by meeting the unmet health care needs of the community.

In another study on health care innovations, a report on "M Health Interventions for Health System Strengthening in India. A Scoping Study Report." The George Institute for Global Health. India. According to the report, rapid technological innovations have created a scope of improving the overall health care system of India. With the inception of technology in the health sector, there has been a tremendous growth in the health care delivery system in terms of availability and accessibility of medical resources. Further, there has been a remarkable increase in mobile phone users in India. Since mobile phones are one of the most powerful communication tools, over the years several mobile based health care applications have been launched to provide health care services to the users. Use of mobile devices for better delivery of health services has been explored both by the government as well as the private sector, leading to the creation of m health. Further, the concept also supports Digital India, which was launched by the Central Government across the country in the year 2015, which aimed to build technological innovations to support and empower the community. As a part of the program, several m health applications like Kilkari, Mobile Academy, m Cessation and TB Missed Call Initiative were launched by the Ministry of Health and Family Welfare. The applications aimed to provide maternal health and child health care services, counseling for TB patients etc. Apart from improving easy accessibility, mhealth has reduced the response time by medical practitioners and has also increased patient engagement. Further, mhealth has also enabled in reducing the cost involved in accessing health care services.

According to the report, there has been a tremendous growth in mhealth services across India. Several mobile based applications related to diabetes, maternal and child health, cancer, heart disease, various communicable and non-communicable diseases are available on Google Play Store and Apple Store and are being used by the masses, leading to an improved tertiary health care system.

A research paper "For Female Health Workers in India, New Digital Tools put Data at their Fingertips by (Idhries, 2016). The paper focuses on the usage of ICT by Community Health Workers. According to the paper, in an effort to support Auxiliary Mid Wives (AMW) of India, the Ministry of Health and Family Welfare along with UNICEF has launched an online tablet based application called ANMOL, which allows the AMWs to store the data of the beneficiaries online. Since, AMWs act as the first point of contact between the community and health care services. The role of AMWs is to visit the homes and assist the females in maternal and child care, further creating a log of the homes they visit.

The application has not only made the work of AMWs paperless, but also provides prompt updation of data, thus providing an updated and real time data of the beneficiaries. Further, the application also works during internet outages and the data can be stored offline as well. The application also helps in generating health awareness amongst the rural population through images and videos related to health, hygiene and other issues related to health. The audio and videos are pre-loaded in the application which makes it feasible for AMWs to counsel the women. Since the launch, the application has created a momentum in the health delivery system of India. However, the application has only been launched in Andhra Pradesh and significant plans are being made to roll out the application across the nation.

Objective of the Study

The objective of the study is to analyze the role of digital health in transforming and improving the efficiency of public health care centres and betterment of patient care.

III. Research Design and Methodology

The study has used both secondary data and primary data. The secondary data used in this research is based on the extensive review of literature which was done on the health care sector, health infrastructure and the role of media in supporting government healthcare programs. For the primary research, data has been collected using focused group discussions, which was held among Community Based Workers. The respondents were ASHA workers and ANM workers. A total of 5 focus group discussions (FGDs) were conducted involving a cohort of 11 community health workers (CHWs). Each FGD consisted of a participant group ranging from 7 to 8 individuals.An extensive review of literature has been done on technological innovations in the health care sector, digital healthcare and m health have been explored to analyze the role and scope of digital health in India. The purpose of the study is to understand the impact of digital tools in improving the efficiency of health care centres-primarily in terms of accessibility, affordability and ease to the marginalized population.

Data Collection

The research has been undertaken using both primary as well as secondary data collection methods. For collecting the data, the study has been conducted using both primary as well as secondary research. Primary research data has been gathered through qualitative method using Focused Group Discussion from Community Based workers (ASHAs and ANMs).

A total of 11 Accredited Social Health Activists (ASHAs) were included in the study, taking into account their availability and willingness to participate during the designated research period. A total of 5 focus group discussions (FGDs) were conducted involving a cohort of 11 community health workers (CHWs).

Each focus group discussion (FGD) ranged from 45 to 60 minutes, and focus group discussions were continued until data saturation was achieved. FGD were conducted in Hindi language.

To conduct the study, secondary data through case studies, research papers and government reports related to technological innovations in health care sector, digital healthcare and m health have been explored to analyze the role and scope of digital health in India .

Theoretical Framework

The theoretical framework adopted in the study includes the following:

Social Mobility Theory

Introduced by Pitirim Sorokin, the theory explains a social status shift among the individuals. The shift can be horizontal, vertical, upwards, downwards, inter generation or intra generation. Inequality in health is one of the prime factors in social mobility, however, with the advent of technological innovations in health, there has been a constant upward shift amongst the masses, with a large number of people being provided with medical facilities, who earlier lack the access of healthcare services. The strategy has reduced inequality by catering to the needs of the disadvantaged group. Moreover, a large number of people are also adapting themselves to the latest technology, creating an upward mobility.

There has also been a constant behavior change in the society towards several health innovations. The theory analyzes the social mobility of individuals towards health technology and the consumption pattern.

Further, health can also affect economic mobility of the community. Since, a large number of health care institutions are private and are established in urban areas, making it difficult for the weaker section to access health care facilities. With the inception of m health, it has become more convenient for people to avail health care facilities, thereby reducing the "out of pocket" expenditure from the destitute population. Apart from economic mobility, the health status of an individual or family can also affect intergenerational mobility as well. Health can be passed to the next generation through parental behavior. Therefore, through several campaigns, there has been a shift in the behavior of the community towards health facilities. People have become more aware about the utilization of health care services, thereby bringing a shift in the behavior of the individual.

Communication for Behaviour Change

The theory involves use of communication for development amongst the masses so as to promote knowledge and to bring a behaviour change. Therefore, several messages and programs have been designed and promoted to bring a social behaviour change. The strategy is commonly used to instigate behaviour change towards several health care initiatives. Social Behaviour Change Communication (SBCC) lays a critical role as it helps in disseminating accurate, clear, relevant and timely information to the community which helps in altering their behaviour towards several health practices.

Diffusion of Innovation Theory

The theory involves dissemination of new ideas and innovations amongst the masses. However, adopting a new innovation by the community depends on several factors like readiness to adopt the innovation, communication system and environmental barriers. The theory can be applied in the health sector. Since then, several technological advancements have been made in the health sector. Several mobile based applications have also been launched by the government as well as the private sector to ensure easy accessibility of health care services. Thus, it is important for the community to adopt the changes. This can be done through proper communication through "agents of change", which includes early adopters who encourage others to adopt the innovation and generate a positive health behaviour amongst the laggards. Further, use of effective communication channels can also bring a desirable social behaviour change towards several health care policies and programs launched by the Government. Therefore, it is important to communicate more about the innovation, because the more people are familiar with the innovation, easier it gets for them to adopt the idea. In rural and remote areas, the communication can be done through ANMs and several communication channels like electronic media, print media, word of mouth or traditional communication tools.

