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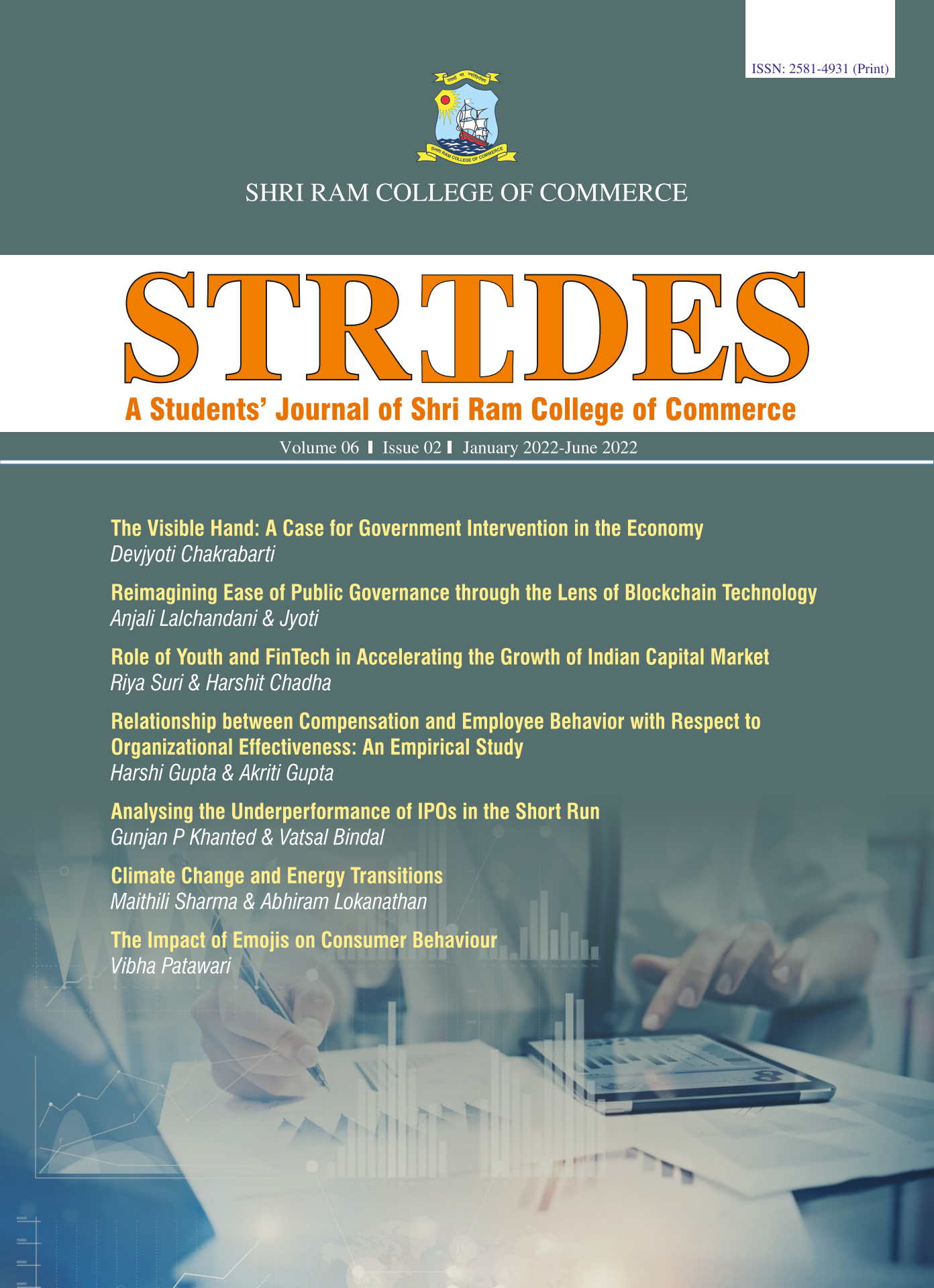

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STRIDES - A STUDENTS' JOURNAL OF SHRI RAM COLLEGE OF COMMERCE

ISSN 2581-4931 (Print)

Shri Ram College of Commerce is well known for its academic excellence and dedicated approach towards dissemination of knowledge in the academic world. The college appreciates the role of research in education and is committed to developing an inclination towards research in both faculty and students. In this pursuit, the college has taken the initiative to launch a new Journal named 'Strides - A Students' Journal of Shri Ram College of Commerce'.

ABOUT THE JOURNAL

It is a double blind reviewed bi-annual Journal launched exclusively to encourage students to pursue research on the contemporary topics and issues in the area of commerce, economics, management, governance, polices etc. The journal provides an opportunity to the students and faculty of Shri Ram College of Commerce to publish their academic research work.

PUBLICATION POLICY

Shri Ram College of Commerce is committed to upholding the high academic standards. Therefore, the Committee on Publication Ethics (COPE) follows a 3-Stage Selection Process while approving a paper for publication in this Journal. The policy is as follows:

Stage-1. Screening of Plagiarism

To maintain high *academic standards, academic ethics and academic integrity* each research paper received by COPE (Committee on Publication Ethics) is sent for screening of plagiarism on "Turnitin". The committee adheres to the maximum tolerance limit of 25%.

After screening for plagiarism, research papers are sent to the *Referees* (Subject Experts) for double blind review

Stage-2. Double Blind Review

The journal adheres to a rigorous double-blind review policy. Each research paper received by COPE is sent for review to the *Referee* (Subject Expert). The reports submitted by the *Referees* are sent to the respective students for improvement (if any, suggested by the *Referees*). After reporting all the suggestions recommended by the *Referees*, the revised and improved version of the papers are re-submitted by the students to the COPE.

If a research paper is rejected by the *Referee*, no further proceedings are taken into account. Once rejected by the expert means cannot be published at all.

Stage-3. Approval by Committee on Publication Ethics (COPE)

After double blind review and screening of plagiarism, research papers are submitted for final approval to the Committee on Publication Ethics (COPE). The research papers approved by COPE are finally sent for publication.

Since COPE is the apex authority to take all decisions related to publication of research papers and articles in 'Strides – A Students' Journal of Shri Ram College of Commerce', the decision of COPE is final and binding.

INSTRUCTIONS FOR MANUSCRIPT DRAFT

The following guidelines are to be carefully adhered by the students before final submission of the manuscript. The submitted manuscripts not conforming to the following guidelines are not taken into consideration for any further processing.

Format

Format of the article on the front page should be:

1. Title
2. Name(s) of the student(s) and mentor along with their details
3. Abstract
4. Keywords

Abstract

The abstract should capture the essence of the article and entice the reader. It should typically be of 100 -150 words, and in Italics.

Font type and word limit

The research paper is to be typed on A-4 size paper with single line spacing. The complete length of the paper should not exceed 5000 words including endnotes and references. The font size should be 12 and font style should be Times New Roman.

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The Journal adheres to the APA (American Psychological Association) Referencing Style, Sixth Edition. Students must refer to the APA Referencing Guidelines to ensure conformance to this reference style. For

further information you may visit the following link - http://www.apastyle.org

Endnotes

Endnotes should be serially arranged at the end of the article well before the references and after conclusion.

Table, Figures, Graphs

The first letter of the caption for table, figure, graph, diagram, picture etc. should be in capital letter and the other words should be in small letter - e.g. Table-1: Demographic Data of Delhi, Figure-1: Pictorial Presentation of Population etc.

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The soft copy of the manuscript should be sent through e-mail to the editor at strides@srcc.du.ac.in and cc to principaloffice@srcc.du.ac.in.

Hard Copy

The hard copy (3-Sets) of the manuscripts should be submitted in the Administrative Office of the College.

Declaration

As part of the submission process, the student and mentor needs to declare that they are submitting original work for first publication in the Journal and that their work is not being considered for publication elsewhere and has not already been published elsewhere. Again, the paper should not have been presented in any seminar or conference. The scanned copy of duly signed declaration by the students and their respective mentors has to be emailed along with the research paper.

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Principal's Message

The first issue of the Journal was released in the year by Shri Prakash Javadekar, Hon'ble Union Minister of Human Resource Development, Government of India. The Journal publishes research papers authored by the undergraduate students of the College under the guidance of faculty members. Research inculcates, among students, skills to apply classroom learning to real-world issue and problems. Towards this objective, the journal offers to the students of SRCC a great platform to sharpen their research skills and realistically display their academic perspectives on wide ranging areas of research of contemporary relevance.

The undergraduate students of the College, under the mentorship of the faculty members, contribute research papers and articles on various themes pertaining to economy, society governance, finance, business, environment, and sustainability. And, to maintain high quality of the journal, research papers are shortlisted for publication after a rigorous review process. Within a short span of five years the journal has progressed remarkably well.

The present Issue 2 of Volume 6 includes several multi-disciplinary and contemporary topics such as "The Visible Hand: A Case for Government Intervention in the Economy", "Reimagining Ease of Public Governance through the Lens of Blockchain Technology", "Role of Youth and FinTech in Accelerating the Growth of Indian Capital Market", and "Climate Change and Energy Transitions", Relationship between Compensation and employee behavior with respect to organizational effectiveness: An empirical study", "Analysing the Underperformance of IPOs in the Short Run" and "The Impact of Emojis on Consumer Behaviour".

I wholeheartedly congratulate the Editor of Strides, Dr. Rajeev Kumar, Editor, and the students whose research papers got published in the Volume 6 Issue 2 of the Journal. Simultaneously, I encourage more students to contribute their research papers for the successive Issues.

My best wishes for future research endeavours of the Students of the Shri Ram College of Commerce!.

Prof. Simrit Kaur
Principal

Editor's Message

Academic excellence and knowledge enrichment are the hallmarks of the Shri Ram College of Commerce. The College has always been keen to nurture research skills and aptitude among the students and teachers and to build a heuristic approach towards generation and dissemination of knowledge to further its mission of academic excellence. The Strides journal was launched by the College to provide an opportunity to the undergraduate students for publication of research papers in different areas like economy, business, society, polity environment, sustainability etc. The journal proved to be path-breaking in creating avenue and space for research publication at the undergraduate level.

Ever since its inception, the journal has been consistently gaining the interest of students. The present issue contains seven scholarly articles of contemporary relevance on themes like Government and Economy, Blockchain Technology, Fintech, IPOs, Climate Change and Consumer behaviour. A reading of the papers demonstrates the impassioned efforts put forth by the students, their faculty advisers, and faculty reviewers. I am sure that the issue will prove to be another milestone in the history of the Strides and it will add valuably to existing knowledge.

I would like to extend my sincere gratitude to the faculty mentors and faculty reviewers for providing their valuable inputs, suggestions, and comments.

I would like to praise and congratulate the students for their sincere efforts, leading to the publication of enriching research papers in the present issue of the Strides.

Best wishes!

Dr. Rajeev Kumar
Editor

STRIDES-A STUDENTS' JOURNAL OF SHRI RAM COLLEGE OF COMMERCE

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RESEARCH PAPERS

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The Visible Hand: A Case for Government Intervention in the Economy

Abstract

Against the backdrop of Covid-19, this paper explores the concept of government intervention in the economy. Three fundamental questions are asked with regard to this theme: why is government intervention in the economy needed, what does government intervention entail, and what is the effectiveness of such intervention. It is noted that the presence of externalities and market failures such as imperfect information and incomplete markets create distortions and have real consequences on welfare, thereby highlighting the need for government intervention. This intervention can take the form of direct provision of goods and services including income support and unemployment benefits, or through regulation and supervision. This paper also analyses the possibility of failures in government intervention in the economy

and concludes by discussing how government intervention alone does not guarantee a better outcome for society unless it is also accompanied by the confidence and trust of the public in the credibility of these interventions.

Keywords

Covid-19, government intervention, externality, market failure, government failure.

Introduction

What lies at the core of the origins of different schools of economic thought is a dynamic debate involving the role and extent of government intervention in the sphere of the economy. Classical economists beginning from the times of Adam Smith had their belief in the invisible hand, a belief rooted in the notion of the inherent ability of competitive markets to reach equilibrium without the need for any intervention by states. The role of the state only as a night watchman reflected the ideology that "since there were no fundamental flaws in the competitive market mechanism, it was not something anybody needed to manage on a large scale." (Gallarotti 2000, 5). However, against the backdrop of historical events such as World War I and the Great Depression, there was a growing concern over the need for an interventionist state providing welfare through social safety nets and macroeconomic stabilisation, a change of beliefs best concretised by the publication of *The General Theory of Employment, Interest and Money* by John M. Keynes in 1936. Keynes argued that during deficient demand conditions, governments should make attempts to stimulate investment or consumption through greater intervention in the economy and redistribution of income through taxation respectively, but the "the wisest course [being] to advance on both fronts at once." (Keynes 1936 (2018), 289).

With major recessions in 2008-09, and in 2020 caused by the Covid-19 pandemic, this discussion has assumed new charge and importance. Adding to this debate, this paper attempts to explore four arguments

regarding government intervention. The first of them works around the view that the question of government intervention is no longer a question of *should* but has rather become a question of *how*. This could be best exemplified by the WHO Director-General's remarks at a Covid-19 briefing in March 2020, "We cannot say this loudly enough, or clearly enough, or often enough: all countries can still change the course of this pandemic…. countries must take a whole-of-government, whole-of-society approach, built around a comprehensive strategy to prevent infections, save lives and minimise impact."[1] There thus seems to be an acceptance of the necessary role to be played by the government during these recessions and crisis situations. There are active roles that should and must be undertaken by the government in the designing and enforcing of economic policies targeted at addressing problems that pure market forces themselves cannot resolve (Stiglitz 2021). With data collated from the OECD database, Our World in Data, and International Monetary Fund Policy Tracker, the pattern of government intervention and the more prominent forms of such intervention during the pandemic will be explored in this section.

Secondly, the First Welfare Theorem, under a certain set of conditions, asserts the Pareto Efficiency of the competitive equilibrium and is often interpreted as supporting the argument for pure market forces reaching an optimal outcome guided by the invisible hand. However, it is important to note that the inability of these conditions to be satisfied, creates distortions and thus has real consequences on welfare. Therefore in situations of externalities, incomplete markets and imperfect information, "there exist government interventions (e.g., taxes and subsidies) that can make everyone better off"(Greenwald and Stiglitz 1986, 259). Particularly in a pandemic like Covid-19 where the spread of the disease caused by an individual's decision to go to work or to do any other activity has clear consequences for other individuals is an externality that cannot be dealt with through the usual price system (Stiglitz 2021). A public health policy dealing with the

[1] These statements are part of the opening remarks by Dr. Tedros Adhanom Ghebreyesus, WHO Director-General's opening remarks at a Covid-19 Media Briefing on 11 March, 2020.

development and deployment of vaccines and investment in medical technology in conjunction with an economic policy focusing on providing social safety nets and minimising the economic damage caused are apparent necessities in this unprecedented state of affairs. Two of the externalities discussed in this section are pertaining to how the containment and prevention of contagious diseases like Covid-19 is a public good (Gartner 2012, 307) and how asymmetric information creates problems in insurance and risk markets.

But Covid-19 has been different, while there has been the obvious demand shock as in most recessions, but never in history have all governments and firms across the world insisted that their citizens and workers stay at home, underlining the unusual supply shock. The question then arises that while stimulating investment and consumption assists in dealing with the problem of demand deficiency, what can governments do to address these supply-side issues, a question that constitutes the third component of this paper. While in the short run snags in supply chain management for commodities like oil and semiconductors have played a role in the rising inflation, in the long run, the development of an organised infrastructure system (César Calderón and Luis Servén, 2004) and expenditure on human capital and human capital development (Lucas Jr. 1990) combined with incentivising innovation assist in tackling some of these issues. Expansion of fiscal expenditures caused a ballooning of public debt. At the same time, central banks attempted to inject liquidity through the purchase of government securities (Allen 2021, 79). It is however imperative to note that as long as countries are able to transition to a track of sustained growth, the better would be the outlook towards fiscal health even in spite of such heavy expenditures (Kogan, Stone, et. al. 2015).

Finally, the above arguments however might lead to the wrong idea that government intervention is being suggested as some form of a panacea. There are two points to be made in this regard. Firstly, it is not being suggested that governments should intervene and regulate in all

spheres and sectors of the economy which, as experience from the USSR shows, is inefficient and impossible to manage properly. Rather, government intervention is always meant to be a means to an end, the end being sustained economic growth. Secondly, related to the first point, even in situations of market failures, government intervention is not sufficient to guarantee a better outcome. For instance, even though the US government has spent trillions in dealing with the pandemic, vaccine hesitancy and eroding trust in government and media continue to pose serious challenges to the recovery process (Giles and Robinson 2021).[2] But countries like New Zealand that have addressed the repercussions of the pandemic better are countries with successful governments. Thus while government intervention acts as a lubricant to the economy's engine, credibility and public confidence in these public institutions are important determinants of the effectiveness of such intervention. Stiglitz (2010, 15) suggests a treatment of these instances of government failures in a manner similar to that of market failures, through increased transparency and competition, a theme that will be discussed in the fourth section of the paper.

Under the section, "Statistical Inference", using data collated from the World Bank and OECD database for 23 countries for the time period 2000-2017, a regression analysis is done trying to establish a relationship between welfare and government interventions. The final structure of the model used here was influenced by the earlier works of Ding (2012) and Barro and Sala-i-Martin (2004) with some emendations and improvements.

Should or How?

The two major recessions in recent memory are those of 2008 and 2020. Looking at World Bank data pertaining to GDP per capita growth rate and unemployment rate in these years, for Organisation for Economic Co-operation and Development (OECD) member countries

[2] According to a survey of 1,015 American adults by the Advanced Studies in Culture Foundation (as cited in Giles and Robinson 2021), 57% of the people said the government and media in the United States had failed to evoke a sense of trust and confidence.

taken as a whole, we see that GDP per capita growth rate was as low as -4.11% in 2009 and -5.11% in 2020. The unemployment rate for the same years was observed to be at 8.28% and 7.38% respectively. In the context of such precarious situations consider Fig. 1 which plots central government expenditure as a share of GDP for the years 2004 to 2020. Two salient points are to be made with respect to the graph: 1) Countries whether taken collectively or individually exhibit an inverted-U structure for the period 2007-2011, suggesting an increase and then a decrease in central government expenditure coinciding with the recession. 2) While data availability poses some restrictions on our study, the curves for the OECD members and World show a positive slope from 2018 to 2019, the most notable is the sudden increase from 22.66% in 2019 to 33.01% in 2020 for the US government.

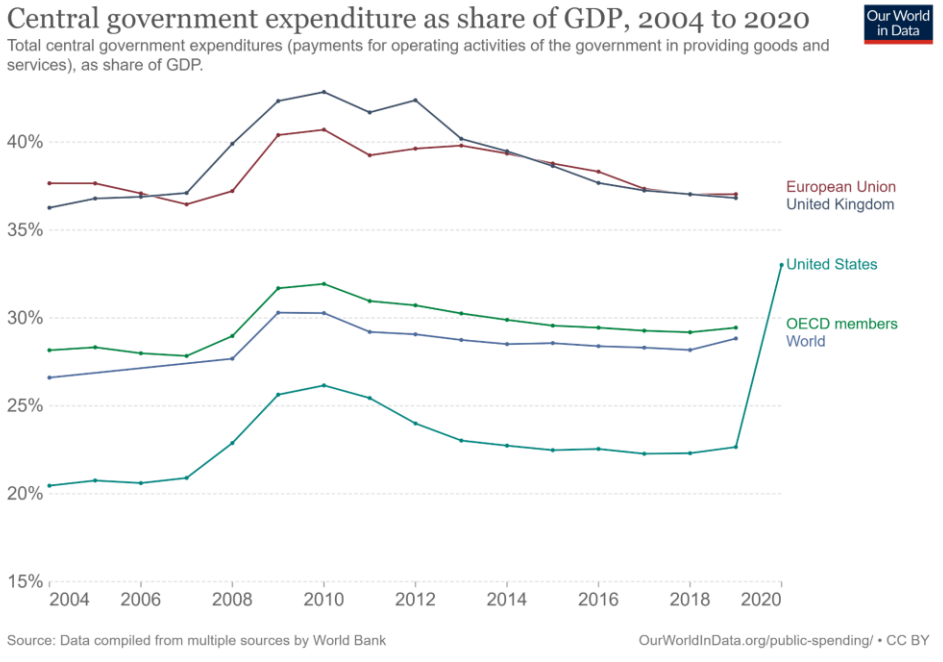

Figure 1. Central Government Expenditure as a share of GDP from 2004 to 2020.

(Source: Ortiz-Ospina, Esteban and Max Roser. 2016 (2020). "Government Spending." https://ourworldindata.org/government-spending)

Without making any claims regarding the efficiency of any such interventions which would be addressed in later sections, Fig. 1 manages to demonstrate the consensus for increased government spending during these crisis situations. To properly analyse how governments actually intervene in recessions, the remaining part of the paper focuses on the recession caused by Covid-19 for the reasons outlined above. In this regard, public health policy and economic policy had complementary roles to play because while measures like unemployment benefit programmes, subsidies, and stimulus checks had a direct bearing on the ability of people to afford daily necessities, the resilience of countries in minimising the spread of the disease, developing vaccines, and providing accessible and affordable healthcare are indisputably vital measures during a pandemic.

What should governments have done in terms of economic and health policy while dealing with the pandemic? And what have been some of the more favoured measures? While nations had to adjust their comprehensive strategy in accordance with their respective local contexts, the core of such strategy often involved measures for "(i) identification, isolation, testing, and clinical care for all cases, and (ii) tracing and quarantine of all contacts" as recommended by the World Health Organization. To look at how this was achieved, consider Fig. 2[3]. The figure plots a Containment and Health Index on a scale of 0 to 100 (100 denoting the strictest response), a measure calculated by The Oxford Coronavirus Government Response Tracker (OxCGRT) on the basis of thirteen response metrics. It essentially is a numeric estimate for the strictness of government policies which includes among other things school and workplace closures, restrictions on public gatherings, international travel controls, testing policy; extent of contact tracing; face coverings; and vaccine policy. For India, Germany, the USA, the UK, and New Zealand, the mean value of the index over the period from 22 January 2020 to 24 January 2022 have been calculated as 67.52, 62.96, 59.71, 58.30, and 46.85 respectively. Based on the plot, the USA has

[3] The Covid-19 Containment and Health Index plots for the countries India, Germany, and United Kingdom can be viewed in the Appendix.

maintained largely a constant level of restrictions over the two years, whereas India shows almost cyclic repetitions of relatively larger and lower index values coinciding with the rise and fall of the different Covid waves, also New Zealand even with the lowest mean score reflects much variability[4] in the index values compared to the other countries suggesting considerably stringent responses in dealing with specific outbreaks.

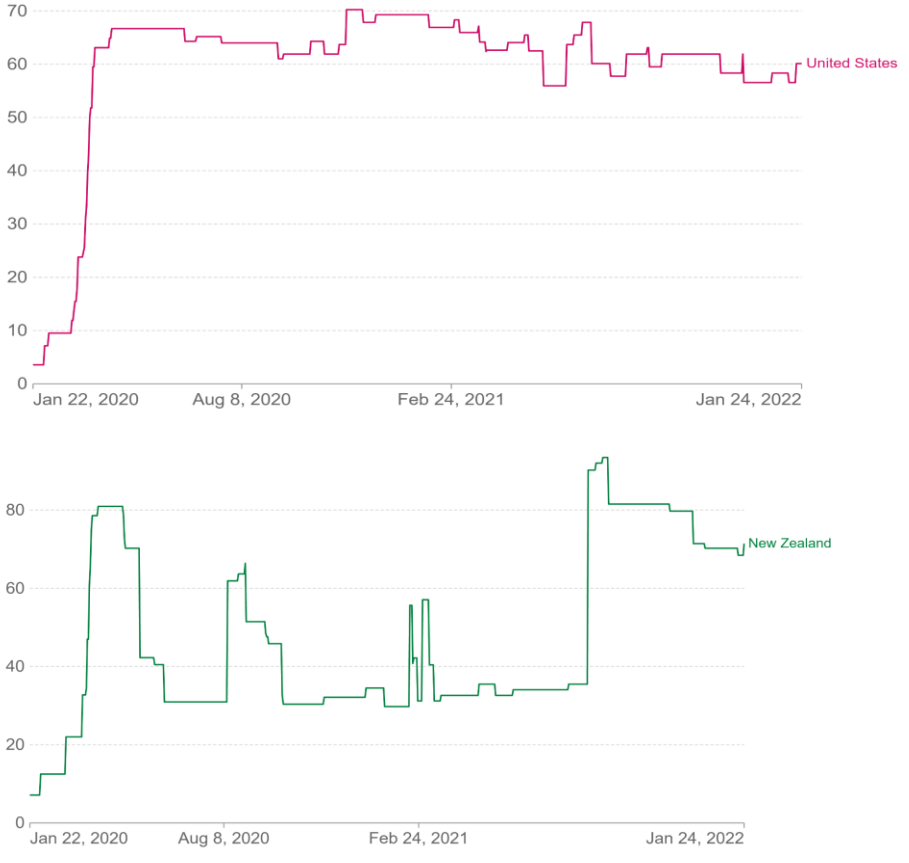

Figure 2. COVID-19: Containment and Health Index

(Source: Our World in Data. "Covid-19: Containment and Health Index, Mar 14, 2022." https://ourworldindata.org/grapher/covid-containment-and-health-index)

[4] The standard deviation of the index values for India, Germany, the USA, UK and New Zealand has been calculated as 16.04, 14.84, 14.01, 15.40, and 22.27 respectively over the period from 22 January 2020 to 24 January 2022.

This is a composite measure based on thirteen policy response indicators including school closures, workplace closures, travel bans, testing policy, contact tracing, face coverings, and vaccine policy rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

However, the enforcement of such stringent measures limiting physical movement and closing of workplaces would have had consequences on the socio-economic well-being of individuals. This is where an economic policy that serves to "protect access to food, water, and essential goods and services, protect incomes, support families and communities; and ensure human rights for all, including gender considerations" (WHO 2020, 2) comes in. The Indian government had responded with cash transfers and in-kind transfers (1.2 percent of GDP), provision of wage support and employment to low-wage workers (0.5 per cent of GDP), higher subsidies in fertilisers for the agricultural sector (0.3 percent of GDP) and measures aimed at providing credit support to micro, small, and medium-sized enterprises and farmers and additional public investment including investment on healthcare infrastructure (0.1 per cent of GDP)[5]. The USA had the Coronavirus Relief and Government Funding Bill, a US $868bn relief fund (about 4.1 percent of GDP) followed by the American Rescue Plan of US $1,844bn (about 8.8 percent of 2020 GDP) providing direct stimulus checks extending unemployment benefits for existing programs. The US $483 billion Paycheck Protection Program and Health Care Enhancement Act and Coronavirus Aid, Relief and Economy Security Act ("CARES Act") of estimated US $2.3 trillion (around 11% of GDP) expanded the provision of loans and grants to small business, provided for stronger food safety nets and unmployment benefits for the more vulnerable sections of the

[5] For India, these fiscal policy response data (International Monetary Fund Policy Tracker) are as of June 3, 2021.

population, with additional assistance for hospitals and transfers to local and state governments.[6]

A similar pattern of responses can be observed also by the New Zealand government (International Monetary Fund Policy Tracker). Preeminent among these is a permanent increase in social spending to protect vulnerable people (total NZ$2.4 billion or 0.7 per cent of GDP), wage subsidies and income-relief payments (NZ$13.9 billion or 4.3 per cent of GDP and NZ$0.6 billion or 0.2 per cent of GDP respectively), a higher infrastructure investment (NZ$3.8 billion or 1.2 per cent of GDP), and loans of up to NZ$100,000 to small businesses.[7] Under this sea of facts and figures, what lies is an attempt by governments to stimulate consumption, increase investment, and provide income and wage support to at-risk and lower-income populations, exactly the role of government in a recession as envisioned by Keynes in the General Theory.

Efficiency and Welfare

Observe the Covid-19 response rankings as published by the Lowy Institute ranking New Zealand, India and USA 1st, 86th and 94th respectively in January 2021. To go back to the Containment and Health Index[8] (Our World in Data), the country with the lowest mean score has ranked first while those with much higher mean scores are further down in the rankings. This begs the question: if these countries have used the same set of measures (focusing on limiting the physical movement of people, reducing transmission, and providing income and wage support), why are there such significant differences in their

6 For USA, these fiscal policy response data (International Monetary Fund Policy Tracker) are as of June 3, 2021.

7 For New Zealand, these fiscal policy response data (International Monetary Fund Policy Tracker) are as of July 1, 2021.

8 The Containment and Health Index (Our World in Data) is only a measure of the strictness of government policies. It does not measure nor does it make any comments about the effectiveness or appropriateness of said policies.

rankings? To put it more formally, how do you establish the efficiency of a government decision?

To properly understand and engage with this idea of efficiency it is important to look at where this idea originates from. Adam Smith wrote, “Every individual necessarily labours to render the

annual revenue of the society as great as he can. He generally indeed neither intends to promote

the public interest, nor knows how much he is promoting it . . . . He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote as end which was no

part of his intention” (1776 (1987), 265). These words paved the way for The First Fundamental Theorem of Welfare Economics, later proved in the twentieth century. It states that working with the assumption that all individuals and firms are selfish price takers, the competitive equilibrium would be Pareto optimal (Feldman 2018). What this assumption entails is that there exist a large number of buyers and sellers who engage in trade in markets devoid of any externalities. The First Welfare Theorem hinges on the existence of such a benchmark economy.

In a pandemic, how reasonable are these assumptions? In the presence of a contagious disease, the decisions and/or actions of individuals with regard to their movement have ramifications on the decisions and/or actions of other individuals, which by definition is an externality. There are three broad perspectives of looking at this externality, 1) as a macroeconomic externality focusing on the inherent interrelationships among firms and 2) as related to the provision of public goods and 3) as incomplete markets with asymmetric information in insurance and risk markets. Deferring the tackling of the first type to the next section, let's begin by examining the second type.

Public goods are a class of goods that are non-excludable and non-rivalrous, the challenge lies with the weaker incentives for their private provision. As discussed presciently by Gartner (2012, 307), “The

prevention and containment of infectious or communicable diseases is a classic case of a global public good." This containment and eradication of diseases, often requiring the combined efforts of all countries is not a new phenomenon. Experience from the Global Polio Eradication Initiative in 1988, the SARS outbreak of 2003-04, and the Ebola virus epidemic from 2013-16 highlight the importance of collective efforts by countries in combating these diseases. Even with polio, it is the inadequacy of finances as noted by WHO that has been "the single greatest threat to realizing the historic eradication goal" (Gartner 2012, 308). Again it is the government that can allocate resources for the accessibility, availability, and affordability of healthcare for the realisation of enormous global benefits that the containment of these diseases can provide. In relation to Covid-19, the earliest government responses were the imposition of lockdowns and restrictions on movement as noted above. That notwithstanding, what ought to happen in normal circumstances, is that firms undertake activities in preparation for these unusual events including stockpiling protective equipment and ventilators. But without proper incentives, the onus once more ends up on the government for the provision of such paraphernalia.

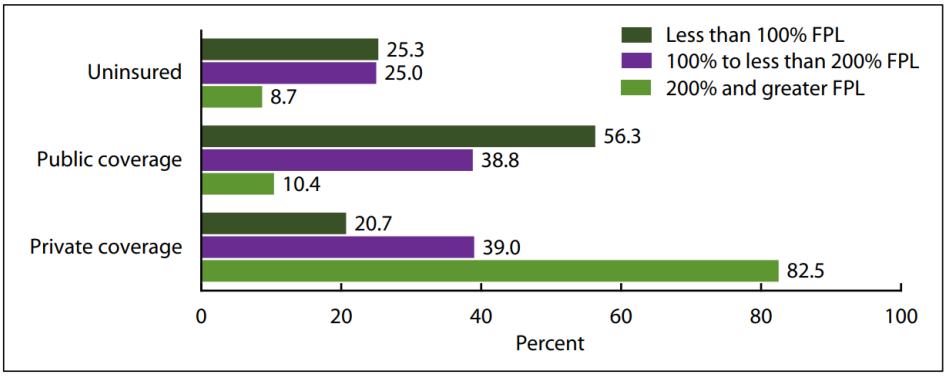

Figure 3A. Percentages of adults aged 18–64 who were uninsured or had public or private coverage at the time of the interview, by family income as a percentage of the federal poverty level: the United States, 2020. Note: FPL is the federal poverty line.

(Source: Cohen, Robin A., Emily P. Terlizzi et. al. 2020. "Health Insurance Coverage." National Center for Health Statistics, Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur202108-508.pdf)

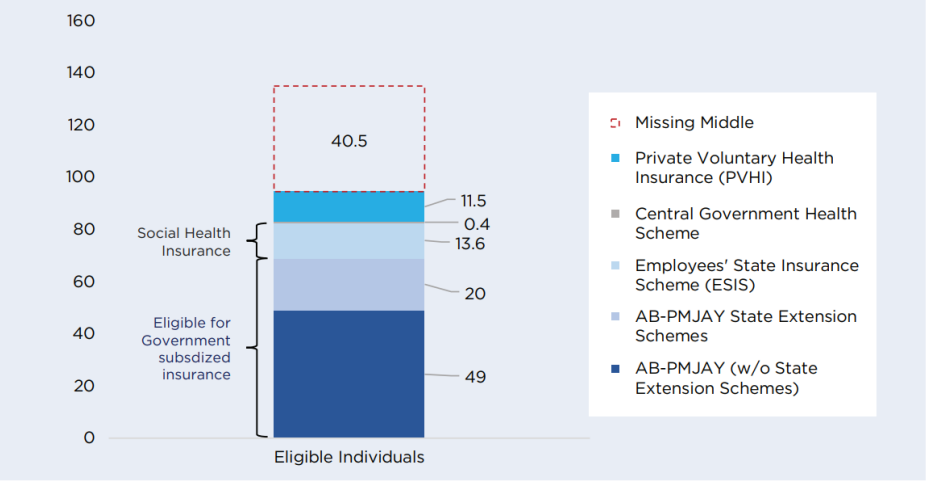

Figure 3B. The number of individuals eligible or covered, by health insurance scheme type in India as of October 2021

(Source: NITI Aayog. 2021. "Health Insurance for India's Missing Middle." https://www.niti.gov.in/sites/default/files/2021-10/HealthInsurance-forIndiasMissingMiddle_28-10-2021.pdf)

Examining Figure 3 based on data from Centers for Disease Control and Prevention, USA and NITI Aayog, India; in the USA almost 14% of the population are uninsured and the majority of the population (67.5%) having insurance are under private coverage in 2020. For India, as of October 2021, "At least 30% of the population, or 40 crore individuals are devoid of any health protection through insurance"(NITI Aayog 2021). There are two instruments of regulation that are suggested for insurance and risk markets for protecting consumers while also ensuring access and promoting macroeconomic stability and growth as outlined below:

1) Information, being non-rivalrous and non-excludable in nature, is a public good. Through disclosure, greater transparency in these markets can be achieved and through regulations, governments set a standard. It is the ability of firms to meet this standard that ensures their operation. These are not drastic requirements as a report by The OECD Competition Committee in 1998 indicates, "Most countries noted that the competition law applies, in principle, to the insurance sector. However, specific features of the insurance sector need to be taken into consideration when applying the antitrust law. Examples include agreements for information sharing and agreements for co-insurance or co-reinsurance. Such agreements, only in so far as they are beneficial to the development of the market, should not, in general, be considered restrictive."
2) The second more important role of the government is to provide social insurance. Such insurance would not only cover health insurance but also unemployment, retirement, and social security. Private markets are built on and function on self-interest. But in the case of global macroeconomic events full of uncertainty like Covid-19, private insurance markets either fail, leading to the exploitation of people or do not simply have the means for addressing such systemic risk. The government then should serve as a "reinsurance company of last resort" (Stiglitz 2021) in these situations.

Macroeconomic Externality and Public Debt

As pointed out above the uncommon nature of the Covid-19 recession lies in the simultaneous supply shock along with the demand shock. As firms responded to government-mandated shutdowns, often through a complete cessation of production activities at risk of spreading infections among employees, both workers and firms had to bear the brunt of the economic repercussions. For workers, these repercussions in many cases took the most unfortunate form of being laid off. To choose an extreme and yet unsurprising example, in the USA alone,

adjusted for seasonal changes in unemployment, 18 thousand workers lost their jobs to layoffs in April 2020 (U.S. Bureau of Labor Statistics 2022). As workers lost their jobs and income, predictable was the drop in their consumption. Furthermore, if firms don't produce any goods, they can't sell any goods. A related concept is that of a firm exit multiplier[9], wherein shutdowns or slowdowns in particular firms trickled down to cause similar effects in other sectors. If restaurants in an individual's neighbourhood begin to close due to health concerns over a pandemic, there would be a reduction in his/her demand for businesses like car dealers or car service providers. In this atmosphere of uncertainty, this deterioration in "their [firms'] balance sheets undermines the ability and willingness of corporations to make investments or even produce" (Stiglitz 2021). It is imperative to realise that bankrupt firms and businesses wouldn't by miracle become "unbankrupt" after the recovery process (Stiglitz and Yun 2014), resulting in this process having the more difficult task of creating new businesses.

But the data seems to tell a different story, for the pandemic bankruptcy rates at least in some countries have fallen during Covid-19. In the background of the above situation, how is it that the bankruptcy rates have fallen? A part of the reason lies in the swift responses by policymakers in alleviating the short-term liquidity shortfalls and arrangements for insolvency relief tools. "These temporary government measures prevented a much greater economic crisis and were key in sustaining businesses of all sizes (even though larger and more mature firms were more likely to take advantage of these opportunities and succeed)."(OECD 2021).

While direct cash flow support and loans at low-interest rates were part of the preliminary measures, some other measures include debt-for-equity swaps which decrease the leverage ratio, reducing debt overhang risk through pre-insolvency frameworks and debt

[9] The idea of the firm exit multiplier has been drawn from Veronica Guerrieri, Guido Lorenzoni, Ludwig Straub and Iván Werning's 2020 working paper, "Macroeconomic Implications of Covid-19: Can Negative Supply Shocks Cause Demand Shortages."

restructuring, the use of more simplified procedures for small and medium-sized enterprises (SMEs) and even temporary state ownership (OECD Policy Responses to Coronavirus 2020).[10]

In the long run, it is imperative to take a more holistic approach to address these problems. For workers, the enlarged provision of education at all levels, skill development programmes, and vocational training would result in greater human capital development. Thus, ensuring that even after the realisation of the recovery process, firms don't lose their industry-specific human capital and workers have more flexibility in job options. On top of this development of the human capital stock (Lucas Jr. 1990),[11] governments can focus on creating an environment conducive to investment, having a compounding effect through the development of infrastructure facilities. The stock of infrastructure assets is a sine-qua-non of growth and infrastructure quality and quantity has been seen to have an impact on reducing inequality[12]. This happens because "infrastructure helps poorer individuals and underdeveloped areas to get connected to core economic activities, thus allowing them to access additional productive opportunities" (Estache as cited in Calderón and Luis Servén 2004, 5).

[10] Figure A.2 in the appendix shows the multipronged approach and the possible policy options that should be taken in addressing insolvency and debt overhang risk.

[11] In a 1990 paper titled "Why Doesn't Capital Flow from Rich to Poor Countries?", Robert E. Lucas Jr. attributes the lack of capital flows from the developed to the developing countries to a large part to differences in human capital and human capital development.

[12] As shown by César Calderón and Luis Servén (2004) in their paper "The Effects of Infrastructure Development on Growth and Income Distribution": "(i) growth is positively affected by the stock of infrastructure assets, and (ii) income inequality declines with higher infrastructure quantity and quality".

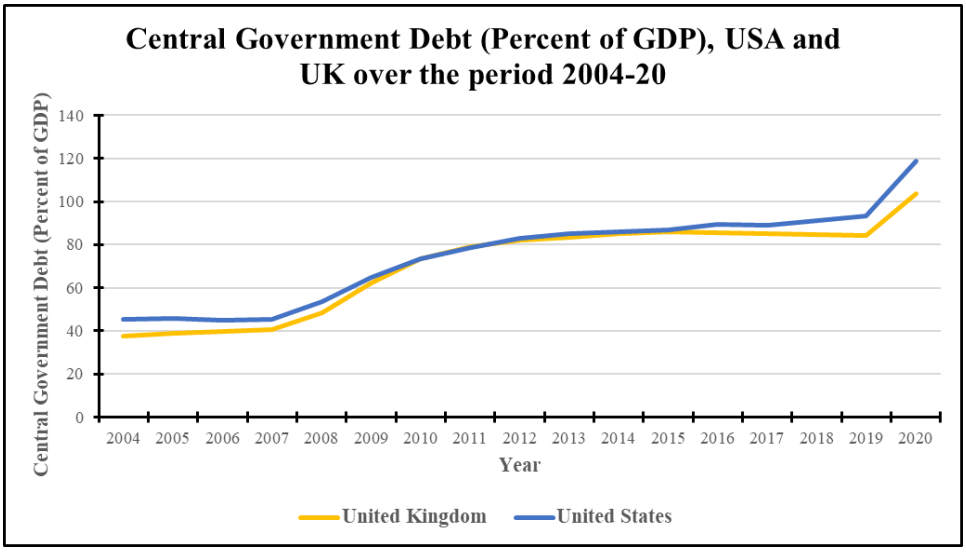

Figure 4. Central Government Debt (Percent of GDP) for USA and UK over the time period 2004-20.

(Source: International Monetary Fund. "Central Government Debt: Percent of GDP." https://www.imf.org/external/datamapper/CG_DEBT_GDP@GDD/USA/GBR/CAN)

What Figure 4 shows is that as a consequence of such large-scale expenditure undertaken by the government, the ballooning of central government debts around the world has been foreseeable. Before understanding the policy responses to this debt, a small comment on public debt becomes important. The term "public debt" has over the years developed a negative connotation, however the greater the expenditure on productive activities, the faster is the growth process, and provided that on average the rate of growth is greater than the rate of interest, the more reassuring it is for policymakers in restoring fiscal health[13] (Kogan, Stone, et. al. 2015). For US and UK governments, "The main feature of government debt management in both countries has been heavy purchases of government securities by their central banks" in an effort to inject liquidity into the markets and "to restore market

[13] Looking at US data for two centuries since 1792, on an average economic growth has exceeded interest rates, thus aiding in the shrinkage of the size of existing debt.

functioning." (Allen 2021, 79). The purchases of government securities on such a large scale cause an acceleration of the money supply, exposing these countries to inflation risk. The typical response by central banks to such inflation is the raising of short-term interest rates. However, considering that economies have been gradually recovering from the economic consequences of the pandemic, the raising of interest rates, does not seem to be a wise option to opt for.