Psychological Empowerment

The theory is commonly used in health communication. Use of several communication tools have made people more empowered towards the health care sector. There has been an increase in decision making amongst the community members regarding their health. The Psychological Empowerment model comprises four psychological indicators which can are adapted in health communication. The four indicators are as follows

- Perceived Relevance or Meaningfulness. The factor can be considered during health communication as the patient's experience towards health activities and the relevance of the activities, which further creates their involvement and participation in health oriented activities.
- Perceived Competence. Due to increased health communication and innovative technology in the health care sector, there has been a tremendous shift in the behavior of the community. People have become more positive towards health and are embracing technology. With mhealth, people are now able to self-manage the diseases, making them more confident towards their health. Further improving the quality of life.
- Self Determination. This indicates action taken by people towards their health.
- Perceived Impact. This involves the impact created by health communication on the masses.

Use of Health Information Technology (HIT) in Public Health

Digital technology plays a pivotal role in disseminating quality health care services. With the advent of technology in the health sector has made it easier for the government in achieving universal health coverage in India. Recognizing the feasibility of digital technology, the government is embracing the innovations by adopting various public health institutions. For instance, in the year 2014, the Ministry of Health and Family Welfare, in accordance with United Nations Development Program (UNDP), launched Electronic Vaccination Intelligence Network (e VIN) so as to maintain a digital database of vaccines in India. The project also aims to support routine immunization in the country so as to reduce infant mortality rate by strengthening immunization coverage in India. The project covered the states with poor immunization. States like Rajasthan, Madhya Pradesh and Uttar Pradesh were covered in the first year of the project.

Long before the advent of mobile applications in the health care sector, the government of India had adopted HIT with the outset of telemedicines. The concept which is considered as leapfrogging in the health care sector has the ability to overcome the geographical gap between patients and doctors allowing the patients and doctors to come face to face via digital technology (Ansari, Ganjoo, 2020).

India faces an extreme scarcity of medical practitioners with more than 883 million people being dependent on 44,000 doctors, making it difficult particularly for rural population to avail health care services. Moreover, the situation is also responsible for creating out of pocket expenditure on the destitute population, as they rely on private hospitals. Thus, with proper integration of virtual clinics, it has become more convenient for people to avail medical services. People also have the facility to consult doctors via phones, texts or even video calls. Further, telemedicines also have the ability to ensure 80-90% of the financial stability.

Several projects have been taken up by the Government, in setting up telemedicine practice in the country.Apart from government initiatives, several private companies have also ventured into establishing Virtual Primary Clinics in rural India. For instance, E mitra, a model initiated by Jiyyo Innovations, is working to provide health care services in interior and remote parts of India. It helps in connecting the patients with doctors through telemedicine. Through a simple smartphone, it allows patients to get connected with doctors. So far, the project has set up 20 clinics in Uttar Pradesh, providing not only consultation by general physicians, but specialist doctors like neurosurgeons, cardiologists, paediatrician, and orthopaedics. Further, the findings also indicate that there is acceptability amongst the population towards virtual clinics. Since the concept is able to eliminate the geographical gap, the project has the tendency to be implemented across India.

Scope of m-Health In India

The number of mobile phone users in India has grown exponentially. Similarly, there has been a rise in the number of internet users in India, leading to the advent of mobile technology in India. With the emergence of mobile technology, people have started using mobile phones for various purposes. The health care sector in India has also witnessed a huge impact with the surfacing of m health. The concept involves use of mobile based technology for health communication. India being a geographically diverse country provides a huge scope to m health making it easier for the people located in far off places to access health care services with ease and can be considered as an alternative health care delivery channel.

Since, the country also fails in meeting the health care guidelines as stated by World Health Organization (WHO). For instance, a large segment of people residing in rural and remote areas are unable to access the health care services. According to PwC analysis, there are only 0.7% of doctors per 1,000 doctors. Similarly, only 1.1% of hospital beds are available per 1,000 patients. Further, a large number of health care institutions are located in urban areas, making it difficult for rural populations to access health care services. Thus, m health can be considered as a substitute for healthcare institutions, thereby ensuring timely, effective and quality health care services to the patients, further reducing the cost of medical services.

Since India has a large share of non-communicable diseases (NCD), information related to the management of NCD is also being communicated. A wide range of health services are being covered using m health through sending a simple health centric SMS to patients to various health applications which can be easily downloaded in phones by users. Use of mobile based healthcare technology has provided "self-management" to the patients, by creating a behavior change that is related to active management of chronic diseases by patients. Moreover, self-management of chronic diseases is more cost effective since the symptoms can be treated at an early stage, further reducing the mortality rate. The inception of m health technology has also contributed in making people self-empowered with a multi-dimensional approach in "self-management" of the disease, wherein people have become more aware and responsible in taking decisions related to their health. Thus m health has created a psychological empowerment towards health amongst the masses along with higher involvement and commitment of patients.

Considering the vast benefits of m health, and to accelerate the use of technology in the health care sector, Government of India has instigated several programs to support m health in the country. To exemplify, Digital India, one of the flagship programs launched by Government of India in the year 2015 also provides a conducive environment for m health technology in India. In order to increase the access of health services, the Ministry of Health and Family Welfare had launched four major m health initiatives which include Kilkari, Mobile Academy, m Cessation and TB Missed call Initiative. The programs are aimed to provide maternal and child health care, training to community health care workers, treatment and counseling services related to tuberculosis through mobile phones.

Government of India has also launched National Health Portal India, a mobile based application which makes it feasible for rural population to avail health related information. Similarly, Health You Card, another mobile based application launched by Government of India aims to help people locate nearby doctors, hospitals, pharmacies and diagnostic centres. The application also facilitates people to book appointments.

In order to support Pradhan Mantri Bhartiya Jan Aushadhi Pariyojana (PMBJP), a campaign launched by Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers Government of India in November 2008 with the intent to provide quality medicines at affordable prices to people, Jan AushadiSugam, a mobile based application have been instigated by Government of India, that helps people to locate Pradhan MantryBahrtiya Jan AushadiKendras, so as to avail medicines at an affordable cost. It also allows users to check the availability of medicines in the centres.

The latest advancement seen in mobile health technology in the country is the creation of ArogyaSetu App. The mobile application was designed to track the cases of COVID-19 clusters in the country. The app also enables people to generate awareness towards the spread of COVID-19 cases. Further, the app also allows people to connect with essential COVID-19 health related services. Apart from these applications, there are various other mobile based applications and websites launched by the Government to ensure transparency in delivering of medical services. A wide range of health issues are being covered through various applications along with providing access to health education to the masses.

Apart from the Government, several private companies have also ventured into digital health by launching several mobile applications so as to increase patient engagement along with providing health education to the users. Some of the most common mobile applications being used in India are proctor, 1mg, Pharmeasy, Netmeds, Medlife, DocsApp. The applications are not only involved in providing medical assistance but also deliver pharmaceutical drugs to the patients at their doorsteps, making it convenient for the patients to avail health care services. Further, with the IT led health services, it has become easier to bring the patients closer to the health practitioners.

Short Messaging Services (SMS) is another effective tool used by public health institutions as a part of m health to make people sensitize towards several health issues prevailing in the community. The service helps to reach people who do not have access to the internet.