Government Failure

There is a question that this paper is yet to answer. Why was it that a relatively small country like New Zealand completely performed superlatively better when compared to the much bigger economies of India and the USA in dealing with the pandemic? The inquiry into this question offshoots into two fragmented questions: 1) Why is it that governments fail? And 2) How to minimise the possibility and mitigate the consequences that these failures cause?

To answer the first fragment requires us to return back to an earlier quoted WHO interim guidance report which suggests,

"To be effective, public health and social measures require the engagement of all members of society. Policies and interventions should be accompanied by regular dialogue through trusted channels to provide the right information at the right time to enable people to make informed decisions to protect themselves. Decision-makers should engage with communities and communicate openly and regularly with people about how to implement public health and social measures throughout all phases of the emergency response and recovery" (WHO 2020, 2).

What underlies the above statement is the idea of credibility and trust people have in their chosen governments, a trust cultivated through and built on the involvement of all concerned stakeholders in the decision-making process. There are two datasets to support this argument. The first of these is the Economic Policy Uncertainty Index largely based on newspaper coverage of policy-related economic

uncertainty, for the USA and UK, there have been significant up and downs in the value of this index for the last two years[14]. Moreover, the other dataset is the trust in government indicator of OECD, calculated using a sample survey. Norway, Finland, Denmark, and New Zealand, countries in the top 25 of the Lowy Institute Covid-19 response rankings (2021), are countries with more than 60% confidence in their national governments.

Apropos of the second question, a possible strategy in dealing with these instances of government failures can involve the use of the same measures prescribed for dealing with externalities and market failures. Elected representatives have an incentive to deliver on their promises. Governments that fail, lose their credibility and legitimacy and are thus replaced. In this context, it is the Constitution that sets, protects, and reinforces the standard that governments ought to abide by. Beyond that, "so long as there is sufficient transparency and competition, there are corrective processes" (Stiglitz 2010, 15) in place.

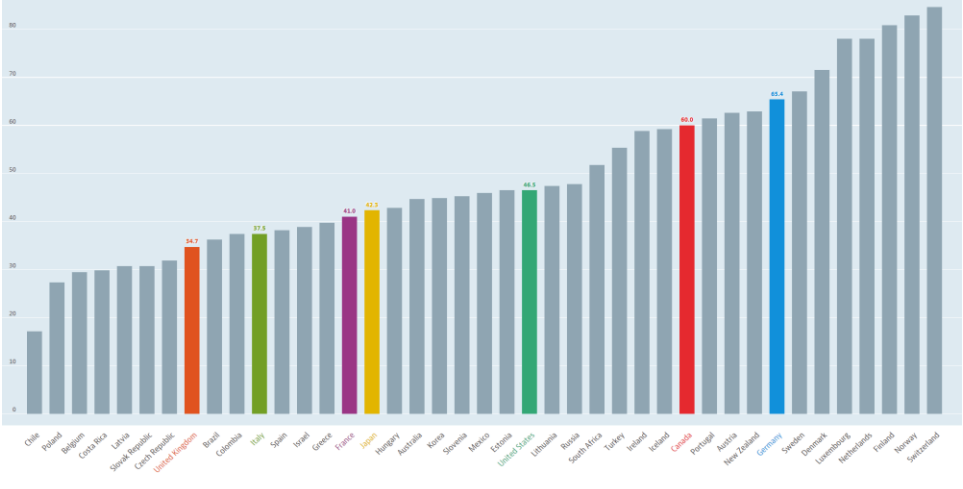

Figure 6. Trust in government Total, Percentage, 2020 or latest available.

(Source: OECD Data. "Trust in Government." https://data.oecd.org/gga/trust-in-government.htm)

[14] Figure A.3 plots the Economic Policy Uncertainty Index for the UK and USA in the Appendix.

A final caveat regarding government intervention. What has already been established is the undeniable role governments play in an economy. In fact, the public sector makes up a significant proportion of the economy in some countries of the world, with central government expenditure as a share of the GDP as high as 46.49% and 36.82% in 2019 in France and the UK (Ortiz-Ospina and Roser 2016 (2020)) respectively. The role of the government thus cannot possibly be ignored. However, even under the broadest interpretation, government intervention does not imply the subsumption of the entire private sector. There is a middle ground here. Even Adam Smith in *The Wealth of Nations* (1987) recognizes the importance of a government in ensuring the proper functioning of the market[15] and in the provision of education, law and order.

Statistical Inference

An initial econometric model was conceptualised as a way of trying to establish the relationship between the unemployment rate, lockdown restrictions, and government spending to show the importance of such intervention. However, unsatisfactory results (See Figure A.4 in Appendix) such as a low R^2 value suggested the need for reworking the model. At its core, what is required is a dependent variable which acts as a measure of welfare and/or economic performance and an independent variable(s) which reflects the degree or extent of government intervention and welfare expenditure, allowing us to understand the interplay between the variables through a regression.

[15] Adam Smith in *The Wealth of Nations* (1987, 322) writes, "To widen the market and to narrow the competition, is always the interest of the dealers…The proposal of any new law or regulation of commerce which comes from this order, ought always to be listened to with great precaution, and ought never to be adopted till after having been long and carefully examined, not only with the most scrupulous, but with the most suspicious attention. It comes from an order of men, whose interest is never exactly the same with that of the public, who have generally an interest to deceive and even oppress the public, and who accordingly have, upon many occasions, both deceived and oppressed it."

Variables	Description	Source
GDP	GDP per capita annual percentage growth rate with constant local currency	World Bank
INV	Annual percentage growth rate of gross fixed capital formation (GFCF) or investment, defined as the acquisition of produced assets.	OECD
SOC	Social expenditure on cash benefits, direct in-kind provision of goods and services, and tax breaks for social purposes.	OECD
HEALTH	Per capita health spending on the consumption of health care goods and services financed by government and compulsory health insurance	OECD
POP	Population growth rate	OECD
MFP	Multifactor productivity measures how effectively the production process makes use of labour and capital inputs.	OECD

Table 1. An explanation of all variables used in the model along with the source of the data.

Based on Ding (2012) and Barro and Sala-i-Martin (2004), we make use of the following variables in our regression model as shown in the above table. GDP per capita is regressed on investment rate, log of social spending, log of social health spending, population growth, and multifactor productivity to get the results as shown in Figure 7. Unlike Hong (2012), some other variables such as inflation and pension support have not been included in the model since the GDP per capita annual growth rate is being calculated at constant prices and the welfare expenditure variables such as social spending already account for variables such as pension support.

OLS Regression Results

Dep. Variable:	GDP	R-squared:	0.793
Model:	OLS	Adj. R-squared:	0.790
Method:	Least Squares	F-statistic:	311.7
Date:	Tue, 14 Jun 2022	Prob (F-statistic):	7.16e-137
Time:	07:06:52	Log-Likelihood:	-593.65
No. Observations:	414	AIC:	1199.
Df Residuals:	408	BIC:	1223.
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	5.8694	0.892	6.583	0.000	4.117	7.622
x1	0.1837	0.010	18.953	0.000	0.165	0.203
x2	-1.1153	0.470	-2.373	0.018	-2.039	-0.191
x3	-1.1058	0.308	-3.588	0.000	-1.712	-0.500
x4	-0.1573	0.087	-1.808	0.071	-0.328	0.014
x5	0.7167	0.037	19.287	0.000	0.644	0.790

Omnibus:	44.228	Durbin-Watson:	1.947
Prob(Omnibus):	0.000	Jarque-Bera (JB):	232.220
Skew:	0.214	Prob(JB):	3.75e-51
Kurtosis:	6.644	Cond. No.	119.

Figure 7. Regression Analysis Summary Table.

Based on these regression results, the coefficients of investment rate, social spending, health spending, and multifactor productivity (MFP) are statistically significant at a 1% level. And the coefficient for population growth is statistically significant at a 5% level. The signs for the investment, MFP, and population growth variables are as expected, but prima facie the coefficients for social spending and health spending seemed uncommon. However, there are two justifications for this that will be given in this paper.

First consider Table 2, which shows the Pearson correlation coefficient matrix between the explanatory variables. Based on the values of the correlation coefficient, we suspect the data used for the regression to suffer from multicollinearity. The unexpected signs for the coefficients of social and health spending could possibly be attributed to this problem of multicollinearity.

	INV	SOC	HEALTH	POP	MFP
INV	1	-0.189	-0.0077	0.17207	0.45044
SOC		1	0.50844	-0.2497	-0.2747
HEALTH			1	0.07402	-0.1786
POP				1	-0.0354
MFP					1

Table 2. Pearson Correlation Coefficient Matrix between all the explanatory variables

The second reason lies in the concept of crowding out, wherein increased government spending causes a reduction in private spending. While this observation might seem completely antithetical to the rest of the paper, this is precisely congruent with ideas outlined in Keynes' General Theory. Such crowding out only weakens the effect of the multiplier, it doesn't eliminate it. To put it more formally, crowding out is not absolute but rather a matter of degree. The welfare gains that are associated with government spending through alleviating poverty, reducing unemployment and income inequality, and improving access to healthcare and education, all of which are factors not reflected in the GDP far outweigh any such crowding out.

Conclusion

Economies are in a constant state of flux, intrinsically complex, and ever-changing by virtue of thousands of interactions between people simultaneously. These dynamic systems are further complicated by the tangled web of interrelationships between private and public actors. Recessions entail a complete overturning of this system and eventual recovery processes to new normals. An exploration of these relationships, breakdowns, and recovery processes in light of the Covid-19 pandemic has led to the following conclusions:

- Irrespective of the economic situation, governments should and do play a role in the economy. While the intensity and degree of this role is a matter of continuing discussion, there is a consensus for enhanced provision of protection and welfare during recessionary situations.
- A part of the need for government intervention comes from the inability of markets to clear themselves. This happens because of the presence of externalities such as incomplete markets, asymmetric information, and public goods.
- One solution to these externalities involves the use of regulation to set criteria that firms have to meet and measures aimed at increasing transparency and competitiveness of markets.
- Through greater investment in human capital development and infrastructure facilities, governments should create environments ideal for inclusive growth and development.
- Finally, government intervention alone is not sufficient to guarantee better outcomes. The analysis in this paper suggests that the credibility and legitimacy of the government are essential determinants of the success of any such interventions.

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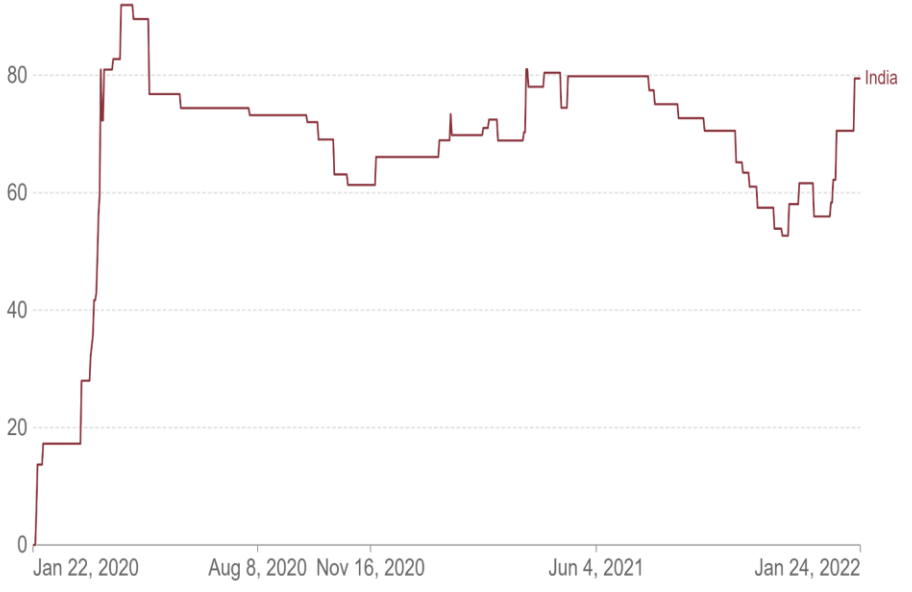
Appendix


India
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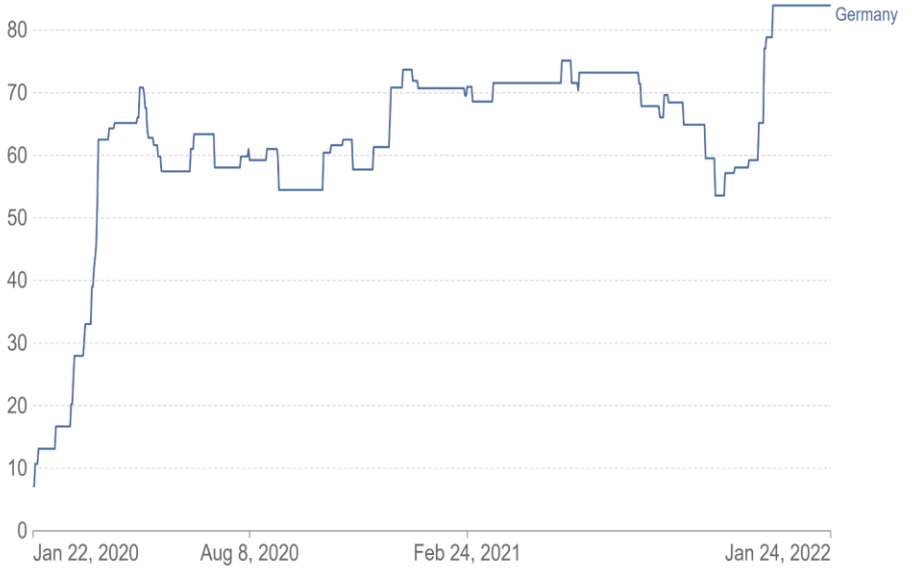
Jan 22, 2020
Aug 8, 2020
Nov 16, 2020
Jun 4, 2021
Jan 24, 2022


Germany
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Jan 22, 2020
Aug 8, 2020
Feb 24, 2021
Jan 24, 2022

Figure A.1. COVID-19: Containment and Health Index for the countries India, Germany and United Kingdom

(Source: Our World in Data. "Covid-19: Containment and Health Index, Mar 14, 2022." https://ourworldindata.org/grapher/covid-containment-and-health-index)

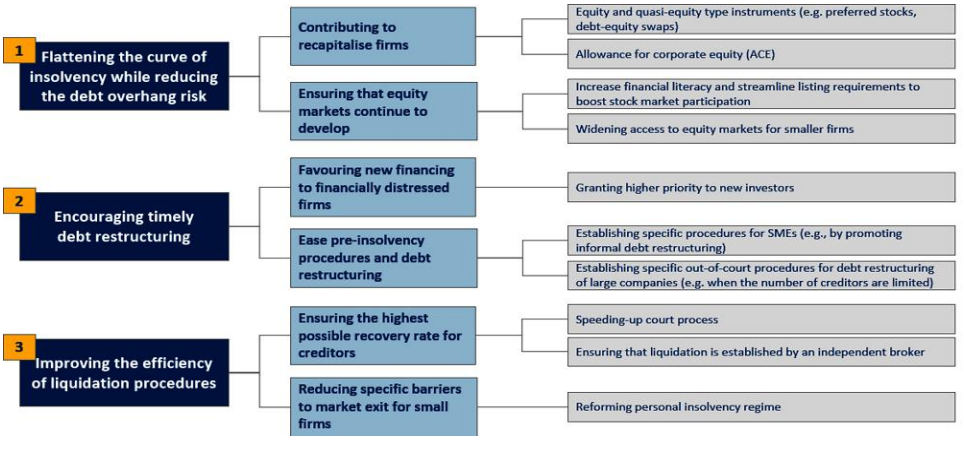

Figure A.2. Policy options: Multidimensional approach to addressing insolvency and debt overhang risk.

(Source: Demmou, Lilas, Sara Calligaris, et. al. 2021. "Insolvency and Debt Overhang Following the Covid-19 Outbreak." OECD Economics Department Working Paper No. 1651. https://www.oecd-ilibrary.org/docserver/747a8226-

en.pdf?expires=1647315753&id=id&accname=guest&checksum=6A4D7D556511BB4067D95D008BF6A745)

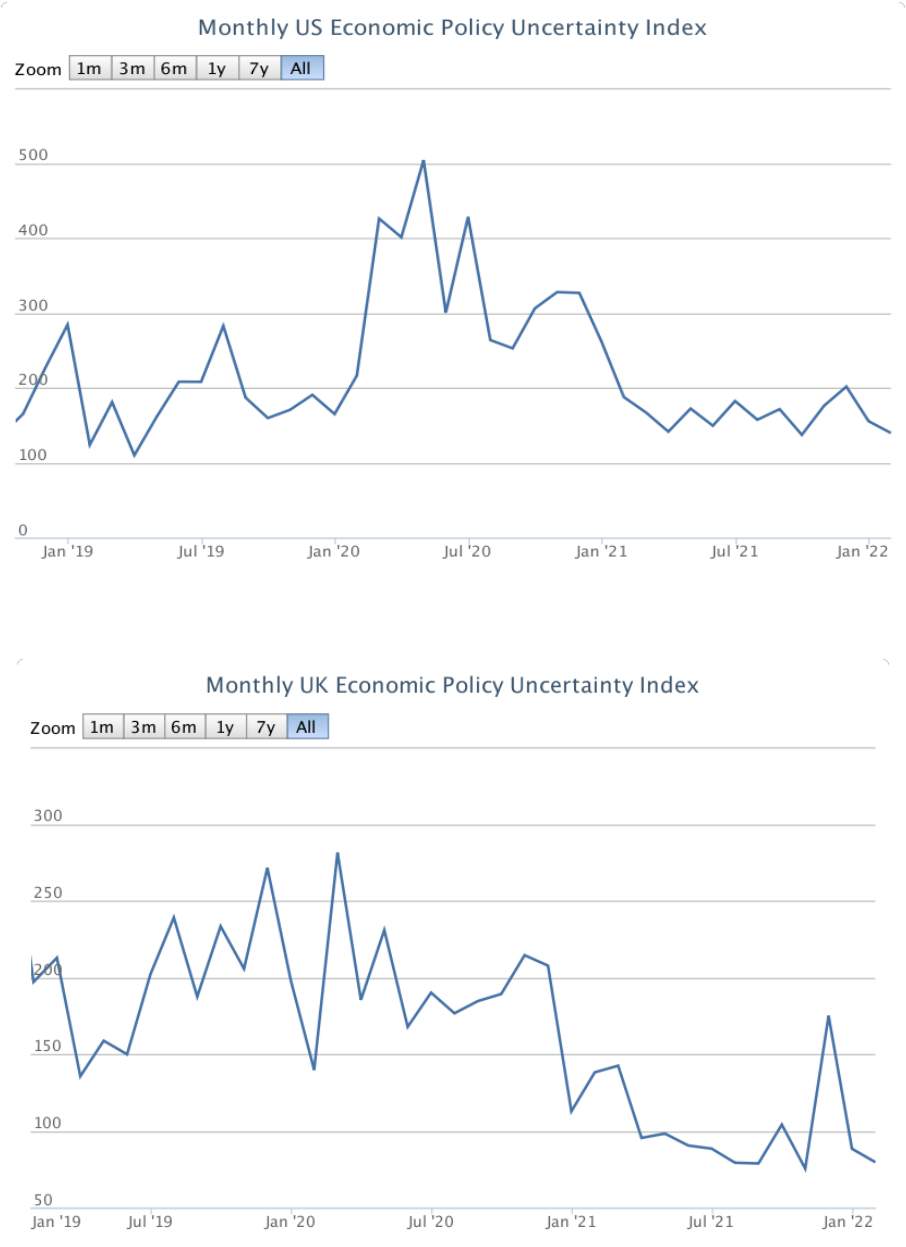

Figure A.3. Monthly Economic Policy Uncertainty Index for USA and UK.

(Source: Economic Policy Uncertainty Index. https://www.policyuncertainty.com/)

OLS Regression Results

Dep. Variable:	UR	R-squared:	0.166
Model:	OLS	Adj. R-squared:	0.155
Method:	Least Squares	F-statistic:	14.07
Date:	Tue, 15 Mar 2022	Prob (F-statistic):	2.68e-06
Time:	06:07:26	Log-Likelihood:	-396.88
No. Observations:	144	AIC:	799.8
Df Residuals:	141	BIC:	808.7
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-2.0243	2.330	-0.869	0.386	-6.630	2.582
x1	0.2411	0.050	4.833	0.000	0.143	0.340
x2	-0.1843	0.058	-3.155	0.002	-0.300	-0.069

Omnibus:	40.774	Durbin-Watson:	0.633
Prob(Omnibus):	0.000	Jarque-Bera (JB):	71.039
Skew:	1.348	Prob(JB):	3.75e-16
Kurtosis:	5.138	Cond. No.	355.

Figure A.4. Regression Analysis Summary Table of the preliminary version of the model. Here the dependent variable was the unemployment rate, and the independent variables were the Covid-19: Containment and Health Index and aggregate government spending as a percentage of GDP.

Linear Regression Model

The dependent variable in this model is GDP per capita annual growth rate. The independent variables are investement (GFCF) annual growth rate, social expenditure as percentage of GDP, public per capita health expenditure, population growth rate, and multifactor productivity. The GDP data has been obtained from the World Bank, while the data for the rest of the variables is from the OECD database. This panel data is for the period 2000-2017 pertaining to 23 OECD countries. In [1]:

```
import pandas as pd
import numpy as np
import statsmodels.api as sm
import scipy.stats as sci
from sklearn.linear_model import LinearRegression    ## Installing relevant libraries
import seaborn as sns; sns.set_theme(color_codes=True)
```

/usr/local/lib/python3.7/dist-packages/statsmodels/tools/_testing.py:19:FutureWarning: pandas.util.testing is deprecated. Use the functions in the public API at pandas.testing instead.

import pandas.util.testing as tm In [3]:

```
data = pd.read_excel('Regression_Analysis.xlsx', index_col=False)

display(data)   ## Displaying the Dataset
```

	LOCATION	TIME	GDP	INV	SOC	HEALTH	POP	MFP
0	AUS	2000	2.680865	-7.943240	1.261120	3.168094	1.151047	0.098462
1	AUS	2001	0.671693	9.124017	1.244005	3.190657	1.292246	2.396460
2	AUS	2002	2.752680	12.567451	1.239249	3.231121	1.144033	0.547144
3	AUS	2003	1.845765	8.735395	1.244178	3.243970	1.156833	1.424527
4	AUS	2004	3.004315	6.094124	1.236487	3.284451	1.074934	-0.806570
...	...	...	...	...	...	...	...	...
409	USA	2013	1.138897	3.568419	1.266796	3.624837	0.695266	0.075356
410	USA	2014	1.776838	5.133423	1.266467	3.868578	0.736057	0.147509
411	USA	2015	2.319441	3.651450	1.268086	3.890849	0.738934	0.443665
412	USA	2016	0.977013	2.128083	1.270586	3.907393	0.727308	0.018943
413	USA	2017	1.687321	3.819112	1.265737	3.921651	0.634649	0.626158

414 rows × 8 columns

Form of the Model

Our model will have the following form:

GDPGDP = B1B1 + B2B2 ***INV*** + B3B3 **log(SOC)** + B4B4 ***log(HEALTH)*** + B5B5 **POP** + B6B6 * **MFP** In [5]:

```
X = data[['INV','SOC','HEALTH','POP','MFP']] ## Initializing the dependent and independent variable arrays
Y = data['GDP']
```

```
model = LinearRegression()
model = LinearRegression().fit(X, Y)     ## Estimating the value of the coefficients
r_sq = model.score(X, Y)
print('coefficient of determination :', r_sq)
print('intercept B1 :', model.intercept_)
print('slope coefficient B2 :' , model.coef_[0])
print('slope coefficient B3 :' , model.coef_[1])
print('slope coefficient B4 :' , model.coef_[2])
print('slope coefficient B5 :' , model.coef_[3])
print('slope coefficient B6 :' , model.coef_[4])
print('The model is : UR = ', round(model.intercept_,4),'+', round(model.coef_[0],4), '* INV' ,'-', abs(round(model.coef_[1],4)), '* log(SOC)','-', abs(round(model.coef_[2],4)), '* log(HEALTH)','-', abs(round(model.coef_[3],4)), '* POP','+', round(model.coef_[4],4), '* MFP' )
coefficient of determination : 0.7925261398852586
intercept B1 : 5.869440979371206
slope coefficient B2 : 0.1837205188704029
slope coefficient B3 : -1.115308251901669
slope coefficient B4 : -1.1057751151962323
slope coefficient B5 : -0.15728395150163366
slope coefficient B6 : 0.7166624942343782
The model is : UR =  5.8694 + 0.1837 * INV - 1.1153 * log(SOC) - 1.1058 * log(HEALTH) - 0.1573 * POP + 0.7167 * MFP
In [6]:
X = np.column_stack((data['INV'],data['SOC'],data['HEALTH'],data['POP'],data['MFP']))
y = data['GDP']

X2 = sm.add_constant(X)
est = sm.OLS(y, X2)
est2 = est.fit()
print(est2.summary())
```

OLS Regression Results

Dep. Variable:	GDP	R-squared:	0.793
Model:	OLS	Adj. R-squared:	0.790
Method:	Least Squares	F-statistic:	311.7
Date:	Tue, 14 Jun 2022	Prob (F-statistic):	7.16e-137
Time:	07:06:52	Log-Likelihood:	-593.65
No. Observations:	414	AIC:	1199.
Df Residuals:	408	BIC:	1223.
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	5.8694	0.892	6.583	0.000	4.117	7.622
x1	0.1837	0.010	18.953	0.000	0.165	0.203
x2	-1.1153	0.470	-2.373	0.018	-2.039	-0.191
x3	-1.1058	0.308	-3.588	0.000	-1.712	-0.500
x4	-0.1573	0.087	-1.808	0.071	-0.328	0.014
x5	0.7167	0.037	19.287	0.000	0.644	0.790

Omnibus:	44.228	Durbin-Watson:	1.947
Prob(Omnibus):	0.000	Jarque-Bera (JB):	232.220
Skew:	0.214	Prob(JB):	3.75e-51
Kurtosis:	6.644	Cond. No.	119.

Warnings:

Standard Errors assume that the covariance matrix of the errors is correctly specified.

Hypothesis Testing

The null hypothesis in this situation is the joint hypothesis that all slope coefficients are jointly or simultaneously equal to zero, that is;

H0H0 : B2B2 = B3B3 = B4B4 = B5B5 = B6B6 = 0 In [7]:

F_stat = 311.7 *## Obtained from table above*

F_critical = sci.f.ppf(q=1-0.05, dfn= 5 , dfd=408)

if F_stat > F_critical:

print('Reject the Null Hypothesis') **else**:

print('Do not Reject the Nulll Hypothesis')

Reject the Null Hypothesis

Conclusion

Since the computed F value exceeds the critical F value, we reject the null hypothesis that the impact of the explanatory variables is simultaneously equal to zero.

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Reimagining Ease of Public Governance through the Lens of Blockchain Technology

Abstract

Since the inception of blockchain technology in 2008, it has outperformed its application from cryptocurrencies to a range of commercial applications including finance, supply chain, healthcare, education, governance, etc. Despite the negative connotations around Bitcoin, there is a strong and growing interest in the potential of underlying blockchain technology to reshape a plethora of economic, business, political, and societal activities. However, there is limited literature on the potential of blockchain for public governance and administration. Limited data is available on the ability of blockchain to restructure present-day government services and provide impetus to the mission of 'Minimum Government and Maximum

Governance'. This paper provides a brief overview of the use cases of blockchain technology in the public governance and administration space such as banking, voting, identity management, land registry, and many more. The case of Estonia which became the first country to deploy blockchain technology in public services has also been discussed. It outlines the existing challenges and shortcomings, such as scalability, high cost, regulatory uncertainty, and so on that need to be mitigated to derive the intended benefits of this revolutionary technology in the public governance space. While technological utopians urge for the complete eradication of all government centralized institutions, this paper argues that blockchain is only a technology facilitator and not a magic bullet to all social and political ills.

Keywords:

Blockchain, Governance, Public Administration, Public Sector, Government

Introduction

New Information and Communications Technologies (ICT) are revolutionizing the world today. Owing to technological advancements, global challenges of the world such as poverty, migration, corruption, governance, and sustainability can be looked at through an entirely different lens (Mora et al., 2021). Blockchain technology-the underlying technology behind the controversial Bitcoins has emerged as a disruptive innovation of this century. Over the years, although Bitcoin has continued to gain negative connotations among the public and governments worldwide due to illicit and illegal activities associated with it (Mora et al., 2019), Distributed Ledger Technology (DLT), or specifically, Blockchain technology, has garnered attention because of its capability to redesign our interactions in business, politics, and civic society at large. Blockchain technology can give birth to a wide range of possible applications.

Definition of Blockchain Technology

The term 'Distributed Ledger Technology (DLT)' represents the broader technology, whereas Blockchain refers to its specific application. Since the field of blockchain is evolving, a single formal definition acceptable to all parties does not exist. Blockchain can be defined as an immutable, distributed, and transparent ledger that is visible to the community implementing and using the blockchain. The term 'immutable' implies that information contained on a blockchain cannot be altered, 'distributed' refers to the fact that the data is shared across all participants, 'ledger' implies all transactions are recorded and 'visible' means that every member of the community can see the transaction (Prakash & Gunalan, 2020). It is an open, distributed, peer-validated, transparent, and time-stamped ledger governed by a consensus mechanism and protected by encryption (Aste et al., 2017; Di Pierro, 2017). Broadly, a blockchain is a database that stores a number of records in blocks (rather like collating them onto a single sheet of paper). Using a cryptographic signature, each block is then 'chained' to the next block. This enables blockchains to function as a ledger that can be shared and verified by anybody with the necessary rights (Simon Taylor, 2016). It is a technology that uses community validation to keep synchronized with the content of ledgers replicated across multiple users.

The fact that blockchain can chronologically record and preserve transactional data in a standardized and tamper-proof manner that is transparent to all parties participating in the transaction is its unique underlying characteristic. It is broadly the characteristics such as pseudonymity, cryptographic guarantees, immutability, shared read and write authority, accountability, transparency, distributed ownership, immutability, and security that allows it to perform all the magic.

Today, Blockchain is found to be diffused in almost all industries, although the extent of adoption varies across sectors (Grover et al., 2019). One of the domains that blockchain has the potential to reform is public governance and administration. According to a McKinsey analysis, the public sector is best positioned to benefit from blockchain technology in terms of prospective impact and practicality (Blockchain-The India Strategy Part I, 2020). According to a report by Maximize Market Research Pvt Ltd (Forecast on Global Blockchain Government Market by Geography during the period 2020–2027), the adoption of Blockchain technology for Government use cases will rise over time (National Strategy on Blockchain, 2021). The majority of these initiatives aim to use blockchain to improve bureaucratic procedures, economic efficiency, transparency, and accountability.

Globally many countries such as China, Estonia, Europe, Dubai, Chile, Canada, and Brazil have launched platforms and services using Blockchain technology in the public governance domain. India too has also undertaken several pilots to test the future and potential of blockchain (National Strategy on Blockchain, 2021).

Research Problem

Although there is a wealth of existing academic literature on the application of blockchain for the commercial and private sector, the literature on the utility of blockchain to transform public governance and administration is minimal. Despite the hype around the technology, the potential of blockchain for public governance remains underappreciated. This paper aims to bridge this information gap and examine blockchain from the standpoint of public administration. It is an attempt to investigate the possibilities of blockchain in areas other than the well-known Bitcoin, particularly in the area of public sector governance and administration.

Research Questions

This paper particularly focuses on the following four research questions:

- What is Blockchain technology?
- What does the analysis of existing literature reveal about the application of blockchain in public governance?
- What are the potential public services that can be affected by blockchain technology?
- What are the associated risks and challenges in the present blockchain technology mechanism?

Objective and flow of the paper

The contribution of this paper is three-fold: First, this paper provides a comprehensive overview of blockchain technology to identify what are the key attributes that enable it to successfully address the social and governance challenges. Secondly, it condenses the scant extant literature regarding our field of research. Thirdly, it equips the researchers, policymakers, and regulators with a scientific perspective amidst the blockchain frenzy and ecstasy.

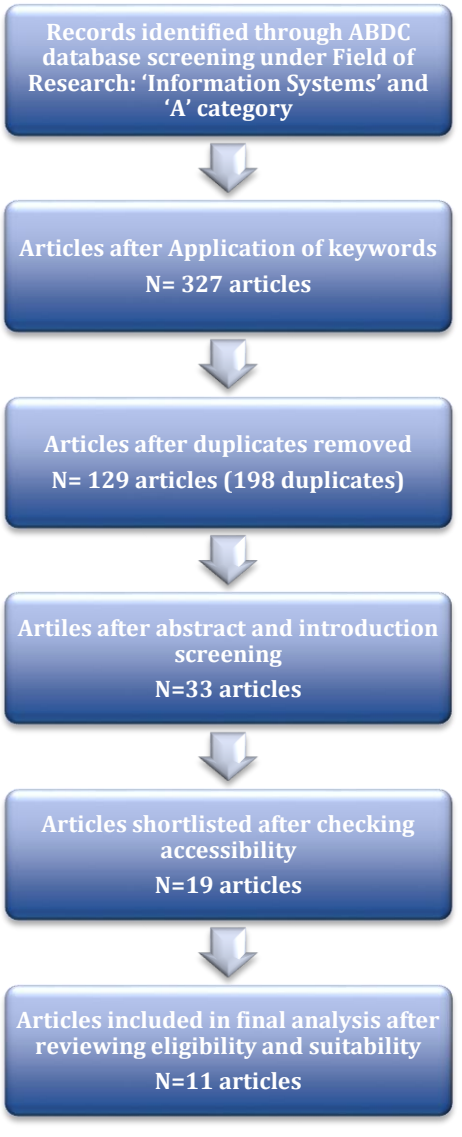
The paper is divided into four sections: The first section gives an overview of blockchain technology and provides a systematic literature review of the existing literature along with the case study analysis of Estonia. Section two discusses the findings of our research and the various challenges that must be tackled to obtain the intended benefits from blockchain in public governance. Section three outlines the future roadmap of blockchain technology in the public governance domain in the form of recommendations and concludes our results. It also highlights the future implications of this paper. Finally, section four highlights the limitations of this paper.

Methodology

The methodology used to conduct this research is based on a Systematic Literature Review (SLR) and Case Study analysis which involved a synthesis of the existing research studies. To ensure the highest research quality standards, PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model was adopted (Matthew J Page et al., 2021). For the paper, the Australian Business

Deans Council (ABDC) database was utilized. 'Information Systems' was selected as the field of research and further 'A' category journals were shortlisted. We identified 41 journals in the 'A' category. Further filtration was done based on 'CiteScore' as provided by the Scopus database. A CiteScore of 10 and above was kept as the requisite parameter. This narrowed the search to 6 journals. The research was restricted to the timeline of 2017- 2022 (including the last 5 years) research articles.

To search the articles in the identified 6 journals, different keywords were used such as 'Blockchain and Governance', 'Blockchain and Public administration', 'Blockchain and Public Sector', and 'Blockchain and Government'. The search identified 327 articles consisting of 198 duplicate and 129 unique articles. Further, the abstract and introductions were read by 2 reviewers. As per the consensus of the two reviewers, 33 articles were selected under this stage. Out of the 33 articles, 14 articles were rejected because they could not be accessed with the 'Delhi University server. Further screening was done to check the suitability of the articles in context to the study of this paper, 8 articles were rejected because they were not aligned with the objective of the study. Finally, 11 articles were included for the SLR analysis.



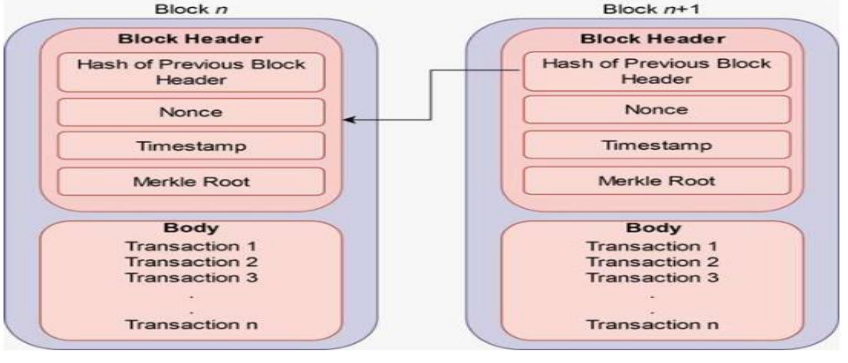
Literature Review

With time, there is a global consensus regarding the transformative potential of blockchain technology in multiple government and private sector processes (Drucker 2016). Blockchain is unique and more captive unlike the emerging technologies like the Internet of things (IoT), Artificial Intelligence (AI), etc because it not only has the potential to improve existing processes, but also to unleash impossible

sources of efficiency and value for various stakeholders such as the government, businesses, and citizens (Ali Sunyaev et al., 2021).

As the name implies, a blockchain is made up of blocks, each of which contains a list of transactions, timestamp, and a hash pointer to the preceding block, establishing a chain. As a result, the sole option to add a new block is at the end of the existing chain implying altering the previous transactions is not possible. A consensus process is used to determine whether the content of a new block will be added (Hidde Lycklama à Nijeholt et al., 2017). This peer-to-peer consensus mechanism adds to the credibility of the records.

Figure 1: Depicts the detailed Block Structure



Source: National Strategy on Blockchain, Ministry of Electronics and Information Technology (MeitY), Government of India, 2021

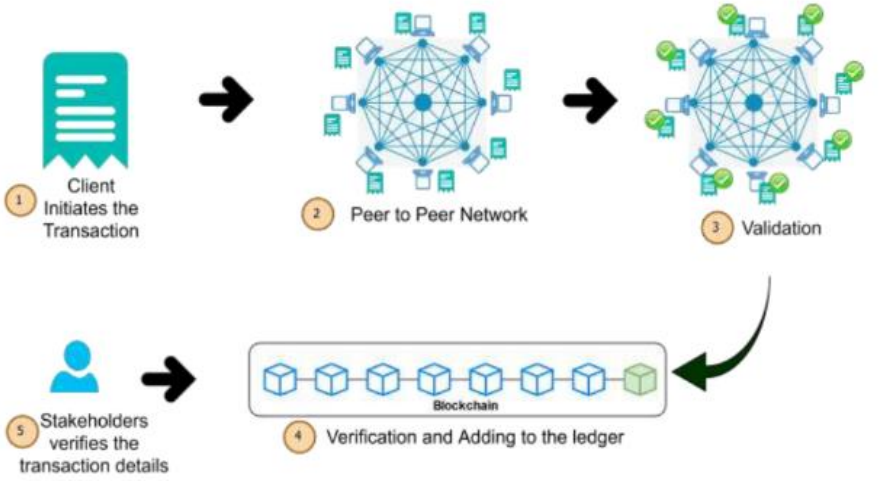
In other terms, Blockchain is a distributed ledger system that is secured using encryption and governed by a consensus method (Aste et al., 2017; Di Pierro, 2017). It allows for the creation of a shared ledger that will serve as a single source of truth for all parties participating in commercial transactions. It eliminates the need for a central authority to validate transactions, and its tamperproof nature produces an immutable trail of transactions. Because it is built on peer-to-peer networks, instead of relying on a central body, all nodes would be

involved in verifying transactions (National Strategy on Blockchain, 2021).

Blockchain protocols combine a distributed database comprised of chronologically ordered and cryptographically interconnected blocks of transactions with a decentralised consensus mechanism and cryptographic security measures to provide an immutable record of transactions, as proposed by Nakamoto (2008). (Glaser 2017).

Figure 2: Highlights the process of how a new transaction is added to the blockchain

without the need of any central authority/third-party service provider



Source: National Strategy on Blockchain, Ministry of Electronics and Information Technology (MeitY), Government of India, 2021

There are broadly three types of Blockchain models: Permissionless/Public, Permissioned, and Private. A public blockchain such as Bitcoin allows any person to connect, read-write and commit to the network, under a permissioned blockchain anyone can join and read but only authorized and known participants can write and commit whereas a private blockchain allows only authorized and known participants to join, read, write and use it, and it is managed by a person

or an authority (National Strategy on Blockchain, 2021). The relevance and importance of each type of blockchain model depend on the functionalities that the network wants to achieve. Each of the models has its own set of benefits and drawbacks, for instance –Permissioned, and private blockchains are contrary to a public blockchain, allowing for higher scalability and client privacy essential for complying with regulation criteria.

According to the World Economic Forum (WEF), ten percent of global GDP will be held on blockchain by 2025, and blockchain is one of seven technologies anticipated to disrupt many facets of our life (Blockchain-The India Strategy Part I, 2020). Today, effective governance is one of the most pressing issues confronting any economy. Blockchain presents a unique set of opportunities for tackling governance-related concerns. However, given the magnitude, variety, economic status, socio-cultural, and political setting of each economy, the challenges for blockchain would differ from country to country.

The objective of the study is to explore and analyze the potential and challenges of blockchain technology in public governance, the below table summarizes our findings of the Systematic Literature Review (SLR) undertaken for this paper. The majority of the papers under the SLR were conceptual and global in the context of the country. The coverage of industries varied from Banking, smart cities, public sector, cryptocurrency, Bitcoin Mining, Supply Chain, Information Technology, and many more.

Systematic Literature Review

Authors	Objective	Methodology	Results
(Mora et al., 2021)	To illustrate how blockchain technology can be utilized to solve problems in the delivery of services, resource management, and the city administration and achieve the Sustainable Development Goals (SDGs).	Literature Review	Blockchain has the potential to help achieve the SDGs; address social challenges, transform service delivery, and smart cities; however, intended benefits can only be delivered when limitations such as lack of knowledge, political will, high cost, regulatory uncertainty, etc. are overcome.
(Rieger et al., 2019)	By using Federal Office for Migration and Refugees in Germany as an example, the paper proposes a GDPR-compliant blockchain system for cross-organizational process coordination.	Action research approach	Blockchain encounters the negative effects of the European Union (EU) General Data Protection Regulation (GDPR). However, blockchain technology and the GDPR are not mutually exclusive as proved in the case of Germany.
(Jensen et al., 2019)	Describes the TradeLens solution for crucial players in the worldwide container shipping business, which includes blockchain technology.	Literature Review	TradeLens and its innovative technological architecture, particularly blockchain technology, offer a new solution that addresses inter-organizational issues in part.
(Waldo, 2019)	Examines the fundamentals of blockchain technology, including the separate components, how they interact, and what improvements could be made to address the issues in other areas.	Literature Review	Despite having drawbacks such as scaling issues, excessive power consumption, and a lack of trust, blockchain has a wide range of applications in different areas.
(Eyal & Sirer, 2018)	To demonstrate that the current consensus-based protocol (called mining in Bitcoin) is not incentive-compatible and is highly vulnerable to conspiring groups and selfish mining.	Empirical	The current consensus-based approach called Bitcoin mining is subject to selfish mining, which allows miners to profit from their computing power. A simple majority is insufficient and a backward-compatible change to Bitcoin assures that pools with less than ¼ of total mining power cannot profitably engage in selfish mining and that at least 2/3 of the network must be honest to avoid selfish mining.