Implementation of technology in Mohalla Clinics

Delhi being the National Capital has become the home of rural migrants. A large number of people from rural areas are settled in remote areas of Delhi, creating a huge gap in the availability of medical resources. To overcome the issue, the Government of National Capital Territory of Delhi in 2016 had launched Mohalla Clinics, also known as Community Clinics in the urban slums of the Union Territory. The flagship program functions to provide efficient medical services to the destitute population, thereby reducing the out of pocket expenditure of health services. However, the clinics established are IT enabled clinics making them more efficient in dispensing the health services. For this, the Government of Delhi has partnered with Wadhwani Initiative for Sustainable Health (WISH)Foundation to provide innovative technologies that are being implemented in the pilot phase of the clinics.

Further, the IT solutions have also made the clinics as paperless clinics, wherein the records of the patients, patient registration, diagnosis recording are kept and maintained digitally using clinics management applications designed for mohalla clinics. The clinics also provide e prescriptions to the patients. The use of IT lead services in mohalla clinics has created a major push in recording comprehensive patient information along with complete utilization of HIT, thereby creating a terrestrial communication network in primary health centers. .

Further, U.S. Agency for International Development (USAID) along with WISH have also installed medicine vending machines that automatically dispense drugs either by doctors or scanning the barcodes on the prescription. The vending machines have been designed and developed by WISH along with Telechikitsathat uses sensor technology and dispenses the pharmaceutical drugs automatically. The IT enabled vending machines have been effective in scaling up the functioning of the clinics, thereby making it convenient for the clinics in managing the availability of drugs.

Some of the other innovations that has been embedded in Mohalla Clinics include AAMC App. The application enables the clinic to generate digital OPD facilities. Further, the clinics also consist of PICOLABS which has the capacity to conduct 70 tests through Biosense Technology.

Challenges for Implementation of M-Health in India

The emergence of technology in the health care sector has created a huge impact on the medical industry by reducing the cost of medical expenses from the weaker section, improving accessibility, and increasing the availability of medical practitioners. However, there are still a number of barriers that need to be overcome that are limiting the impact of mhealth particularly in rural and remote locations of the country. Some of the key barriers in effective implementation of m health services in India are as follows

Lack of awareness

Since the advent of HIT, the government of India has created several mobile applications to benefit the population across the nation. Several m health services focusing the rural population have also been designed. Similarly, over the years, a lot of private companies have ventured into the health sector and have created mobile applications to benefit the users by providing them easy access to health services. However, despite several initiatives, a large population of India, especially in remote areas of the country, is unaware about digital health. Therefore, in order to ensure complete utilization of digital health, it is imperative for the Government to generate awareness amongst the masses.

Computer Illiteracy or Digital Divide

Despite the advent of technology, a large number of people lack computer literacy. Therefore, in order to ensure complete utilization of HIT by people, it is important that the government must take efforts to generate technological literacy amongst the masses.

Infrastructural Challenges and resources

For effective utilization of digital health, it is imperative that the country must have a strong infrastructure. Lack of resources like infrastructure, unavailability of network connectivity possesses another major hurdle in the smooth implementation of digital health. There are still a large section of people who cannot afford smartphones, making it difficult for them to avail mobile health care services instigated by the government.

Manual usage of M health

Since the applications designed by Government or private companies require manual interventions by the users, making it difficult for the illiterate population to access the m health services, thus creating a lack of interest amongst the users.

Huge volume of mobile applications

Since a large number of private companies are involved in developing the mobile based applications creating a huge option for the users. Further, the ratings provided in the applications are based on personal impressions rather than their clinical performance, thus, making it difficult for the users to analyze the application that needs to be downloaded.

IV. Results and Discussion

The advent of technology in the health sector has revolutionized the healthcare industry of India. New technological tools have created a huge impact on the existing health care sector, making it convenient for the population to avail health care services. HIT in the form of mobile applications, telemedicines, storage of electronic medical records, electronic vending machines, Electronic Vaccination Intelligence Network, m health have already been implemented in public health sector in various forms and have resulted in improving clinical outcomes by making the health care services and other health related information available to the masses. Moreover, the services are also cost effective, thereby reducing the financial pressure from the weaker section. Further, the services have not only created an ease in accessing medical services by the patients, but have also ensured a swift delivery of medical services by health practitioners as well. For instance, the use of technology for recording medical records of patients by ANM workers have reduced the time required to update the data manually and has also eliminated the chances of duplicacy of data (Kumar, K. Arun, et al., 2020)

The research findings indicate that an overwhelming majority (100%) of ASHA professionals possess comprehensive knowledge regarding various communication technologies. According to the data gathered through Focused Group Discussion, all the participants (ASHAs and ANMs) utilize digital tools given by the government. Among these platforms, WhatsApp was the most commonly used by 88% of participants. Further, video clips from campaigns are also shown to the beneficiaries and are an effective way of disseminating health awareness amongst the community.

Delhi Government has also successfully implemented an innovative approach known as e-ASHA.

The system comprises customized application software that provides a more streamlined approach to identifying, tracking, and monitoring maternal and child health. The decision was made to conduct a field test of the concept and approach in a cluster of remote villages that are challenging to access and have limited facilities. This test specifically targeted Accredited Social Health Activists (ASHAs) with lower literacy levels and less exposure to external influences. Jasola village in the southern district represents an example of such a location.

The government has implemented a range of initiatives to augment the digital capabilities of ASHA workers and enhance the effectiveness and precision of data management. Here are some important ICT tools availed by ASHA workers for data recording and storage:

ASHA Soft: ASHA Soft is a mobile application developed by the Ministry of Health and Family Welfare, Government of India. It allows ASHA workers to digitally capture and record data related to maternal and child health, immunization, family planning, and other health indicators. The application also includes features for scheduling appointments, tracking follow-ups, and generating reports.

Mobile Apps: ASHA workers utilize other mobile applications to support their healthcare activities, such as Doctor on Demand, Talkspace, and My Shift Planner. These apps often have features for data collection, tracking health indicators, providing health education materials, and facilitating communication with healthcare providers and supervisors.

Some ASHA workers are provided with tablets or smartphones with relevant data recording and storage applications. These devices enable them to capture data digitally, access educational materials, and communicate with healthcare authorities efficiently.

The use of ICT tools in data recording and storage helps improve the accuracy, accessibility, and timeliness of health data. It enables efficient monitoring and evaluation of healthcare programs, facilitates data-driven decision-making, and supports better coordination between ASHA workers, healthcare providers, and government authorities.

V. Conclusion

With the advent of technology in health care sector, digital media is being widely used to disseminate health information amongst the masses. Technology is being used in the healthcare sector in the form of e health which means communicating health information using technology. Several mobile based applications focusing on various important health issues have been launched by the government with the intent to provide ease in accessing health care services to the beneficiaries. Several websites have also been launched by the government to communicate important health information with the masses.

According to the study, several mobile based applications and other ICT tools are being used by the respondents to avail information related to maternal and child health. ICT tools are also being used by ASHA workers to communicate with the masses. Audio and video tools are being used to communicate health information in an interactive way.

Further, ASHAs are also using ICT tools to store and record the data of the beneficiaries, thus helping in maintaining real time information. For instance, e-ASHA, which was launched by the Delhi Government, is being used by ASHAs working across Delhi for storing and recording the data of the families. The use of ICT tools in data recording and storage helps improve the accuracy, accessibility, and timeliness of health data.

Thus, ICT has now become an inevitable part of the health care sector. Both mainstream as well as digital media is being used by the government to communicate health information. At the same time, both forms of media are being used by the beneficiaries to avail health information. The study also suggests that ICT tools have the capability to enhance the efficiency and effectiveness of data management, communication, and counselling by ASHA workers, contributing to improved healthcare outcomes. The study creates evidence in favor of the need for increased ICT and media access for both the beneficiaries and CBWs. ASHA workers play a significant role in communicating health information amongst the community and thus act as a catalyst of change. Further, mass media too has an intrinsic role in strengthening government led health care programs.

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THE ROLE OF EMPATHY AND TRANSCENDENCE IN DRIVING THE VIGOR OF MINDFULNESS ON EMPLOYEES JOB SATISFACTION

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Purpose: *This study investigates how Empathy-Transcendence, which is essential for organizational longevity, improves employee satisfaction through mindfulness. Self-transcendence theory emphasizes the intrinsic yearning for connection beyond oneself, fostering personal progress, whereas empathy, based in social exchange theory, promotes meaningful relationships. The Attention Restoration Theory emphasizes the role that mindfulness plays in recharging cognitive reserves and improving general job satisfaction.*

Research Methodology: *Using a Google Form to survey 400 managers in Chennai's automotive sector, the author analyzed the data using structural equation modeling in SPSS V.23(PROCESS Macro).*

Findings: *The findings show that transcendence and empathy-two factors that mediate job satisfaction-are highly influenced by mindfulness.*

Value: *In the workplace, emotional resilience improves engagement, output, and job satisfaction, which promotes worker wellbeing and organizational success.*

Keywords : *Empathy; Job satisfaction; Hybrid Mode; Mindfulness; Transcendence.*
JEL Classification Code: *M5*

I. Introduction

Numerous employees' problems in organisation such as attendance, gross revenue, bribery, exhaustion, and scuffle fierceness are currently afflicting modern organizations even most of the research has demonstrated all these issues are more prevalent in workplaces where mindfulness is not present. Empathy and Transcendence are now recognized as a crucial ingredient for stimulating the mindfulness more to satisfy talented employees, which ultimately contributes to the growth and development of an organization by understanding-supporting others and using it as a technique to refine the mental well-being, as well as enhancing job-satisfaction also enable to be more focused, foster diplomatic wisdom, and lower stress levels, increases emotional intelligence.

II. Literature Review

Mindfulness

Mindfulness refers to “the state of being aware of one's thoughts and surroundings” (Petchsawang and Duchon, 2009).Being mindfulness led to enlarged job satisfaction and reduces job strain amongst healthcare professionals Reb et al.,(2018). Kuo and Lee (2020a) explored the connection that emotional intelligence had association between mindfulness and job happiness. The vision, hope and person's level of mindfulness may benefit from the power of selfless love (Khaddam et al., 2023).From this the author found that mindfulness has a critical influence in an individual's general well-being from various literatures which displays a more profound sense of dedication to their organization.

Transcendence

Transcendence refers to “a unique state of energy and vitality that people encounter when there is a harmonious alignment between their inner and outer worlds, resulting in a profound sense of self-fulfillment, also the experience of going beyond the limits of ordinary perception and experience”. As described by Wong and Fry (1998), transcendence involves spiritual or religious experiences, but can also be applied in a broader sense to experiences of awe, wonder, or connection to nature. Gruber & Tamir (2020) discovered a positive association between transcendence, empathy, and prosocial behavior. Kraus et al., (2020) investigated and observed that those who expressed higher levels of transcendence tended to report greater subjective well-being and life satisfaction. King et al. (2020), transcendence was certainly allied with psychological well-being and life satisfaction and found meaningful-life. Desai et al. (2022), transcendence being connected with engaging employees at work which leads to greater motivation, commitment and enhance their work performance and job satisfaction. Engaging in prosocial-behaviors among adults had increased Mehta, et al., (2022). Finally, in a study by Mendoza-

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Denton (2023), transcendence was found to be associated with greater intergroup empathy and towards outgroups. These reviews suggests that individuals transcend their own-identity to connect with higher power are more likely to exhibit empathy regardless of involvement. Transcendence may positively impact psychological health, happiness and Job-satisfaction.

Empathy

Empathy is defined by Petschsawang and Duchon (2009) "deep alertness, sympathy, and a desire to relieve others from suffering, leading to a sense of responsibility for those in distress and less fortunate, expressing care or compassion, and an aspiration to help". Yang (2021), higher levels of job satisfaction are associated with empathy. Kuo et al. (2020b) demonstrates the favorable correlation between empathy and servant leadership. These findings suggest that empathy from managers and coworkers is benefited for promoting happiness. They do not, however, investigate alternative processes or take into account additional elements that may have an impact on job satisfaction, such as leadership style, organizational culture, or job demands.

Job Satisfaction

Job satisfaction is an individual's overall job perception, is influenced by various factors. Gebremichael et al. (2018) identified workload, salary, and promotion opportunities as key predictors for job satisfaction in Ethiopian healthcare workers aged 30 and above with higher education. Chen et al. (2020) emphasized the positive impact of teamwork and communication within organizational culture on job satisfaction. Kumar et al. (2022), through an online survey in India, highlighted workload, job stability, and support from peers and managers as crucial for healthcare workers' job satisfaction during the pandemic. Suhartono et al. (2023) recommended policies to reduce workload and enhance social support for healthcare workers. Ariani (2023) stressed the importance of workload, salary, promotion opportunities, leadership, and organizational culture, suggesting further exploration of employees' psychological feelings in future studies.

Mindfulness and Empathy

Mindfulness, as indicated by Condon et al. (2019), correlates positively with empathy. Xu et al. (2019) revealed that mindfulness-based interventions effectively elevate empathy across diverse populations, including healthcare professionals, students, and individuals with chronic pain. Barraza and Goldin (2020) demonstrated the effectiveness of mindfulness interventions in improving empathy in various relationships, from partnerships to parent-child and teacher-student dynamics. Dholakia et al. (2021) explored how mindfulness enhances leaders' empathic abilities, facilitating connections and inspiration among followers. Dorjee and Khechok (2022) highlighted the positive impact of mindfulness practices on classroom environments, fostering relationships between students and teachers, ultimately enhancing emotional regulation and reducing stress.

However, the study identifies a crucial gap, noting that most reviewed studies only examined short-term effects of mindfulness on empathy, neglecting long-term impacts. Despite this gap, the study underscores the potential benefits of mindfulness and empathy in leadership, suggesting avenues for future research in diverse industries like automobile, textiles, and banking sectors.

Therefore, we propose,

H1: Mindfulness will have a significant impact on Empathy.