(Risius & Spohrer, 2017)	Learn about the present state of blockchain knowledge and how it can be strategically developed that will help to make use of blockchain in other fields.	Literature Review	A detailed review of current scientific research efforts in a framework with projected research guidelines would aid in the long-term sustainability of blockchain research beyond the prevailing buzz so that other fields also get the benefit of blockchain technology
(Ostern & Riedel ,2020)	To define KYC criteria to construct a blockchain-based KYC solution that is compliant by design and incorporated into the ICO investment flow.	Design science research	The system is transferable to other contexts; however, more work is needed on the issue of designing governance rules, as well as a more thorough assessment of the rigor and applicability of this or future versions of the prototype, which applies to both participating financial organizations and ICO investors.
(Parra Moyano & Ross, 2017)	To provide an extra improvement by reducing the overall cost of the KYC procedure and distributing the savings proportionally among the financial institutions participating in the system utilizing DLT (blockchain technology).	Literature Review	A system like this might provide significant cost savings for member institutions as well as a better client experience.
(Sunyaev et al., 2021)	To demonstrate the decentralized token economy's potential for asset ownership transfer while reducing the requirement for traditional service providers like banks and notaries.	Literature Review	Recommended benefits of blockchain are supplemented with challenges.
(Hyvärinen et al., 2017)	Develop a feasible solution for addressing governmental taxation concerns relating to the Danish tax authority's double-spending dilemma.	Design Science Approach	The blockchain-based prototype is the first viable solution to practical challenges faced by public tax administrations.
(Notheisen et al., 2017)	To address the mitigation of transaction risk in blockchain systems,	Design science research	This study's proof-of-concept prototype aims to replace bureaucratic public registries with a blockchain-based

	the minimization of inefficiencies in public registry systems, and the correction of adverse selection risks in used goods or lemon marketplaces, among other things.		transaction system for real-world assets, acting as a transparency device to mitigate inefficiencies in markets with insufficient information, tackling transaction risk, and illustrating the opportunities and challenges such as scalability and privacy concerns.

The Systematic Literature Review determines that it is time for Governments to pay special attention to decentralized networks where peer-to-peer transactions can create more socio-economic value. The implementation of Blockchain in the public sector is projected to save operational costs, increase efficiency, eliminate payment fraud and errors, and increase transaction transparency between the government, other agencies, and citizens (Blockchain-The India Strategy Part I, 2020). Blockchain triggers governments to relook and redefine their role into more strategic avenues rather than serving as ledger maintenance service providers and not adding any value such as in the case of land registries, notaries, etc. giving rise to technocratic-based power-regimes. It is critical to thoroughly examine the advantages and hazards connected with blockchain, rather than succumbing to utopian ideals, too optimistic implementations, and biased judgments.

The following are some of the promising use cases of blockchain technology in the public governance space:

- **Banking:** According to a McKinsey report, blockchain has the highest utility in the banking, financial services, and insurance industries (Blockchain-The India Strategy Part I, 2020). Double financing, credit history verification, greater remittance expenses incurred during overseas transactions, and higher transaction costs are all problems that blockchain can resolve (Lycklama À Nijeholt et al., 2017). Financial inclusion, microfinance, and Central Bank Digital Currencies are some of the blockchain's untapped potential opportunities in the public sector.

- **Voting:** Public Voting is fundamental to modern democracies. Blockchain-based E-voting improves accessibility, and security, and gives individuals a strong sense of involvement (Khan et al., 2021). For example, Estonia has been successful in conducting i-voting with the use of blockchain technology (Ojo & Adebayo, 2017).

- **Education and Employment:** Blockchain can help to tackle the problem of degrees from fake universities and fake degrees from legitimate universities. Student impersonation, university impersonation, and document tampering lead to a tangible cost for students and employers (Blockchain-The India Strategy Part I, 2020). Blockchain can solve this by providing a real-time tamperproof and secured repository. Blockchain can also materialize the vision of Open Distance Learning (Kant & Anjali, 2020). Scholarship disbursements will become transparent. Employers' processes for certificate verification, skill mapping, payroll management, data security, and performance management will be streamlined by blockchain (Chillakuri & Attili, 2021).

- **Health Care:** The healthcare industry will benefit greatly from blockchain technology. Huge amounts of data are generated in the healthcare industry, and privacy must be managed. Blockchain technology can help with electronic medical records, the Internet of Things and supply chain management in the healthcare sector (Ng et al., 2021). Patient records and the menace of counterfeit drug issues can be tackled through the tamperproof maintenance of data.

- **Taxes:** Blockchain is the perfect tool for application in the domain of taxes (Søgaard, 2021; Wijaya et al., 2017). Tax authorities will be able to create an audit trail, prevent tax evasion, and automate tax collection using smart contracts. For example, a blockchain prototype was created to solve the Danish tax authority's double-spending problem (Hissu Hyva linen, 2017).

- **Supply Chain Management:** As the size of a business grows, so does the importance of supply chain management. It is critical to

effectively manage the supply chain. Food and drug inspection in the United States are using Blockchain to address the lack of openness and security in the processing of health data. Blockchain technology can be used to resolve the usage of reliable information exchange among global supply players (Jensen et al., 2019). The supply can be tracked, and self-enforcing relationships can be made, obviating the need for levels of mediation in transactions, according to the claim (Waldo, 2019).

- **Identity Management:** To counter the growing cyberattacks, effective identity management should provide access to data only for authorized and authenticated personnel. The present system is faced with deficiencies like the requirement of an in-person visit, time-consuming, vulnerable to undesired activities like theft, loss, duplication, and scam as it is paper-based leading to a denial of essential services, the inability to obtain government grants, and failure to remain accountable. Even mere computerized IDs are vulnerable to hacking and single point of attack. Private Blockchain-based solutions can ease the identity management process with in-built privacy features and avoid the problem of a single point of failure along with tackling the theft and inconvenience issues (Bhattacharya, 2021).

- **Land Records**: The present land registry system is highly inefficient facing challenges such as establishing ownership over the property, voluminous litigation, poor land record maintenance, information asynchronicity, costly intermediaries, etc (Blockchain-The India Strategy Part I, 2020). A blockchain-based land titling and transaction system will assign a unique ID to each land piece, will track purchases and sales of land titles, mortgages, and rentals, as well as notary services, and prevent double sales (Prakash & Gunalan, 2020). This is specifically more useful for countries where corruption is dominant and the integrity of documents is questionable.

- **Smart Cities:** To improve the quality of life of the citizens, governments are evolving cities into 'smart cities. Blockchain provides innovative ways such as smart contracts to allow governments to move closer to citizens and make service delivery more efficient and hassle-free (Mora et al., 2021). For example, The Smart Dubai initiative in the United Arab Emirates aims to make Dubai the first city in the world to be powered by Blockchain by 2021, with benefits ranging from education and health care to traffic sustainability and green sustainability (National Strategy on Blockchain, 2021).

The case of Estonia

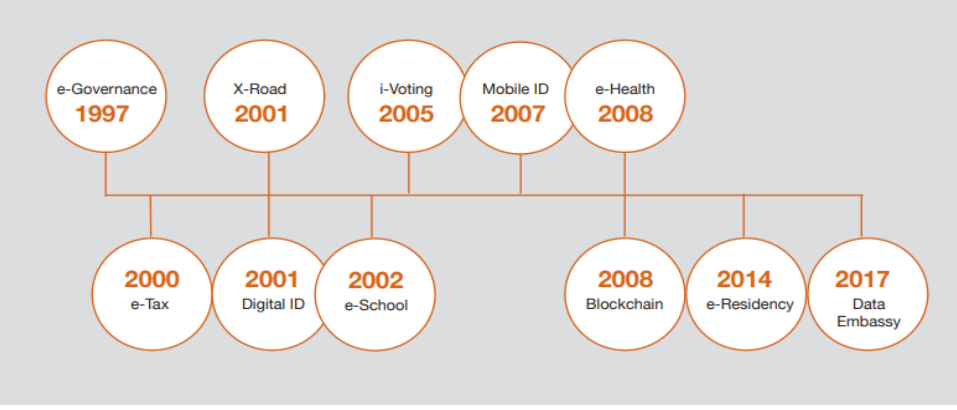
After restoring its independence in 1991 from USSR, Estonia saw an enormous effort for modernization, which mainly resulted in several digital reforms throughout the 1990s. Today, Estonia is called a digital republic secured by blockchain technology. Around 99% of the public services in Estonia except for marriage, divorce, and real estate transactions are provided as e-services. Officials report that Estonia has saved over 800 years of working time and 2 percent of GDP annually through its digitized public services (Martinson, 2019).

Estonia is perhaps the earliest adopter of distributed ledger technology at a governmental level. The Estonian Government started testing scalable blockchain technology in 2008, as a response to 2007 cyber-attacks to ensure the integrity of data stored in government repositories and to mitigate possible insider threats. It became the first nation-state in the world to deploy blockchain technology in production systems - in 2012 with the Succession Registry kept by the Ministry of Justice.

Some of the State Registries backed by blockchain technology in Estonia are Healthcare Registry, Property Registry, Business Registry, Succession Registry, Digital Court System, Surveillance/Tracking Information System, Official State Announcements, and State Gazette.

The primary aim of the Estonian government behind using blockchain technology is to maintain the integrity of government data and systems.

Figure 3: Estonia's journey towards becoming a digital republic



Source: Estonia – the Digital Republic Secured by Blockchain, PwC, 2019

The technology chosen for Estonian systems is Keyless Signature Infrastructure (KSI) Blockchain, also used by NATO and the U.S. Department of Defense. In Estonia, KSI is used for independent verification of all government processes and for protecting e-governance services offered to the public. In other words, with the use of KSI Blockchain in Estonian government networks, history cannot be altered by anyone, and the integrity of the electronic data can be demonstrated mathematically. It implies that no one can change the data and get away with it—not hackers, system administrators, or even the government. This protects Estonian e-services such as the e-Health, e-Prescription database, e-Law, and e-Court systems, e-Police data, e-Banking, e-Business Register and e-Land Registry. Blockchain is not used to directly store any data but is employed to ensure more data integrity. An internal service provider for the government, Estonian Information Systems Authority (RIA), ensures access to the State's blockchain network agencies using the X-road network. State Agencies deploy the blockchain technology by themselves using the SDK-s and prebuilt tools (i.e. for log and database integration).

Discussion

Blockchain can redefine the public's faith in governments worldwide. It will build a foundation of trust, confidence, integrity, and credibility (Mora et al., 2021). It will enable government officials to enhance process management, strengthen security, and streamline transactions for better efficiency. Despite all of the advantages that Blockchain can provide, it is not the remedy for all social ills and has its own set of disadvantages. The following are the non-exhaustive list of limitations that have been identified which should be countered to enable blockchain adoption:

- **Inadequate scalability:** The number of transactions per second defines the scalability. In comparison to typical centralized systems, the decentralized and computationally expensive nature of blockchain results in more nodes, resources, and slower transaction processing speeds. Permission-based blockchain has a comparatively higher speed but still less than many existing alternatives. For example, Visa, Inc., processes 4,000 transactions per second, according to Kokina, Mancha, and Pachamanova (2017).

- **Lack of knowledge/skills/employee:** Blockchain is still a young discipline, hence there is a lack of understanding, knowledge, skills, and employee training amongst the general public. Employing blockchain experts is more expensive than hiring software developers. If the problem of trained workforce scarcity is not appropriately handled, any country's path to embracing Blockchain is likely to be hampered (National Strategy on Blockchain, 2021). Blockchain can also likely be seen as a job threat for the existing government employees who lack the required knowledge and training for it (Cagigas et al., 2021).

- **Environmental and infrastructure constraints:** Decentralised nature of blockchain leads to extensive energy consumption. It can hamper the achievement of other priority SDG goals such as

responsible resource consumption and respect for the environment. However, as a silver lining, it can give a boost to renewable energy production (Mora et al., 2021). Other infrastructure problems surfacing blockchain can be storage, vendor risk, etc (Kyleen W. Prewett, 2019).

- **Regulatory Uncertainty:** Blockchain being an emerging technology, regulatory standards are absent, and adapting old regulatory techniques to blockchain work mechanics is challenging, resulting in a lack of political will and incentive. Incongruence with existing legislation might confuse what role each level of government should play. "Regulatory difficulties" were mentioned by 39 percent of respondents in Deloitte's 2018 Global Blockchain Survey as the most significant problem deterring enterprises from investing in blockchain technology (Prewett et al., 2020).

- **Social and Cultural Implications:** As an internet-driven and highly complex technology, limited access to the internet and phones for those living in remote areas poses a threat to inclusion for such communities and may further marginalize already vulnerable populations, particularly women, intensifying the existing wealth and knowledge gap and affecting emerging and underdeveloped economies more severely (Seyedsayamdost & Vanderwal, 2020). Blockchain has the potential to both exclude and include communities.

- **Security and Privacy:** Privacy is not a characteristic that blockchain incorporates into its design. As a result, it violates several national privacy regulations, including the European Union's General Data Protection Regulation (GDPR). To make blockchain comply with data privacy standards, as Germany's Federal Office for Migration and Refugees has done effectively, an active research process is required (Rieger et al., 2019). Similarly, for India, the 'Right to be Forgotten,' under the Draft Personal

Data Protection Bill, 2019, clashes with the intrinsic characteristic of Blockchain.

All the above limitations should be mitigated with constant improvements in the technology to reap the intended outcomes. In other words, there is an urgent necessity to finance and encourage pilot projects on governance-based blockchain projects to validate the promises of blockchain use cases and ascertain their true feasibility and practicality.

Recommendations

Decentralization of government services via permissioned/private blockchains is beneficial and valuable if properly managed because it can improve the administration processes of the government. However, public distributed blockchains like Bitcoin come with significant risks and costs that exceed the benefits. (Atzori, 2017). Governments must encourage private/ permissioned blockchain-based pilot projects aimed at solving conventional problems, while also understanding the negative consequences of blockchain-based governance to create a balanced perspective and assess the true potential of the technology. This paper recommends that governments should begin with small-scale projects slowly to have a better understanding of the overall picture. The success of the early use cases will determine the tone of future exploration. Lessons from cross-country research and pilots and private-sector-initiated projects should be duly noted and studied. Blockchain is a complicated technology with a wide range of technological, socio-economic, legal, and cultural opportunities and limitations, its adoption is likely to be slow and steady rather than rapid, even if the outcomes are positive. It will take decades for blockchain to penetrate our economic, cultural, and social foundation.

Blockchain is not the solution to all the social evils and public governance challenges but can transform the processes efficiently. Its usefulness will vary based on a country's geographic, political, cultural,

and social situation. Blockchain-based governance should be viewed as a tool that delivers significant technological and administrative benefits for markets, private services, communities, and e-government, rather than as a substitute for state power that allows cypherpunks to pursue utopian goals. Blockchain technology may not be universally more efficient, therefore specific use cases where it adds value, as well as those where it doesn't, must be identified, evaluated, and implemented.

Originality

Despite being a SLR and Case Study Analysis, it upholds its originality by the recommendations and discussion presented by the authors from the synthesis and analysis of the SLR, thereby adding to the current knowledge. The paper mentions the different challenges to be addressed and opportunities that can be tapped by using blockchain technology for ensuring a better public administration.

Implications

The paper discusses a contemporary and emerging trend of blockchain in public governance. This study could be helpful to understand the nuances of blockchain technology in a lucid and crisp manner. It additionally talks about the application of the blockchain in the much-underappreciated domain of public governance. The various use cases of blockchain identified under public governance like in finance, land registry, tax collection, voting, education, healthcare, etc will provide direction to the researchers, policymakers, regulators, and data scientists to undertake detailed analysis under each application. This paper will potentially add to the existing limited literature available in the field of blockchain-based public governance.

Conclusion

Any innovation begins with rational choice and eventually becomes institutionalized and accepted. The transition of blockchain from infancy to a growing positive attitude about its potential is an

indication of its upcoming bright future. By portraying both sides of the coin, Media has further pushed the interest of the public and raised awareness about blockchain.

The United Nations defines Good Governance as "participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and the one which upholds the rule of law. It ensures that corruption is minimized" (Seyedsayamdost & Vanderwal, 2020). Blockchain is a disruptive technology with enormous possibilities for the governance and public administration ecosystem. It inherent the features of Good Governance in itself, which has piqued the interest of the policymakers, regulators, etc. It is assured that blockchain is here to stay and will likely undergo transformations and improvements to become more inclusive, efficient, and acceptable.

Limitations and Future Scope of Research

The systematic literature review in the paper was narrowed to the journal articles and government reports within the 2017–2022 time period. Since the University access was limited to a few Journals, many of the prominent articles from renowned Journals could not be accessed. The research was limited to the A category Journals having "CiteScore" more than 10 on the Scopus database. A more rigorous and comprehensive systematic literature review with a larger sample size can be undertaken in the future across different countries. Other databases can also be considered and Journals from A*, B, and C categories from ABDC can also be analysed for a holistic overview. There is a dearth of empirical studies on the symbiotic relationship between effective governance and blockchain technology. Conferences, white papers, and other gray areas can be examined for extensive analysis.

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Role of Youth and Fintech in Accelerating the Growth of the Indian Capital Market

Abstract

The capital market in any country has a significant role in the functioning of its economy. We could also say that the capital market somehow shows us how the economy is performing. The Indian capital market is huge in monetary terms as well as employment terms. We are here looking at the recent changes in the Indian Capital Market, the reasons for change, and where these changes would lead the economy.

Until the past two decades, the Indian Capital Market has been led by the traditional market players. But then it has faced major cost problems and operating problems. With no surprise, the FinTechs have come to the rescue. This is due to the technological revolution and the techsavvy youth who doesn't want to face red-tapism and inefficiency at offices. The situation is

such that FinTechs are overpowering the traditional players and for both of them to survive in the economy, they must collaborate and move forward together.

The research paper describes the background of the Indian Capital Market, the FinTechs, and how the youth is playing a major role here. We have established a strong relationship among the three and have shown how the media inspires youth. The paper describes and presents facts on how the youth and FinTech together are increasing the proportion of population putting money in the Indian Capital Market. The impact of the various important elements of the economy has been shown. Both primary and secondary data have been used across the paper to support the claims made.

Keywords:

FinTech, Capital Market, Youth, Financial Technology, Innovation, Social Media, Technical Advancement, Digitalization, Traditional Investment.

1. Introduction

FinTech is in essence the use of technology to provide banking and financial services online. Until the past two decades, these services were provided only in offices by the traditional market players. But now, FinTech has made it possible to render such services online with more ease, efficiency, accuracy, transparency and thus making the operations smooth. So the Indian Capital Market has been adapting the FinTechs rapidly and making progress to avoid the inefficiencies and huge capital costs. Here, the driving force is the youth that facilitates the whole process and long-run growth and success of the industry. Today FinTech is the trend in the banking and investment sector and what drives FinTech is essentially the youth. With the times changing, the scenario in the Indian Capital Market is also changing. The industry is adapting to technological changes in order to survive and work efficiently. In this paper, we analyze why and how the adaptation to technology is happening. More importantly, we look at how the youth

and FinTech are contributing to accelerating the growth rate of the Indian Capital Market. We also analyze its impact on the economy and the future scope of the Indian Capital Market collaborating with FinTechs.

The paper aims to look at the role of the youth and FinTech in accelerating the growth of the Indian capital market. To do so we need to have a look at their past and present performance and problems persisting in the industry. Then only we will be able to analyze their actual contribution and future scope of the industry. So let us have a look at the background of the Indian Capital Market and the FinTech:

Capital Market

The capital market industry in India faces a lot of challenges like heavy structural costs, high capital charges, average revenues, and their returns on equity(ROEs) are not attractive at all. Although they are trying to make progress, they need to spend huge amounts to defend themselves from external threats. They are under immense pressure due to increasing regulations and their deadlines, new laws on capital and liquidity, structural changes, investor protection laws, and transparency compliances. To date, the industry has not been able to control its base cost and the only solution visible is to collaborate with fintech, which can bring the costs down and make compliance easy.

Even though the industry has made a lot of efforts to reduce costs, the results are far from satisfactory. The performance of global investment banks in 2015 shows that their revenues fell by more than 4% but they could reduce costs only by 1.5% which is insignificant in comparison to the fall in revenue. More importantly, the overall costs of the investment banks were 25% higher in 2015 than what it was in the previous decade. The Capital markets need to decide whether they want to update themselves by adapting technology and accelerate their growth or remain stagnant and eventually lose the game. It has now become necessary for investment banks to substitute fintechs for their

present operating and business models in order to survive and grow in the future.

Today fintechs are able to disintermediate the traditional players in the retail financial services and capture their market share but to be a part of the capital market fintech will need to find a middle way with the investment banks. Fintechs will need to collaborate with investment banks in order to provide better services and gain a large market share. Both of them need to be sure of the problem that they want to solve. They need to check the viability and profitability of all the technologies available in order to select the best one so as to thrive in the future. Investment banks also need to regain the trust of the general public. The financial frauds, bad press, and regulatory actions on investment banks have tarnished their image in the general public. They need to collaborate with fintech, making compliance and transparency- easy and efficient, which will help them regain public trust.