Mindfulness and Transcendence

Soderberg et al., (2019) exposed that MBI's – Mindfulness based interventions can effectively alleviate symptoms of anxiety and depression among individuals and drops depression in older women. Mindfulness was active in tumbling anxiety, depression, and refining transcendence in people with schizophrenia (Kang et al., 2020); Mahfoudhi et al., (2022) found mindfulness and transcendence to be biased. Overall, these studies provide some evidence for mindfulness and transcendence connections, but additional study is required of this landscape. The limited sample sizes in this research limit the generalizability of the results. Thus, we propose,

H2:-Mindfulness have a significant impact on Transcendence.

Empathy the connection between Mindfulness and Job Satisfaction

Azoulay and Doron (2019) scrutinized there is a strong connection between the empathy, mindfulness, and job satisfaction among mental health professionals also it was partly intermediated by mindfulness with greater job satisfaction. Gu and Day (2018) explored mindfulness can improve teacher well-being by decreasing stress, anxiety, burnout by boosting self-efficacy, resilience, and job satisfaction. Guo et al., (2020) found that empathy and mindfulness were positively correlated but partially mediated between empathy and job satisfaction using the Five Facet Mindfulness Questionnaire also it drops burnout among workers. Ruscio and Krietemeyer (2021) found that mindfulness-based interventions in the workplace were associated with improved job satisfaction also it is a valuable strategy for boosting workplace well-being and job satisfaction. Thus, we propose.

H3: Empathy significantly plays a substantial role in connecting mindfulness and job satisfaction.

Transcendence the relationship between Mindfulness and Job Satisfaction

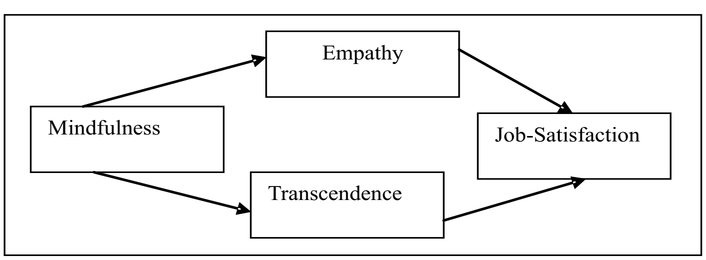
Higher emotional intelligence and greater job satisfaction are both positively correlated with mindfulness (Shen et al., 2019). Shamsudin and Velmurugan (2023) looked into a workplace where leaders' unwavering commitment to quality, accomplished workplace productivity increases, and support for staff growth are all crucial factors in reaching superior outcomes. Transcendence and job satisfaction were found to be positively connected by Wei and Ren (2020), but job stress and job satisfaction were found to be negatively correlated, with burnout serving as a partial mediator. Through mindfulness training, healthcare personnel have reported increased job satisfaction and overall well-being, which has decreased stress and burnout (Nguyen et al., 2021). Iranian nurses found that job stress and job satisfaction were negatively correlated, although mindfulness and job satisfaction were positively correlated (Mohamedi et al., 2021).Zhang and Wang (2022) found a positive correlation between job satisfaction and mindfulness, with mindfulness acting as an intermediary. Munir et al. (2022) further supported the positive correlation between mindfulness and job satisfaction, emphasizing its strength among employees in various Pakistani organizations. In summary, these studies collectively suggest that mindfulness not only positively correlates with job satisfaction but also serves as a significant mediator or moderator in the context of job stress and demands etc., Thus, we propose,

H4: Transcendence have a significant relationship and strong mediating effect between Mindfulness and Job satisfaction.

The current study seeks to address the following inquiries: RQ. Does Empathy and Transcendence mediate mindfulness and job satisfaction of manufacturing firms of Chennai. As a result, the author proposes the conceptual model shown in **Figure 1.**

Conceptual Framework for the Present Study

Fig.1: Conceptual Model



****Source:*** *Created by the authors (2023)*

Operational Definitions	**Authors**
Mindfulness-"The awareness that arises from paying attention, on purpose, in the present moment and non-judgmentally"(p. 145).	Kabat-Zinn (2013)
Transcendence-"A sense of connection to something beyond the individual self, a sense of purpose or meaning that is larger than one's own individual existence"(p. 415).	Wong and Fry (1998)
Empathy- "An understanding of the other person's situation, thoughts, and feelings (cognitive empathy) and a vicarious emotional response to the other person's actual or anticipated emotions (affective empathy)"(p. 113).	Davis (1996)
Job satisfaction-"A pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences"(p. 1300).	Locke (1976)

****Source:*** *Authors (2023)*

III. Methodology

Research design and Research Instrument

"A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure with a conceptual structure in which research is conducted." The correlational strategy used in the research design looks at relationships between variables. The study focused on workers from several automakers in Chennai and attempted to collect 500 questionnaires from nine different companies located in four different districts of Tamil Nadu. 400 responses, or 75.47 percent of the total, were deemed appropriate for additional examination (refer to Table 1), which is consistent with the design's objective of integrating procedural efficiency, relevance, and a well-organized conceptual framework for data collection and analysis. The authors meticulously selected, developed, and validated a scale for this study, employing an empirical method. Extensive literature review guided the choice of validated measures, with subsequent modification of four constructs aligned with study goals. Subject matter experts ensured content validity, and a pilot study with 20 participants validated content production. The final 34-item scale, adopted without revisions, is presented in the table.

The ***Five Facet Mindfulness Questionnaire(FFMQ) (Baer et al., 2006)*** A set of thirty-nine self-assessment mindfulness-questionnaire with five distinct aspects: observation, description, conscious action, nonjudgment, and nonreactivity. ***Transcendence*** **Scale** developed by *Kinjerski (2013)* and five items were used for this study. Four items were used for ***Empathy****Pradhan et al., (2017)*. **Job satisfaction** (10-Items) by *Macdonald and Maclntyre* (*1997*). **Table 3** presents the results of a final 34-item questionnaire that was utilised to gather the primary data.

Sampling

Private automobile manufacturing companies in Chennai, specifically in Sriperumbudur, were chosen for the study. Stratified random sampling was utilized to select participants. Primary data were gathered from employees holding various positions within four manufacturing companies. Data collection took place between October 2022 and January 2023.

Hypotheses: The following are put forth based on the conceptual framework:

Measurement - Reliability and Validity

Smart PLS version 4 was used to evaluate data. Construct dependability was found to be greater than 0.7 as measured by Cronbach's alpha and Rho A (Nunnally, 1978; Robert, 2004). Average variance extracted (AVE) exceeded 0.5 and convergent validity exceeded 0.7 after Henseler et al. (2009) (Bagozzi and Yi, 1988; Hair et al., 2010). Discriminant validity is shown in Table 4, demonstrating each construct's independence (Dubey and Sahu, 2022). Every construct had values more than 0.7, confirming the suitability of the methodology for measurement.

Results (*Common-Method-Bias)*

By adopting a variety of data collection techniques and applying Harman's single component test to evaluate common technique bias, the study reduced the impact of common method bias. There was little common technique bias, as the analysis revealed, with no single factor accounting for more than 50% of the variance. In accordance with Podsakoff et al. (2003), confidentiality and anonymity were maintained for employees, minimizing the possibility of response bias.

Demographic Features of Respondents

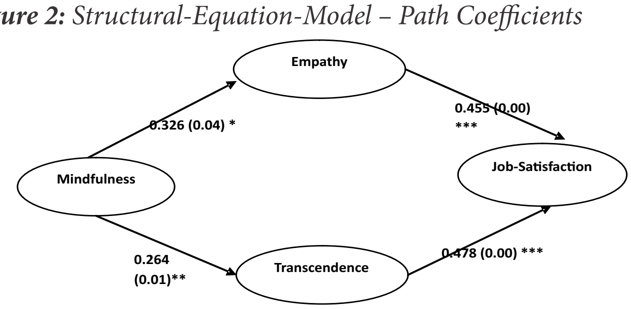
Most of the employees have an average age of 41–50, 164 (41%). This is followed by 31-40, 135 (33.75%); The educational qualifications reveals that a significant portion, comprising 158 individuals (39.5%), holds postgraduate degrees. Furthermore, it is noteworthy that many of the respondents are currently employed in full-time positions within private companies, totaling 242 (60.5%) (Table 2).

Table 2: Demographic-Segment

Class	Sub-group	Occurrence	Percentage (%)
Gender	Male	263	65.75
	Female	137	34.25
Age	Below 30	46	11.5
		135	33.75
		164	41
		55	13.75
Marital -status	Single	111	27.75
	Married	289	72.25
Family -type	Nuclear family	210	52.5
	Joint family	190	47.5
No. -Family Members	One – Three	160	40
	Four – Six	196	49
	Six and above	44	11
Education	12th	29	7.25
	UG	147	36.75
	PG	158	39.5
	Others	66	16.5
Job type	Regular	242	60.5
	Temporary	158	39.5
Experience	0 - 3 Years	125	31.25
	Four - Six Years	108	27
	Seven-Ten Years	134	33.5
	Ten & -above	33	8.25
Personal-Income - (Per month)	Below 20,000	31	7.75
	20,001 – 40,000	180	45
	Above 40,000	189	47.25

***Source:** *Adopted by the authors (2023)*

Figure 2: *Structural-Equation-Model – Path Coefficients*



***Source:** *Authors (2023)*

Measurement Model Calculation

The CFA results indicated that all items had factor loadings (0.681 to 0.921) surpassing the 0.6 threshold, implying their suitability for subsequent path analysis. Measurement model fit, assessed via 2/df, AGFI, CFI, IFI, and TLI, was satisfactory. Item reliability, evaluated through construct reliability and Cronbach's alpha, exceeded the 0.7 cutoff (Nunnally and Bernstein,1994). RMSEA remained acceptable at 0.054 which is within the acceptable range (0.05-0.08). Notably, 2/df was 1.982 (within 1-3 range), AGFI was 0.967 (close to 1), and CFI, IFI, and TLI values were 0.981, 0.974, and 0.989, respectively, affirming the model's robustness and validating its components for further analysis. Proximity to 1 indicates the measurement's fitness (Hair et al., 2006). Table 3's AVE values (0.607-0.704) surpass the 0.50 criterion as well construct's squared correlations and MSV values are below AVE, meeting and satisfying convergent discriminant validity (Fornell and Larcker, 1981). Table 4's latent items affirm convergent and discriminant validity, with mean scores (0.355-0.453) highlighting item importance. Standard deviation (SD) ranges from 0.045 to 0.121, underscoring item significance in clarifying structures.

Table 3: Dimension Items, Model Validity and Reliability

Construct	Item-Coding	Item-loading	AVE	MSV	Cronbach Alpha	Cronbach Reliability
Mindfulness (FFMQ) - (Baer et al., 2006)	**Observing**		**0.565**	**0.257**	**0.838**	**0.923**
	MF1	0.683				
	MF2	0.847				
	MF3	0.773				
	Describing					
	MF4	0.836				
	MF5	0.764				
	MF6	0.752				
	Acting with awareness					
	MF7	0.819				
	MF8	0.827				
	MF9	0.716				
	Non-judging-inner experience					
	MF10	0.919				
	MF11	0.866				
	MF12	0.888				
	Non-reactivity to inner experience					
	MF13	0.856				
	MF14	0.951				
	MF15	0.791				
Empathy Pradhan et al., (2017)	EM1	0.793	**0.616**	**0.112**	**0.743**	**0.854**
	EM2	0.738				
	EM3	0.774				
	EM4	0.885				
Transcendence Kinjerski (2013)	TR1	0.867	**0.685**	**0.169**	**0.867**	**0.914**
	TR2	0.756				
	TR3	0.781				
	TR4	0.862				
	TR5	0.721				
Job Satisfaction Macdonald and Maclntyre (1997)	JS1	0.765	**0.667**	**0.26**	**0.874**	**0.926**
	JS2	.744				
	JS3	.749				
	JS4	.795				
	JS5	.785				
	JS6	.764				
	JS7	.804				
	JS8	.89				
	JS9	.875				
	JS10	.891				

*Note: Average-Variance (AVE) MSV (Maximum-Shared-Variance) Extracted; MF-Mindfulness; EM-Empathy; TR-Transcendence; JS-Job-Satisfaction;

***Source:** *Authors*

Table 4: Validity (Discriminant)

Hypoth-eses	Mean	SD	CR	AVE	MSV	TR	MF	EM	JS
TR	0.46	0.13	0.86	0.61	0.16	0.78			
MF	0.47	0.09	0.83	0.6	0.36	0.36	0.79		
EM	0.45	0.05	0.95	0.72	0.18	0.34	0.52	0.84	
JS	0.44	0.11	0.91	0.67	0.35	0.49	0.61	0.34	0.87

***Source:** *Authors*

* Note: TR-Transcendence; MF-Mindfulness; EM-Empathy; JS-Job Satisfaction; SD-Standard Deviation; CR Construct Reliability; AVE-Average Variance Extracted; MSV-Maximum Shared Variance

Table 5: Analysis of Path

Path - Models	Path - Coefficient (β)	SE	T-Statistics	P - Value	Decision
H-1MF—>EY	.326	.098	3.651	.04*	Supported
H-2MF—>TR	.264	.054	4.251	0.01**	Supported
H-3MF—>EY—>JS	.455	.082	6.649	***	Supported
H-4MF—>TR—>JS	.478	.084	6.058	***	Supported

Note(s):-Structural-Model-Fit-Indices: AGFI = 0.967, CFI = 0.981, IFI = 0.974, TLI = 0.989, RMSEA = 0.054 and 2/df = 1.982, *p-value = 0.05; ** = 0.01; *** = 0.001. Transcendence (TR), mindfulness (MF), empathy (EY), and Job Satisfaction (JS).

Hypothesis-Testing

The route analysis exhibited positive correlations, as seen in Table-5 (Results). In particular, H1 is supported in which (=0.326, t > 1.96, p = 0.04).