Fintech

Finance is an age-old concept in India, it has been evolving and transforming its functions across the years, and technology, at the same time is incessantly spreading its wings in almost every sector of the economy providing solutions one could not even think were possible before. Finance and technology were integrated for the first time in 1886 giving rise to FinTechs at a global level and 2015 was the year when it pioneered its roots in India. Since then, FinTechs are reshaping our traditional financial services be its payment system, trading & investment, accounting services, banking services, and all the rest. FinTech has evolved into stages, the first stage was all about infrastructure development and computerization. Fintech 2.0 focused on banking, giving rise to bank mainframe computers, digitalization.

The third stage was the revolutionary stage with the emergence of new players in the form of startups using highly advanced technologies such as artificial intelligence, blockchain, robotic assistance, and what not. According to investindia, currently, the Fintech sector has 1,860

startups and as of December 2021, more than 17 Indian FinTech companies have secured Unicorn status with a valuation of over $1billion. There are different types of FinTech companies including Payments/Billing, Regtechs, Personal Finance, Capital Markets. At present, almost every sector is approaching FinTech in order to improve their utilization and enhance efficiency by reducing the operational cost.

However, this paper primarily focuses on the application of FinTech services in the Indian Capital Market. Technology is impacting trading, markets and security services, modeling new conceptions of investment, settlement, trading and clearing. The emergence of trading apps such as Zerodha, UpStocks and Grow makes it even easier to buy or sell a stock online with just a finger tap, eliminating all the complex and time-taking procedures which were involved earlier. These apps are not only encouraging people to invest but are also making an attempt to make them financially sound. All these things are contributing to the formation of the digital capital market in India. However, currently there is no robust model or ecosystem of how the players of the capital market will join hands with FinTech but their integration is definite in the near future.

2. Review of literature:

Capital markets are the backbone of every economy and therefore must function efficiently. Financial markets with efficient prices are the drivers of the country's economic growth(Malkiel, 2010). Kothari(1986), Mookerjee(1988), Lal(1990), Ramesh Gupta(1991,1992), Raghunathan(1991) broadly examine the Indian Capital Market and trading system in the Indian stock exchange. Raju and Ghosh (2004) compares the volatility of between the developed and the emerging capital markets with the help of empirical observations. The SBI report(2021) shows that there has been a surge in the number of individual investors in the market by 142 lakh in the financial 2021 including 122.5 lakh new accounts at CDSL and 19.7 Lakh accounts in NSDL besides the the rise of 6% share of individual

investors total turnover of National stock exchange as per March 2020. It depicts the growing interest of the people towards investing in the capital market. This increased willingness is also a result of increased use of technology in the financial sector(Das & Ali, 2020). During the pandemic, the number of transactions surged by 82.5% from March 2020 to July 2020 (KSEI, 2020). Numerous studies show that financial literacy has a significant impact on the investment decisions by the people(Abdeldayem, 2016; Fitria et al., 2019; Mouna & Anis, 2017). On the basis of the national financial literacy and inclusivity survey conducted by the Financial Service Authority (2017), the public knowledge about capital market products and services has risen up to 9.8% in 2016. According to Mouna and Anis (2017) financial literacy has a considerable impact on investment behaviour, found a significant influence of financial literacy on investment behaviour. Lack of literacy directs people to a smaller extent of capital market participation. People with inadequate financial knowledge are also deemed to be less likely to own shares. People with low literacy are less likely to participate in the stock market. People with poor financial awareness are also thought to be less likely to invest in stocks. Nabila Na'ma Aisa (2022) found a significant positive correlation between the automated investment technology and the intention to invest in the capital market and a significant direct relation between the financial literacy and the willingness to invest among the students of Indonesia. This paper focuses on how technological advancement in the financial sector contributes to the growth of Indian Capital Market along with the role of youth in the same.

3. Objective of the study

a) To measure the significance of the FinTechs in the Indian Capital Market. We intend to observe how the FinTechs are capturing significant market share in the industry in India.

b) To examine the Participation of the Youth in new-age investing and its amalgamated impact with the capital market on the economy of the nation.

4. Research Methodology

For our research paper, we have adopted a qualitative research method because of the explanatory nature of the objects. We have used an analytical approach and tried to detect the relationship between the technological automation in investing, participation of youth in stock market and the growth of Indian capital market. To draw inferences, we have used secondary data available on the government national and international portals to maintain the authenticity of information. The data includes latest facts and figures that act as indicators of the market. Web articles served as a basis for detecting the factors that push the market. Some sort of primary research has also been done through LinkedIn polls to support the findings. We have made an attempt to cover required prospects in order to join the dots among the variables of the research.

5. GROWING SYNERGIES BETWEEN FINTECH, YOUTH AND CAPITAL MARKET

Let us now see what is the relationship between youth, FinTech and the capital market. We shall try to find out the correlation between them. We will also analyse how that relationship would help the Indian economy to grow. So, the purpose is to understand how the growing synergies among the Youth, FinTech and Capital market shall accelerate the growth of the Indian economy.

5.1 FinTech & Capital Market

No sector in the economy has been devoid of technology, capital market with no surprise has also experienced technological advancement in some or the other way, earlier the traditional process of trading involved hustle of paperwork, physical presence, documentation, tedious tracking of stocks and many more but the coalescence of FinTech in Capital Market has made the process of investing way easier and hustle-free. The electronification of trading facilitates tracking of

stocks and gave rise to intra-day trading, it also eliminated the paperwork and made it accessible to the larger audience.

Figure-1: Number of Demat Accounts (annual data)

Source: tradewithstatistic

Computerization of stocks and emergence of digital currency has resulted into a lot of movement in the capital market and has also gained attention from an extended section of the society making people develop interest in investing. But as the industry is in the middle of change, it sometimes gets difficult for those who are in the industry for many years to actually re-learn the things and change their way of responses but as these changes are essential it creates inertia on the part of the incumbent. Figure 1 shows the growth in number of demat accounts. It represents massive growth in number of new active demat accounts from 2020.

5.2 Youth & Capital Market

Today the youngsters are tech-savvy and are easily adapting to the rapid technological advancements. The youth prefers to use technology rather than being stuck in red-tapism and inefficiency of the traditional ways of operation be it any office. In the present the banks and the

capital markets are observing a shift from traditional branch banking to online banking and the major users of internet banking facilities are actually the youth. There is also a spark among the youth to learn to be a good investor. The youth wants to be financially literate and have proper financial planning for themselves and their family.

Recently with the entry of a lot of FinTechs in the banking sector and the capital market, it has actually stimulated the youth to be a part of the Indian capital market. The capital market has observed a massive increase in the number of online demat accounts being opened which shows us the increase in participation of the youth in the capital market. The introduction of the FinTechs in the capital market has actually made the process of entry, investment and exit extremely easy for the youth to manage while sitting at their place of convenience. As on July 9th, 2021, there were more than 4 crore active demat accounts on CDSL. In the financial year 2020-21 the number of retail investors has jumped more than 41% according to BSE and more than 7 crore investors were registered with BSE as of July 8, 2021.

With a lot of FinTechs in the form of trading apps have facilitated entry of youth in the capital market. The youth invests directly in equity stocks and also mutual funds. A lot of mutual fund houses are able to get more investors, especially the youth who want to secure their future by starting SIPs at an early age. With ease of investing, managing portfolio, managing funds and interpreting analytical information provided by these FinTechs, they have actually become way more popular than the traditional players in the market. Figure 2 shows the survey results wherein we get to know that almost 55% of the youngsters consume FinTech services such as trading, investing etc.

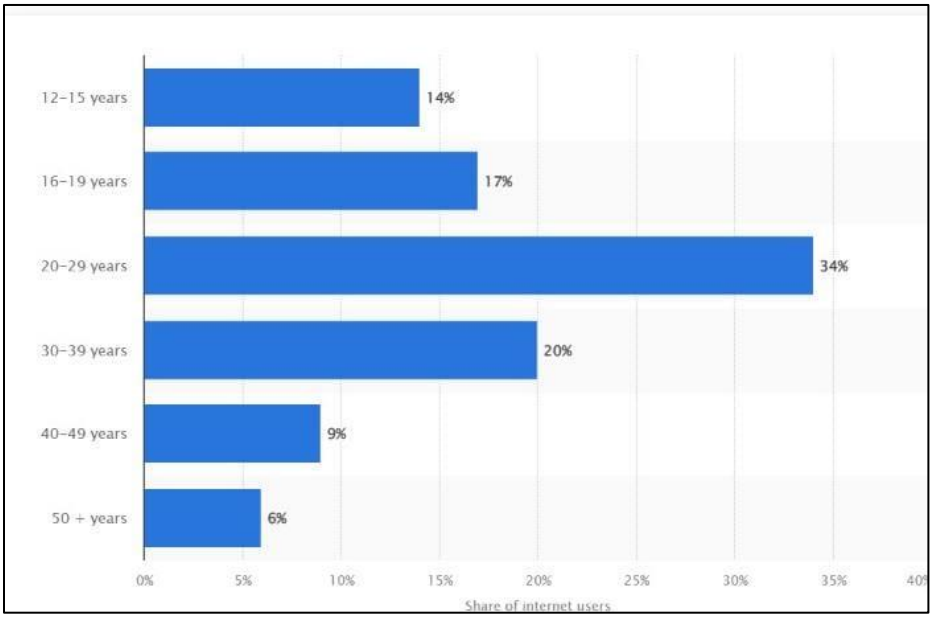
Figure 2: Proportion of Youth Consuming Fintech Services

Source: LinkedIn Poll

6. Influence of Media on youth

Present generation interact with media on a daily basis, it has become a part of their routine, internet connectivity and rising technology has made their interaction with media as easy as touch of finger. Data shows that 85% of the Indian youth below the age of 18, have access to smartphones and on an average almost half of them are active on such platforms for more than 5 hours a day. According to the survey conducted in 2019, more than half of the Indian population on the internet belongs to the age group of 20 to 39 years and almost 14% of the total Indian internet users are the youngsters between the age of 12 to 15 years. As per Statista 2019, India is ranked second in terms of number of internet users with 560 million total users. Figure 3 shows the distribution of internet users in India according to age groups. It shows that maximum number of people that use internet are of the age group 20-29 years.

Figure 3: Distribution of Internet Users in India, by age group (2019)



Source: Statista

All this information shows that today's youth is highly engaged with the media and spends a significant amount of their time on such platforms reading and learning about various different things be it investment, career, technology so on and so forth, which reflects that they are actively involved in what they see on the internet and are available with an abundance of information related to each and every domain. Following are some of the fragments of media which impacts the investing mindset and the role of youth in the Indian capital market:

6.1 Impact of Social Media: Latest trend shows that 52% of India's youth is on social media out of which 57% is between 8-12 years old and 47% of them belongs to the age group of 13-17 years. Number of Facebook users in India is 349.2m, Instagram 201.1m, LinkedIn 81m and Snapchat 115.95m. Today's youth spends half of their time on social media apps not just watching funny videos but also getting quick and quality information about the things that are not a part of their academic curriculum. These apps provide relevant information

and knowledge in the form of short videos, posts, stories, memes and podcasts which attracts youth which is already lacking in time. Talking about investments, then the internet is experiencing a sudden boost in terms of people providing excellent financial knowledge and educating the youth about the importance of saving and investing.

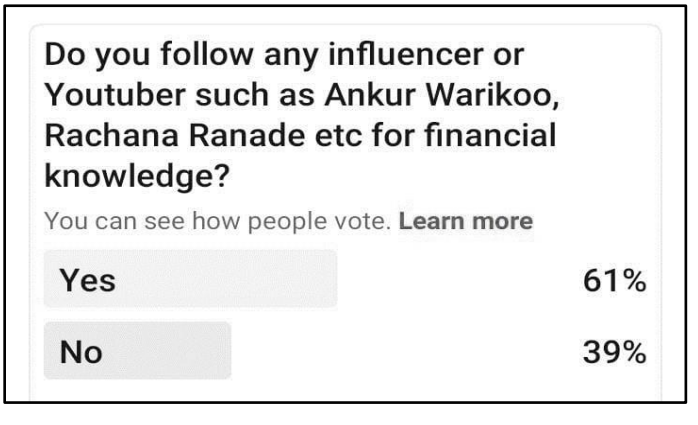
6.2 Impact of OTT & Cinema: India is the 3rd largest cinema market in the world (2021) as per the PWC report, it says 20 million people go to watch movies every day. According to a survey, 50 percent of young people are influenced by what they see in movies as opposed to what they see in the actual world. Indian cinema is very versatile and influences the youth in so many ways, it has recently witnessed a wave of movies involving the concept of investing and stock market. Movies such as SCAM 1992, SHARE BAZAAR, GAFLA, THE BIG BULL, CORPORATE focused on the stock market operations and the lifestyle of investors which appeared to be fascinating to the youth and generated a lot of interest among them on how all these things work in real life. Hence the OTT platforms and Indian Cinema with the help of such movies have made investing and finance a cool concept among the youngsters.

6.3 Information Accessibility: Earlier in the era of traditional investing, a lot of time was required to actually sit and analyse every industry, keep a check on relevant news and read books. To be precise, gathering information was challenging. But now in the present time, almost every student has access to the internet and hence to the information of the outside world. There is an ocean of information accessible with just one click. Daily articles, news apps, stock-tracking apps which provide daily updates of stocks and help to channelize your money by calculating the efficiency of your investment and managing portfolios. There are also several investment calculators that are available to calculate the return, interest

and the underlying risk. All these things make investment much easier for the Youth because youngsters nowadays are tech savvy and can adapt and learn all these technological facilities more efficiently than anyone else.

6.4 Emergence of YouTube: YouTube has grown tremendously in the past few decades. Currently it has 122 million daily active users which depicts that a large proportion of our population actively uses the app and hence consumes the content which is capable of influencing their lifestyle and persuading to try out things they never have. YouTube in the past decade had become a great education platform as well because of its free availability, there exist a large number of students who use YouTube to fulfil their learning requirement. The platform has no limit to the kind of knowledge it provides, from academic stuff, makeup tutorials to investing strategies, our present generation has access to all. All these things to some extent motivates people especially the youth to actually apply the gained knowledge in the practical world. Figure 4 shows that almost 60% of youth that consumes media is influenced by some finance industry experts and that is what has led the youth to consume FinTech services.

Figure 4: Influence of Media on Youth



Source: LinkedIn Poll

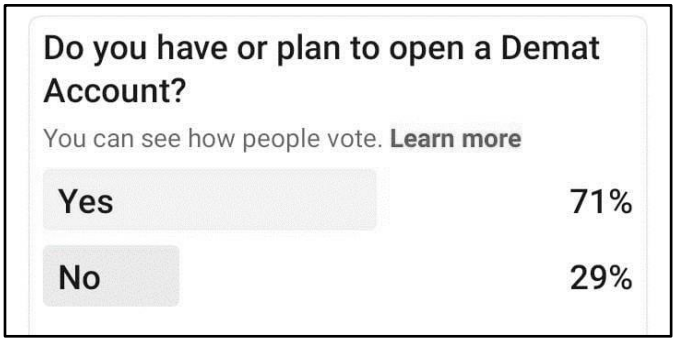
7. SURGE OF RETAIL INVESTORS IN THE INDIAN CAPITAL MARKET

The Indian Capital Market has recently witnessed a significantly large influx of retail investors. The Covid-19 pandemic has played a major role here: enabled work from home (WFH), made people look for additional income sources, encouraged or rather forced the adoption of technology especially in the field of banking, investment and trading through the mobile apps of the FinTechs. The above claim is supported by the fact that CDSL (Central Depository Services (India) Limited) became the first depository to have four crore plus active demat accounts as per CDSL's statement on July 8, 2020. The CDSL then announced that it has reached the mark of five crore active demat accounts as of November, 2021. CDSL on March 1, 2022, declared six crores active demat accounts which is amazing as it took just three months to add another one crore demat accounts after November, 2021. This is quite intimidating but we must know that our number of demat accounts is only a small proportion of our population. Thus, there is a huge opportunity for growth available. A large part of our population is still out of the Indian Capital Market.

Fintech is playing a major role in encouraging people to enter into the Indian Capital Market. Also, in the year 2020, the number of retail investors has increased by 41 percent which is huge. As on July 8, 2020, more than 7 crore investors were registered with BSE(Bombay Stock Exchange). Also, the mutual funds industry saw New Fund Offers (NFOs) set new records in 2021. A total of 132 NFOs were launched in 2021 as per ACE MF data. Thematic and sectoral funds alone witnessed a net inflow of Rs.21,768 crores. This again is due to the ease of investing through mobile apps and the urge of the youth to start SIPs (Systematic Investment Plans) to secure their future. The fact that this is happening due to FinTechs is supported by a survey done by us on LinkedIn. The audience was students in their 20's pursuing undergraduate or postgraduate degree courses. We found that almost 70% of the youngsters have or plan to have a demat account in recent

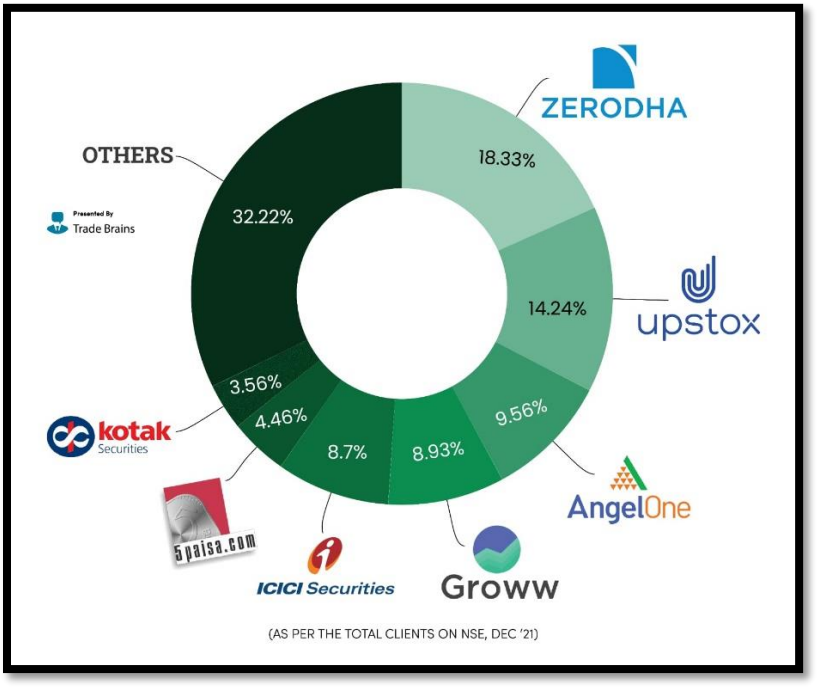
future. Figure 5 shows how aware the youth is about financial literacy and their willing to enter the securities market to invest and trade. This supports the fact that the rate of number of demat accounts opened is growing tremendously.

Figure 5: Proportion of Youth having Demat Accounts



Source: LinkedIn Poll

Figure 6: Market Share of Different Stockbrokers as of Dec, 2021



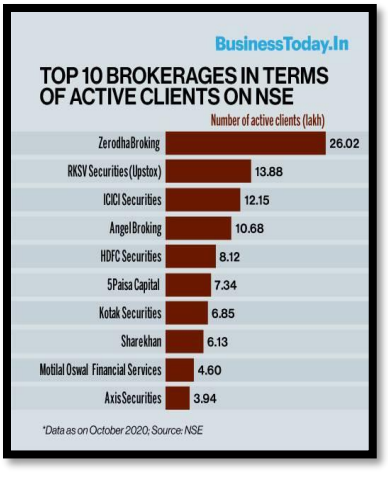
Source: NSE

Figure 6: shows the market share of stockbrokers(fintech) as of December 2021. It is clear that new players such as Zerodha, UpStocks, Groww, AngelOne have acquired major share and have overtaken the traditional players in the industry.

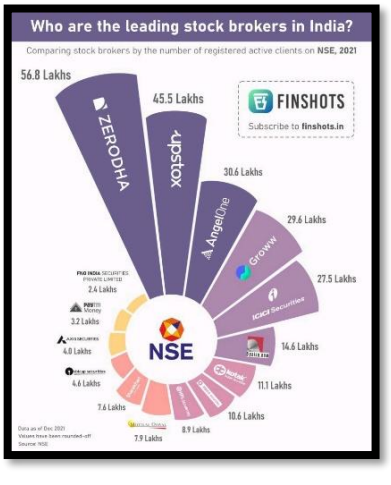
Refer Figure 7: It can be seen clearly that the number of clients with FinTechs has increased significantly over just a year. Another fact supporting the entry of youth in the Indian Capital Markets through the FinTechs. Above all the time was perfect for entry as the market was down. The new age tech savvies who are also finance enthusiasts were in fear of missing out the wonderful opportunity and thus the situation turned out to be perfect for the new investors to enter into the market. With the perfect environment at hand, the youth being finance enthusiast, influenced by youtubers, finance-based movies, and social media, recklessly wanted to put in their money in the market to learn to invest/trade and turn out to be an early bird(take maximum advantage of compounding) with an edge over other people who are not so financially literate. The urge of learning finance and applying it in life are two different things and today the youth of our country want to have an expertise in both.