The empathy's R2 is 0.51; mindfulness-51% of the variance in empathy which left 49% unsolved that was not predicted by mindfulness dimensions. Transcendence strongly correlates with mindfulness (route coefficient = 0.264, t > 1.96, p = 0.01), supporting hypothesis 2. Transcendence's R2 is 0.7; implies mindfulness-70% of the variance in transcendence. Results confirm that Transcendence and Job Satisfaction (β=0.478, t >1.96, p= .000) and Job Satisfaction (β =.455, t >1.96, p=0.000) have positive significant relationships, supporting H3 and H4 (Table 5; Figure 2). Cumulative findings coefficient (R2) is 0.66, indicating that Empathy and transcendence, job satisfaction is explained by 56% of the variation. However, 44-percent of the variance remains unexplained by the model and could be attributed to other variables such as hope-psychological capital-resilience, emotional-intelligence.

Testing-Mediation

The process macro test was used following Preacher and Hayes' (2004), to examine the mediation effect H3 and H4 were tested. **Table 6** shows that the bootstrap lower and upper limits for the mediation effect are 0.1357 and 0.3781, respectively, demonstrating that H3 is supported by the 95% Confidence Interval (CI), which excludes zero. Similarly, **Table 7** demonstrates that the bootstrap lower and upper limits for the mediation effect are 0.1754 and 0.3861, respectively, demonstrating values are no negative within 95%. Confidence Interval (CI), and therefore H4 is supported.

Table 6: Results of Empathy (Using PROCESS Mediation)

Direct Effects	**β**	**t-value**	**p-value**	**LLCI**	**ULCI**
MF–> EY	.7072	16.175	***	0.4367	0.7577
EY–>JS	.3624	8.7961	***	0.3204	0.5281
MF–> JS	.2868	6.7476	***	0.1125	0.3786
Indirect Effects	**β**			**Boot LLCI**	**Boot ULCI**
MF–> EY–>JS	0.2931			0.1357	0.3781

Note(s): ***p < 0.001

Table 7: Results of Transcendence (PROCESS Mediation)

Direct Effects	**β**	**t-value**	**p-value**	**LLCI**	**ULCI**
MF–> EY	.758	23.65	***	.7109	.8442
EY–>JS	.453	7.84	***	.2577	.4769
MF–> JS	.438	8.92	***	.3544	.5463
Indirect Effects	**β**			**Boot LLCI**	**Boot ULCI**
MF–> EY–>JS	0.2604			0.1754	0.3861

*Source: Prepared by the authors (2023) *Note(s): ***p<0.001

Discussion

Research in the field of employee psychology has highlighted the importance of job satisfaction as a key factor in influencing employees' empathy and their intention to transcend been investigated their inter-connection between mindfulness and job satisfaction. The entire study was predicated on the idea that people who experience empathy and transcendence fulfill their mindfulness. In particular, some professionals might not be compassionate, spiritual among their peers, and they might not use tactful strategies to assist their colleagues in strengthening their bonds with them. These findings match with Keng et al., (2011) examined numerous empirical studies exploring mindfulness' effect on psychological well-being and found a strong correlation also highlighted the effectiveness of mindfulness techniques like meditation, yoga, and mindful breathing in mitigating psychological distress symptoms. Cheng and Huang (2021), reinforces that transcendence and empathy operate as mediators between job happiness. Suliman et al., (2020) given strong evidence that transcendence and empathy play a significant role in promoting mindfulness, which stimuli organisations to strengthen employees' emotional commitment and boost job-happiness.

The H3 test results revealed interconnections with empathy therefore it was validated. This suggests that empathic workplace culture has a significant positive impact on managerial staff's job satisfaction in private manufacturing businesses. When employees demonstrate empathy towards others, it promotes cooperation and companionship within the organization, leading to job satisfaction. The fourth hypothesis supports H4 by confirming the link between mindfulness and job happiness and suggests the consequences for work satisfaction into one's mind. As a conclusion, this study indicates that incorporating transcendence and empathy into the workplace may raise employee happiness by mediating the relationship between employees' job satisfaction and mindfulness.

IV. Implications of the Study

Managerial and Social Implications

Organizations can enhance job satisfaction and well-being by promoting mindfulness practices, such as meditation and yoga, fostering social responsibility, and cultivating inclusiveness and diversity. This study explores the interconnectedness of these factors, emphasizing mindfulness to boost job happiness. The findings offer valuable insights for organizations, SMEs, and policymakers, guiding them to understand employee needs and perspectives for increased productivity, retention, and satisfaction. Socially, employees engage in community service, manage stress, and enjoy better mental-physical health, leading to more competitive job opportunities.

Limitations and Future Study

The research provides valuable perspectives on both individual-organizational opportunities; nevertheless, its applicability is limited by cultural differences among various settings. Cross-sectional data is used, which limits long-term usefulness due to the short-term focus. Future studies can examine the effects of mindfulness on employee job satisfaction in a variety of settings and cultures, including banking, academics, textiles, healthcare, and IT. Future research potential include investigating how technology-based interventions promote transcendence, empathy, and mindfulness among employees, an area that is currently understudied.

V. Conclusion

Positive results from the study conducted in Chennai's automobile sector suggest that transcendence and empathy work as mediators in the relationship between job happiness and mindfulness. According to the research conclusion, transcendence-empathy both play important roles, considering these findings companies may improve worker connection and belonging by encouraging higher levels of job satisfaction.

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ELON MUSK'S TWITTER ACQUISITION

Sumit Saha*

While Elon Musk's acquisition of Twitter presents exciting opportunities, it must be approached with a well-defined strategy that prioritizes responsible governance, user experience, and long- term sustainability. Maintaining a social media for business and social matters involves a lot of strategies and principles to be used. Balancing innovation with ethical considerations will be crucial for the success of this acquisition. The companies should adhere to the statements and policies for a better functioning.

Keywords : *Acquisition, Buyout, Investment, Equity , Social Media , Free Speech*
JEL Classification Code: *M5*

I. Introduction

Elon Musk, a very rich and influential person in business, bought a popular social media company called Twitter in 2022. He started buying parts of the company's ownership in January and became the biggest owner by April. At first, Twitter asked him to be on their board, but he refused. On April 14, he offered to buy the whole company, and after some back and forth, Twitter agreed to sell it to him for $44 billion. Musk said he wanted to make some changes, like adding new features and making the computer stuff that runs Twitter open for everyone to see.

Later, Musk said he wanted to cancel the deal because he thought Twitter wasn't doing enough to stop fake accounts. Twitter got mad and took Musk to court. Before the trial, Musk changed his mind and said he still wanted to buy Twitter. The deal was finished on October 27 at UD$ 43 billion, and now Musk is the boss of Twitter. He changed the company's name to X Corp. and the Twitter app is now called X. He also fired a lot of important people at Twitter and made many workers leave after giving them a big challenge.

Some people liked what Musk wanted to do with Twitter, like giving more freedom of speech, but others were worried that it might lead to more lies, bullying, and hate talk. In America, some conservative people supported Musk buying Twitter, but many liberal and former Twitter workers were worried about what he might do. Since taking over, Musk has gotten criticism for how he's running the company and for blocking some accounts.

While Elon Musk&'s acquisition of Twitter presents exciting opportunities, it must be approached with a well-defined strategy that prioritizes responsible governance, user experience, and long- term sustainability. Maintaining a social media for business and social matters involves a lot of strategies and principles to be used. Balancing innovation with ethical considerations will be crucial for the success of this acquisition. The companies should adhere to the statements and policies for a better functioning.