Figure 7: The Absolute Number of Active Clients of the Stockbrokers

2019



2021



Source: NSE, Business Today, Finshots

Everything above seems nice and great for the youth and the market but it is true only in the long run when the market shall grow with the influx of investors and their capital in the market and the youth shall learn investing/trading and thus create wealth for a better and secure future. But it has some cons in the short run: the youngsters get into the influence of the social media celebs, youtubers, telegram channels and many more that give advice and suggestions which are often wrong or are misinterpreted. These influencers basically take advantage of premature investors just to make profits in the market and increase their presence on the internet. Eventually, the youth loses capital and the whole thing goes on until they learn how the market works and understand their own aim and risk profile.

8. IMPACT ON ECONOMY

Economy is an intensely volatile part of any country, even a small bustle can sometimes lead to an economic turbulence. But not every commotion is disturbing, some disruptions are essential for the long-term growth of the economy as they pave the way for innovations and experiments preventing the situation of stagnancy. Demonetisation, GST, digitalisation are some of the supporting examples of the above statement. Over the past few decades Indian Economy has been experiencing temperamental changes in terms of technology, policies, global relations etc which have given rise to some complex anomalies which in turn gives rise to new innovations.

Capital market holds the paramount importance in every economy acting as a medium to constructively starboard savings into persisting investments. It serves as a Barometer of economic growth. It helps to generate the funds required for long-term investments contributing to the capital accumulation. Technological advancement in the capital market has smoothened the process of investing and market operations, it has made it easier to track the indices and market trajectory with every passing second. The FinTech revolution, just like many other sectors of the Financial industry, has made its mark in the Indian capital market as well, making investing more attractive and

accessible to many groups in the country and adding to the secondary capital market. One of such divisions consists of youth.

Youth plays a vital role in shaping the future of the economy, the expertise and interest of youth eventually becomes the expertise of the country. The Indian youth at present is not afraid of experimenting and trying different things, not limiting themselves to theoretical knowledge but also understanding the practicality of the real-world operations. India is currently experiencing a wave of entrepreneurship among the youth giving rise to more than 80 unicorn start-ups which contribute to the primary capital market. The present generation is technically more sound and is comfortable in playing around with the complex technologies which will eventually create new employment opportunities in the country. This refashioning of the economy will also attract more foreign investment to the country increasing the amount of forex in India. Participation of new investors and the technological revolution in the financial sector also increase the flow of tax streams for the Indian government, the recent example of this is the imposition of 30% tax on the crypto currency in the Union Budget 2022.

In terms of financial technology adoption, India leads emerging economies, with an adoption rate of 87 percent in March 2020, compared to a global average of 64 percent. India leads the globe in digital transactions, with a total value of more than US$ 25 billion. The fintech market in India was valued at Rs.1,920 billion (US$ 26.09 billion) in 2019, according to a recent estimate. By 2025, the market is expected to have increased to Rs.6,207 billion (US$ 82.7 billion). India's smart workforce and technological prowess make it an attractive site for the development of financial technologies.

9. CONCLUSION AND FURTHER SCOPE FOR STUDY

After having a look at the background of the Indian Capital Market and the FinTech, we know the time has come for the mutual collaboration between the two so as to survive in the market for now and thrive in future. We have established a strong connection between the youth, the

Indian capital market and the FinTechs. This bond between the three is a driving force that will lead the Indian markets to sky high in next decade.

It is important to note that FinTech is growing tremendously in India and capturing significant market share in the industry. They are overtaking the traditional players and creating a conducive environment for the public at large to enter the securities market. The youth here are particularly important as they are the ones floating, operating and consuming the FinTech services. They are playing a major role in this transition phase of the industry. They have been significantly influenced by different forms of media available today. With their passion to be financially literate, they are going to change the whole picture.

With the massive influx of investors through FinTech, the future of the Indian Capital Market seems bright. FinTech shall increase the proportion of the population investing in the securities market. It will lead to tremendous growth in the coming decades. The whole industry will look different, operate differently and will be much more efficient than what it is today. The industry will be able to operate efficiently in terms of rendering services and also in meeting the legal requirements of the market regulators like SEBI, RBI etc leading to smooth and steady operations. The impact shall be huge especially in the long run. There will be a level effect on the economy's investment and growth rate.

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Relationship between Compensation and Employee Behavior with Respect to Organizational Effectiveness: An Empirical Study

Abstract

Purpose: *This study determines how compensation affects employee behavior at work with respect to organizational effectiveness. Along with compensation, how other rewards & incentives affect employee behavior at work and what do people prefer more when the choice comes between compensation and the other rewards. It also touches upon the future expecta-tions with respect to compensation that could lead to organizational effective-ness. The study adopted a survey which includes a well-defined set of questions which have been answered by a total of 230 respondents. The findings of the study indicate that*

Compensation usually affects employee behavior at work in a positive manner but in some cases, some of the other rewards surpass it, and that is why in those scenarios those other rewards become the motivating factor for a person to act in a positive manner with respect to the organizational effectiveness. Compensation has always been an important part of a person's life and therefore this study highlights the importance of effective compensation and the benefits that are to be obtained thereof. Employers are continually challenged to develop pay practices and procedures that will enable them to attract, motivate, retain and satisfy their employees. The findings of this study can be a helpful tool which could be used to provide solutions to individual dissatisfaction towards work processes. Our research tries to understand the motivation that pushes employees to be productive. However, the study is conducted from the perspective of employees only. The study unravels the expectations of to-be-employees -what do they look for in a job, how do they want to be compensated, etc. Another important event that has been taken into account is pandemic.

Keywords:

Compensation, Motivation, Work Culture, Work life balance, monetary & non-monetary incentive, Recognition & rewards, Employee behavior, currently unemployed people i.e. students or to be employees.

Introduction

Compensation is often seen as an important aspect of human life and one that offers a large amount of motivation to employees yet according to the literature compensation is an area that has not received as much attention in research as other parts of human resource. When looking at the importance of compensation there are two sides that must be explored. The first is the perspective of the employer and the second is the perspective of the employee. This study is conducted from the perspective of employees. Over time it has been a case in some organizations that their employees are under remunerated or the organization is not having a good compensation

structure like the pay package is not commensurate with the work employees have done for the organization (Fein, 2010). At times, this could be a deliberate act by the management in order to make the employee feel frustrated or that the management lacks the required capabilities to effectively administer the compensation (Dyer, & Schwab 2004).

Gone were the days when such issues were being accepted by the employees and therefore there is a need to tackle the problem and bring in robust attention towards the compensation structure.

In this study we have assumed that rewards, whether monetary or non-monetary, always bring a positive change in employee behavior at work, which means that after getting the rewards employees are more energetic, innovative and motivated.

Keeping in mind that compensation is one of the most important aspects of a person's life. We have taken it as the base to know more about the effect it possesses over employee behavior at work. In addition to this, various comparisons have been made keeping compensation as the base with other kinds of rewards to know more about the preferences of an employee i.e. what do they prefer when along with compensation other rewards are being offered to them to choose from.

Along with this, the objective of this study is to find out what drives people to a greater extent i.e., what propels them to work towards organizational goals in a positive manner, How do they feel about their current pay package, what do they prefer between monetary and non-monetary incentives, etc.

We have made use of a very renowned theory given by "American psychologist Abraham Maslow" namely Maslow's hierarchy of needs theory, by categorizing and including the monetary and non-monetary rewards under the heads of various needs provided in the theory. The monetary incentives like compensation have been included under the head of basic physiological needs and other non-monetary incentives

have been given space under the remaining other needs of the model. The relation between these heads and the rewards have been explained below:

- **Physiological Needs:** The most basic human survival needs of life which includes food, shelter, clothing, etc come under this head. Fair compensation being a monetary incentive excluding the promotion and bonuses is required to meet these basic necessities of life, that is why compensation can be considered as a physiological need of a person.

- **Safety Needs:** These needs basically include the safety and well-being of a person be it financially, emotionally, physically or mentally. Work life balance being a non-monetary incentive involves the minimization of work related stress and the establishment of a stable & sustainable way to work while maintaining **health and general well-being.** That is why work life balance can be considered as a safety need of a person.

- **Love and belongingness Needs:** This need basically includes the close human interactions including the friendships, family bonds, membership in societies, having a sense of unity and having a sense of connection with either the organization or the humans or both. A positive workplace culture and practices involves a place where employees feel united, where they are valued, supported & nurtured by the other team members. This is how we can consider positive workplace culture and practice to come under the love and belongingness needs of a person.

- **Esteem Needs:** These needs generally include factors like self-respect, recognition, status provided to an employee. Therefore, recognition & rewards being a non-monetary incentive has been included under this head and we have considered it as the esteem needs of a person.

- **Self-Actualization Needs:** It basically describes the fulfillment of your full potential as a person. It includes personal and creative self

growth, which are achieved through the fulfillment of our full potential. Passion for work is the intense enthusiasm and excitement for what you do i.e. developing yourself by doing what you love. So passion for work, personal growth & sense of achievement can be considered as a person's Self actualization needs.

Review of literature:

Employee compensation plays such a key role because it is at the heart of the employment relationship, being of critical importance to both employees and employers. Employees typically depend on wages, salaries, and so forth to provide a large share of their income and on benefits to provide income and health security. (Barry Gerhert 1994) In today's times, compensation in the organizations is a major consideration in Human Resource Management (HRM), and how it is allocated sends a message to employees about what the organizations believe to be important and worth encouraging. (Fahim, Shuai, Mohammed & Mohsin 2011).

Compensation may directly influence key outcomes like job satisfaction. retention, performance, flexibility, cooperation, skill acquisition and so forth. However, its impact may be indirect by facilitating and constraining the effectiveness of other human resource activities like selection and training. (Barry Gerhert & George 1991) Organisations struggle to define the right equation, that is how to pay the right people, the right amount, for the right reason at the right time. (S S Upadhyay 2009) The paper attempts to answer some of these questions.

In the 21st century organizations, by and large, people pay much more attention to their life style and the money they earn from the work unlike earlier times. However, it still remains unclear whether many of them would continue working if it were not for the money they earn. (Fahim, Shuai, Mohammed & Mohsin 2011) There are other factors as well that can affect an employee's attitude at work like work culture.

Martin (1992) contends that the objective of studying organizational culture is to help understand organizational life more. Understanding organizational life is important as it is widely acknowledged that organizational cultures have an impact upon company performance (Schein, 2004).

Employee's performance can also depend on non-monetary rewards. Monetary rewards enhance the direct satisfaction of employees and non-monetary rewards are helpful for the recognition of employees and that recognition is a motivational tool for the employees and leads to the work engagement (Burgess &Ratto, 2003).

Compensation processes are based on compensation philosophies and contain arrangements in the shape of policies, structures and procedures. So, compensation administration is not just about money. It is also concerned with that non-financial aspect which provides intrinsic and extrinsic motivation to employees to improve in their performance.

Compensation can consist of base salary, bonuses, pensions contributions, insurance and healthcare, automobiles and stock options, and so on.

Compensation:

All forms of financial returns and tangible services and benefits employees receive as part of an employment relationship (McGraw-Hill Education)

Monetary incentives:

Monetary incentives have an explicit monetary value used as a method for motivating and improving the performance of persons who use and are affected by accounting information.

Non-monetary incentives:

Non-monetary or non-cash incentives do not involve direct payment of cash and they can be tangible or intangible. For instance, giving more

autonomy to employees at their job and participation in decision making, assigning challenging duties, recognizing good work through small token of appreciation, tickets to restaurants etc., providing some services for the employees, organizing social activities in the workplace, etc.

Promotion:

A promotion is when an employee advances to a position that is classified at a higher salary grade, or in certain circumstances, an acknowledgment of significant greater responsibilities within the same grade.

A salary increase is typically appropriate at the time of promotion, based upon an evaluation of relevant experience, performance, relative position in the new salary range, internal equity, and external competitiveness. (Jonathan R. Veum & Michael R. Pergamit,1999)

Motivation:

Motivation represents anything that ignites our physical and mental capacities to move towards certain accomplishments or objectives. (Emir Srna, M. Sait Dinc,2017)

These are the "factors or events that energize, channel, and sustain human behavior over time" (Steers, Mowday, & Shapiro, 2004).

Importance of an effective compensation package has been discussed below:

To employers:

a) People are always looking to put themselves in the best possible position financially so an attractive compensation structure attracts the best talent towards the company and helps in retaining it as well by reducing the employee turnover ratio.

b) An attractive compensation package may many times act as a strong motivator for an employee to work even harder to achieve the goals of the company.

c) It further boosts employee loyalty towards the company.

d) Increases the productivity and profitability of an employee.

e) Last but not the least, It improves job satisfaction and employee engagement.

f) To employees:

g) Wages/ Salaries constitute the primary source of income to employees, and its adequacy would very much determine their standard of living which will fulfill the physiological needs of the person.

h) This standard of living will further create a status and respect in the society that will fulfill the esteem needs of the person.

Why study compensation?

From the organization's perspective employee compensation often represents the single largest cost accounting for 10-50% of total operating costs. Secondly, it is important to assess its impact on a wide range of employee attitudes & behaviors because compensation may directly influence key outcomes like job satisfaction, attraction, retention and so forth.

From the employee perspective, salaries and wages represent the main sources of income for most people and can be an effective indicator of his or her social standing in society. (Barry Gerhart & George T. Milkovich, 1991)

Implications for managers and policy makers:

a. More research needs to be done on how pay interacts with non-monetary rewards. This would help establish conditions under which monetary rewards are more likely to have a high return on

investment. (Barry Gerhert & George 1991). This paper attempts to judge the effect of non-monetary rewards as well for achieving organisational efficiency.

b. We have very few studies where effect of compensation on organisational efficiency is based on the Maslow's need hierarchy theory.

b. The study attempts to present findings that will help policy makers and managers in developing an effective compensation plan and policy for the organisation. They can judge the effectiveness of their current compensation plan in light of these findings to fulfil their objective of achieving organisational efficiency.

Methodology:

Two separate self-administered questionnaires were prepared for two sets of people i.e. currently employed & currently unemployed & studying (to-be-employees), based on the monetary & non- monetary incentives that a person being an employee receives in a job.

Questionnaire made for employed respondents consisted of 20 questions in total. The initial phase of the survey included demographic questions such as Name, Gender, Age, & Highest qualifications. After that, it included questions like Job type (Private or Government) , Mode of Job (online, offline or hybrid), sector in which they are working currently (Accounting, Banking, Finance, Business, Consulting, Management, Healthcare, Teacher training & education etc.). Finally, the last section of this survey consisted of the questions which asked for the opinions people hold about their current compensation structure, its potential in future, its effect on their productivity, what should be the basis of promotion, what propels them to work for the organization, why do they want promotion at job, and the choices they make when their compensation is compared with other rewards, etc. This questionnaire has been filled by a total of 119 employed people who are above the age of 20.

Another questionnaire prepared for the currently unemployed respondents consisted of 13 questions in total. The initial phase of the survey included demographic questions such as Name, Gender & Highest qualifications, sector in which they are interested to work. The remaining survey included questions which asked for the opinions they hold about the importance of compensation over other factors and rewards, what should be the basis of promotion at job, what will motivate them to increase productivity at work and the choices they make when compensation is compared with other rewards and factors. This questionnaire has been filled by a total of 111 respondents which ranges roughly between the age of 18-28 years.

The survey was conducted via online mode by making use of the google forms facility. The purpose of the study was explained in the sub heading section of the form.

Findings, results & interpretations:

The respondents were all employees or to be employees. There were a total of 230 responses which includes 119 from currently employed people and the remaining 111 from to be employees or students. The demographic characteristics of the respondents are presented as follows.

In case of employed respondents, the sample had 68 Females (57.1%) as compared to 51 Males (42.9%). The respondents were above the age of 20 years. In terms of their highest academic qualification, the sample had a total of 68 Graduates (55.5%), 43 post graduates (36.1%), 3 possessed M.phil (2.5%), 5 Others which includes diploma, Company Secretary, Acturialist, Doctorate (4.2%).

Also, the majority of respondents i.e., 100 (84%) were in the private sector and the rest 19 respondents (16%) were working in the government sector.

The sector wise classification is given in the table below

Current Sector	Frequency (in%)
Teacher Training & education	24.4
Information and technology	20.2
Accounting, banking & finance	17.6
Business, consulting & management	12.6
Energy & utilities	-
Healthcare	2.5
Others	22.7

Lastly, 26.7% i.e. a total of 31 people were doing work from home, 31% were going to the office and the rest 42.3% were having the hybrid mode.

Now, after this basic information lets move on to the core aspects of the paper.

Let us first look at the responses of **working people**.

Satisfaction at work and future expectations

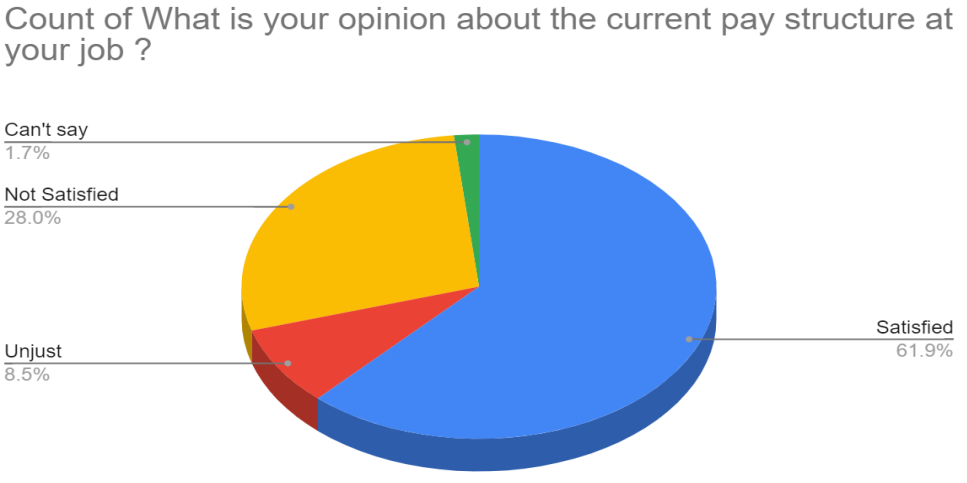

Figure 1

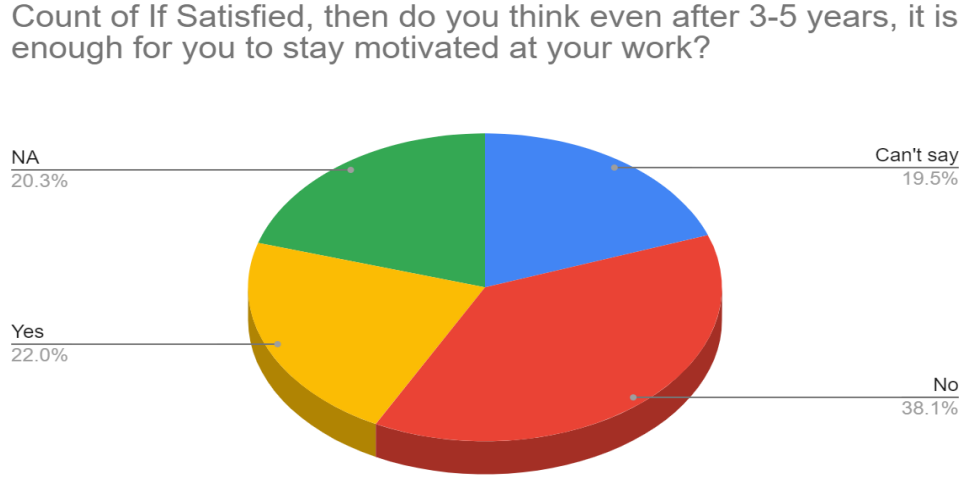

Figure 2

Employee motivation is defined as the enthusiasm, energy level, commitment and the amount of creativity that an employee brings to the organization on a daily basis. Figure 1 and figure 2 are interrelated. In absolute terms, if we look at the major chunk of the Figure 1 then it

shows that out of the 119 employed respondents, the majority of them i.e., 74 people are satisfied with their current compensation structure, 33 of them are not satisfied, and 10 people think that their current pay structure is unjust. Figure 2 is portraying that out of those 74 satisfied people, most of the people want perks other than compensation after 3-5 years of working to remain motivated at work.

Interpretation:

Compensation being a monetary incentive definitely affects employee behavior at work positively but it happens only for the initial years of working but after that perks & rewards other than compensation like work culture, recognition, social needs becomes the motivating factor.

Higher Compensation Vs Good Work Culture

A constructive workplace culture in view of an employee leads to augmented efficiency, better employee confidence and gives a sense of belongingness. It reduces the huge turnover cost for the organization as well because people enjoy coming to work and are more committed towards the work.

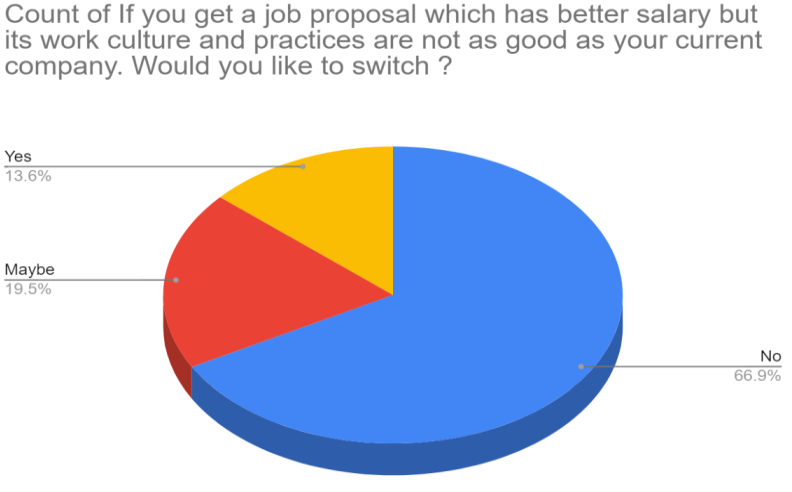

Figure 3

The results are portraying that when it comes to the choice between Compensation and work culture then in that case more than 50% of the people are more inclined towards a good work culture over compensation. Out of the total of 119 employed respondents 80 chose a good work culture, 22 people were falling in the bracket of 50-50 (confused between the choices) and only 17 people went towards compensation…which clearly proves that compensation is not enough to affect employee behavior in this case.