II. Background and Early Development

Elon Musk, a very influential business person, started using Twitter in 2010 and became incredibly popular with over 80 million followers by April 2022. In 2017, he joked about buying Twitter when someone suggested it, and later in March 2022, he began criticizing Twitter and asked his followers if they thought free speech was important for a healthy democracy. He talked with Twitter's co-founder, Jack Dorsey about the future of social media and even thought about joining Twitter's board of directors.

Musk also considered making a new social media platform or making Twitter private. This caused some big changes at Twitter, with Dorsey leaving his role as CEO. In early 2022, Musk started buying shares of Twitter, and by April 2022, he owned about 9.2 percent of the company, worth billions of dollars, making him the biggest shareholder. When this was announced, Twitter's stock price went up a lot. Twitter then invited Musk to join their board, but this came with some rules, like not owning too much of the company and not talking too openly about it.

Musk talked to Dorsey about this, but Dorsey didn't agree with Musk staying on the board. After a few days of back-and-forth, Musk decided not to join Twitter's board. Instead, he told Twitter that he wanted to buy the whole company and make it private. This caused a lot of discussions among Twitter's board members and legal advisors. Meanwhile, one of Twitter's shareholders sued Musk, claiming he manipulated the company's stock price and broke some rules set by a government agency called the Securities and Exchange Commission (SEC).

Buyout Offer

Elon Musk made an offer to buy Twitter for a very big amount of money, $43 billion. This offer was seen as aggressive because he said he might buy the company's stock if they didn't agree. The

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people in charge of Twitter said they would think about it. Musk said he wanted to make Twitter a place where people can talk freely, which he thinks is very important for a working democracy. Some people thought he was more interested in changing how Twitter controls what people say rather than fighting against government restrictions.

Twitter's leaders came up with a plan to protect the company from being taken over. They said if someone tried to do that, other shareholders could buy more of the company's stock. This plan would last until April 2023. Some big shareholders of Twitter told the leader, Bret Taylor, to seriously think about Musk's offer. Musk , then said, he had the money to buy Twitter, with help from a group of banks. This would include loans and money from investors. But some of the banks thought the amount of money Twitter wanted to borrow was too much and only wanted to give a bit less. This would cost Twitter a lot in interest and fees. After Musk announced he wanted to buy Twitter, the value of his other company, Tesla, dropped a lot.

On April 23, Musk told Taylor that this was his final offer and asked him to agree. Many news outlets said Twitter was close to accepting Musk's offer, but there was still a chance it might not happen. After this news, Twitter's stock went up. Big banks like Goldman Sachs and JPMorgan Chase said Musk's offer was fair. Twitter's board comically said yes to the buyout, which meant Twitter would become a private company once everything was done. Musk said he wanted to make changes to how Twitter works. He wanted to make the way tweets are shown to people more transparent and remove fake accounts. He even talked about using Twitter's once to help homeless people. He wasn't happy with how Twitter was being run, and said he might reduce pay for executives and board members. He also criticized some of the decisions made by Twitter's leaders.

In the UK, a group of important people called the Digital, Culture, Media and Sport Committee wanted to talk to Musk about how his buyout might affect free speech and online safety. Musk got even more money to help with the buyout, and some very rich and important people invested in it. There were investigations by government agencies into how the deal was happening. The CEO of Twitter, Parag Agrawal, fired two important people in the company.

Termination Attempt

Elon Musk tried to buy Twitter for a very big amount of money, but there were a lot of challenges along the way. At first, he said he might not go through with the deal because he heard that many of Twitter's users were fake user accounts. This made Twitter's value drop. But he later said he still wanted to buy it. Musk and Twitter's leaders had disagreements about giving Musk certain information. Then, Musk said he wanted to cancel the deal because he thought Twitter was not cooperating. Twitter said they would take legal action against Musk. This caused Twitter's stock to go down. There's a lot of back-and-forth with court dates and requests for information from both sides. There were many legal requests from both sides to gather information from people involved. Despite these challenges, Musk tried to negotiate a lower price, but Twitter turned down his offers. The situation is still ongoing.

Revival

Equityinvestor Commitment

Company	Amount Expected
Sequoia Capital Fund	$800 million
Vy Capital	$700 million
AH Capital Management	$400 million
Aliya Capital Partners	$360 million
Qatar Holding	$375 million

On October 27, Elon Musk successfully completed the purchase of Twitter. Major portion of the fund approximately $27 billion was backed by investors. He bought it for the originally agreed-upon price of $54.20 per share. This happened after a lot of back-and-forth and legal battles. As soon as the deal closed, Musk became the new owner of Twitter. He promptly removed several top executives from their positions. These executives were set to receive large sums of money due to their dismissal, but Musk indicated he might not pay them because he believed the company had been mismanaged. Musk took over as the CEO and merged Twitter with his company called X Holdings. This meant Twitter was no longer an independent company. It became part of a new entity called X Corp. Twitter's shares were removed from the stock exchange, which meant they could no longer be traded publicly.

III. Closure

After Elon Musk took over Twitter, he made some big changes (Exhibit-1). He made people who wanted to get verified pay for a subscription called Twitter Blue. He also made Twitter employees work longer hours to meet his goals for the platform. Unfortunately, he laid off about half of Twitter's staff. Later, he told the remaining employees to work really hard or leave. Many chose to leave.

Musk brought back some accounts that were previously banned, like Jordan Peterson, Kathy Griffin, The Babylon Bee, and even Donald Trump. However, he also suspended accounts that criticized him or were connected to anti-fascist groups. He relaxed rules about hate speech and allowed misinformation about COVID-19, which led to more hate speech on the platform. In December, Musk got into trouble for banning a Twitter bot that tracked his private jet.

Musk stepped down as CEO and chose Linda Yaccarino to take over. This happened in June 2023. Musk introduced Meta inspired (formerly Facebook) app called Threads. This new app was released in July 2023. Twitter didn't like this and said they might sue Meta. Also, X Corp., the company that owns Twitter now, sued a law firm called Wachtell for charging too much for their services during the acquisition.

Some of the challenges before Musk that remain are –

- Address the issue of fake accounts
- Improve the moderation process
- Make twitter more transparent
- Expand the features of Twitter
- Make Twitter more accessible

It would be interesting to see how he implements his vision for the development of this Platform.

Exhibit-1

Jagannath International Management School

Vasant Kunj, New Delhi

presents

Radio JIMS Vasant Kunj 90.4 MHz

Voice of The Voiceless

Jagan Institute of Management Studies

Rohini, Delhi

Presents

JIMS Rohini Community Radio 96.9 MHz

This radio is being run by the students and is providing an opportunity to develop programmes for community broadcast. The radio station is used by the college as laboratory for training students specializing in radio broadcast and they work in close coordination with community representatives and leaders. At present the radio broadcasts daily for eight hours with original programme of four hours in morning which is repeated in the afternoon. The students are encouraged to explore the needs of the society, thereafter, they conceive, design and broadcast their own programmes in a real life environment.

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