Interpretation:

When we compared compensation with work culture, the majority of the people chose work culture which can also come under the social needs of a person. This proves that many employed people in India are more inclined towards fulfilling their social needs but this happens only after working for 3-5 years at the workplace.

Compensation Vs Passion towards work

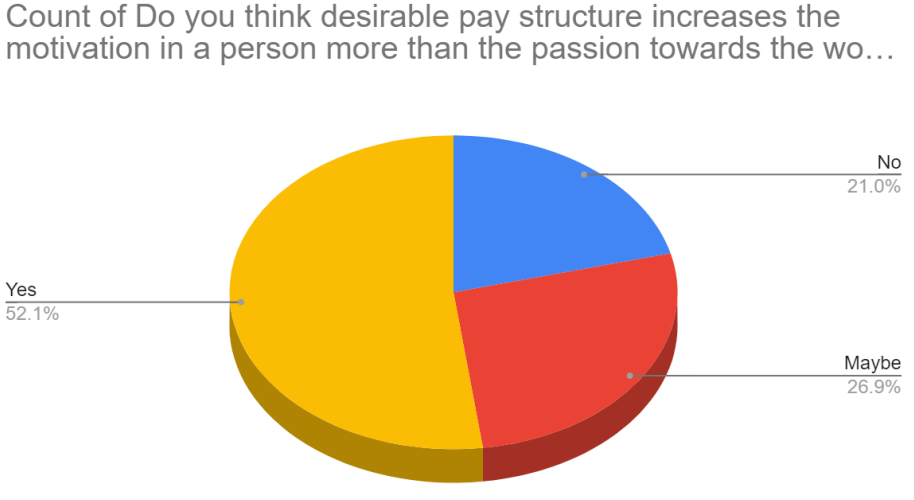

Figure 4

Now when the question arises between the desirable pay structure and the passion towards work then more than 50% of the employed

respondents are of the view that the desirable pay structure increases the motivation in a person. If absolute numbers are to be considered then out of 119 employed respondents 62 people think that desirable pay structure increases motivation, 32 people are again in a 50-50 state (confused between the options), Only 25 people say that passion towards work is sufficient to increase motivation at work over the desirable pay structure.

Interpretation:

Passion for work is the intense enthusiasm and excitement for what you do i.e. developing yourself by doing what you love. Self-actualization needs include personal and creative self growth, which are achieved through the fulfillment of our full potential. When we compared the compensation with the passion towards work which may come under the self-actualization need of a person. The results proved that people are not concerned about their own self-satisfaction as they are preferring the compensation over their passion.

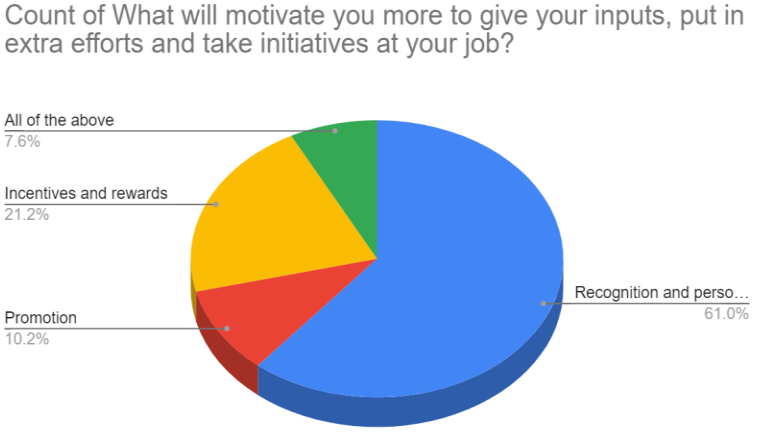

Figure 5

Figure 5 is clearly showing that majority of the people voted for "Recognition and rewards". To be exact, out of 119 employed respondents 72 people said that recognition and rewards motivates an

employees to be innovative at work, 26 people voted for Incentives and rewards, 12 people voted for promotion and rest 9 people voted for all the 3 options.

Interpretation:

After seeing the numbers for recognition and rewards which come under the esteem needs of the Maslow hierarchy need model we can interpret that In India after working for 3-5 years people are more inclined towards fulfilling their esteem needs over the monetary incentives like compensation.

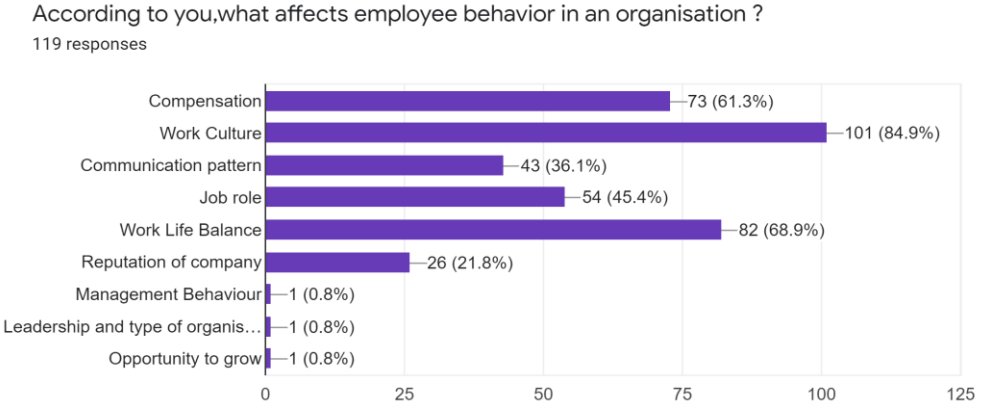

Figure 6

Nowadays work culture is becoming an extremely important aspect of a job along with the salary it provides, and results are showing that work culture aspect is easily surpassing the compensation aspect.

Apart from it, Work life balance which may come under the safety needs of a person is also surpassing the compensation aspect.

Interpretation:

Here, in this case as well, safety needs are surpassing the physiological needs of a person which means a person is having preference for non-monetary incentive of work life balance over the monetary incentive of

compensation…but again this happens only after working at the workplace for 3-5 years.

Why is promotion desirable?

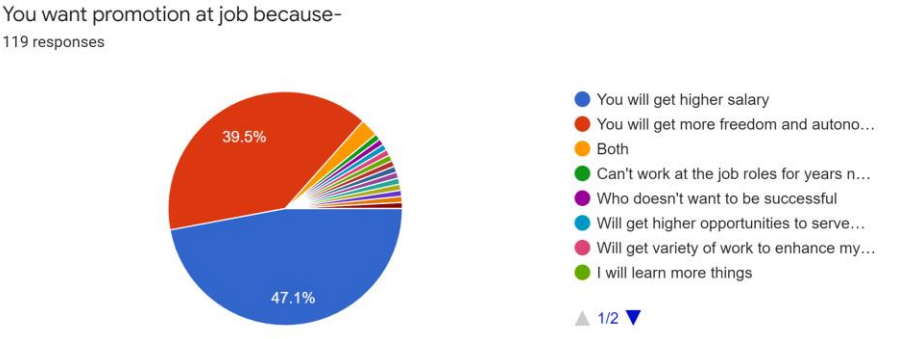

Figure 7

If we look closely at the dominant and larger chunk of the data, when we tried to know the reasons why people want promotion at their jobs, many of them voted to get higher salary over freedom and autonomy which proves that compensation does affect employee behavior here when compared with the freedom at work. Out of the 119 employed respondents 57 people voted for the higher salary aspect, 47 people voted for freedom & autonomy aspect, and the rest 15 people were spreaded across other aspects which are not so significant to consider in this study.

Interpretation:

Freedom and autonomy, Craving to learn new things, job enrichment etc factors do not come under any of the maslow's need hierarchy and all of these are not able to surpass the compensation aspect in this case. It proves that Compensation affects employee behavior at work when the factors other than those forming a part of safety, esteem & social needs of a person are there for making the comparison.

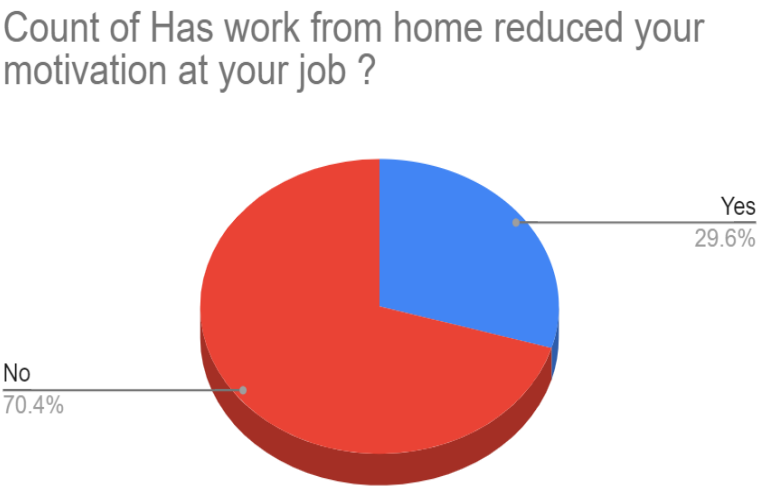

Figure 8

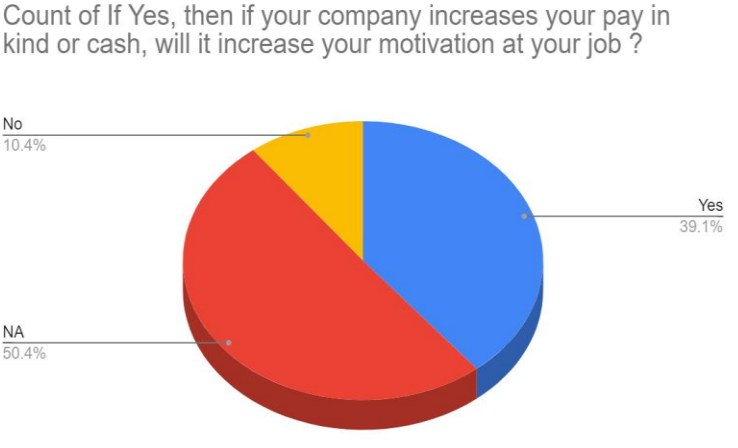

Figure 9

These 2 figures are interrelated. In fig.8 35 people stated that work from home during covid 19 reduced their motivation at job. Then in fig.9 majority of those 35 people were of the opinion that the pay in kind or cash can increase their motivation at work again.

Interpretation:

When the comparison does not exist between compensation and any other factor then people are ready to accept the compensation as a medium to get motivated.

Inexperienced people/to-be employed

Now, we would like to discuss the interpretations made for a total of 111 respondents from the pool of young population (to be employees) that are not having any work experience currently and are largely falling under the age bracket of 17- 23 and includes 88 under graduates, 14 graduates, 9 post graduates.

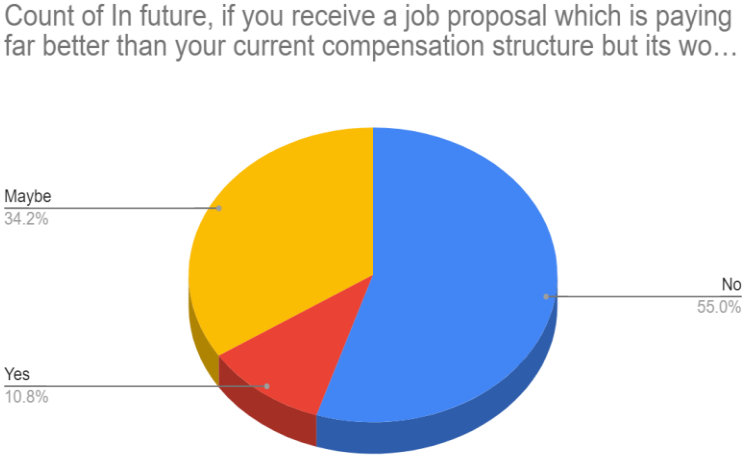

Figure 10

The results are portraying that when it comes to the choice between Compensation and work culture then in that case more than 50% of the people are more inclined towards work culture over compensation. Out of the total of 111 to be employed respondents 62 chose a good work culture, 38 people were falling in the bracket of 50-50 (confused between the choices) and only 11 people went towards compensation…which clearly proves that compensation is not enough to affect employee behavior in this case.

Interpretation:

When we compared compensation with work culture, the majority of the people chose work culture which can also be referred to as one of the factors which can fulfill the social needs of a person. This proves that many employed people in India are still not able to fulfill their social needs and that is why they are even ready to forgo the pay for it.

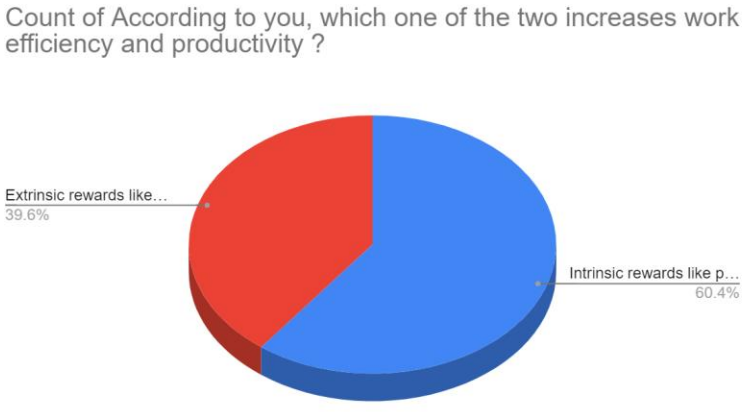

Figure 11

Extrinsic rewards are usually financial rewards given to employees such as pay raises, bonuses and benefits. They are external to completing the work itself and are controlled by people other than employees. Intrinsic rewards are psychological rewards that employees get from doing meaningful work and performing it well. When someone achieves an intrinsic reward, there is a positive emotional reaction. More than 50% of the to be employed respondents believe that intrinsic rewards like recognition that forms a part of esteem needs, personal growth & a sense of achievement which form a part of self-actualization needs are the motivating factors behind work efficiency and productivity.

To be exact, 68 people voted for the intrinsic rewards and the remaining 43 went for the extrinsic rewards aspect.

Interpretation:

The esteem needs and self-actualization needs are much more dominant over the pay structure or the compensation paid to the employees. And hence, in this case, compensation is not enough to have an effect on employee behavior at work.

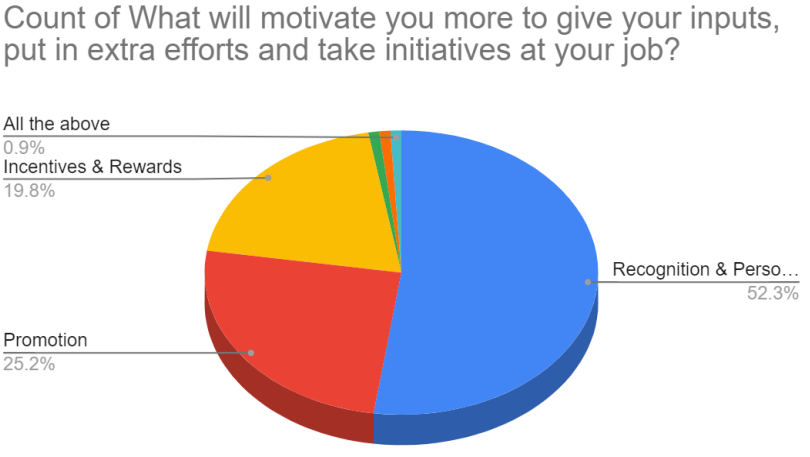

Figure 12

This is again showing the same result as above that Recognition and rewards which come under the head of esteem needs are much more dominant over the Incentives & promotions.

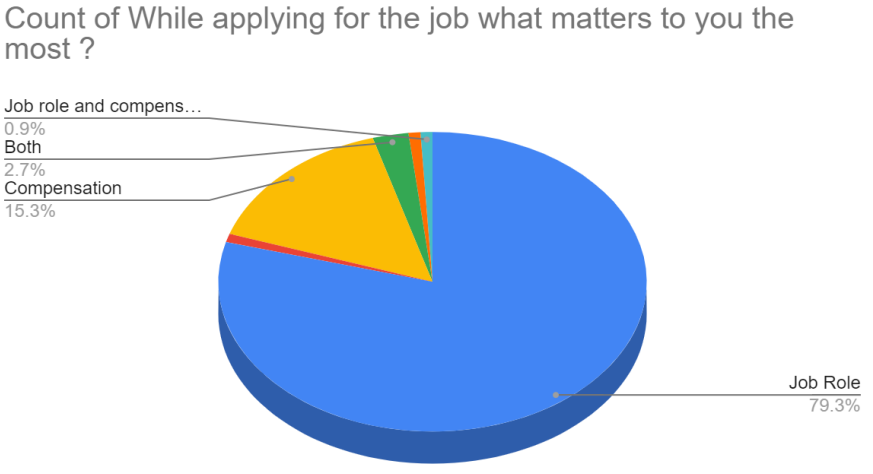

Figure 13

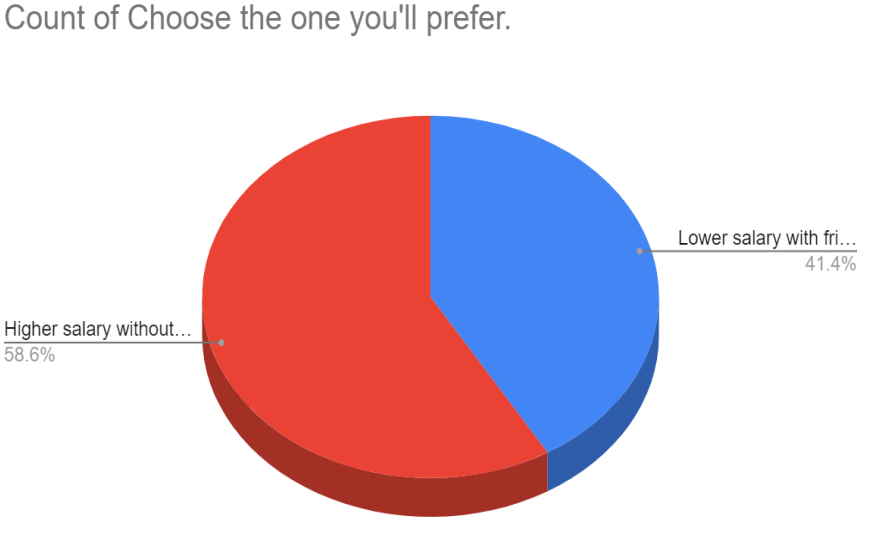

Figure 14

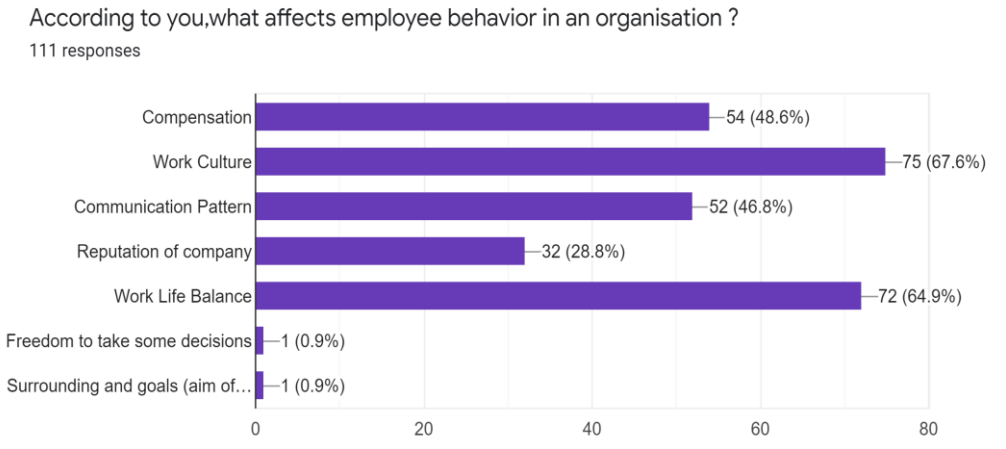

Figure 15

A job role is a part played by an employee as per his/her key responsibility areas. In figure 13…as per the results while applying for a job 88 of the total 111 to be employed respondents job role matters much more than the compensation that profile is offering.

Fringe benefits are perks that employers give to their employees above and beyond any financial compensation. Fringe benefits do not come under any of the needs mentioned in the Maslow's hierarchy needs theory. In figure 14, As per the results again the majority of the people are voting for "higher salary without fringe benefits" ,to be exact 66 respondents are of the view that they want a higher salary and zero fringe benefits.

In figure 15, Work culture comes under the social needs and work-life balance which may come under the safety needs which try to promote the well-being of an employee physically, emotionally, and mentally…and work-life balance also tries to promote the same.

Apart from the work culture and work-life balance other factors like freedom and autonomy, the reputation of the company, communication patterns which do not come under any of the needs mentioned in Maslow hierarchy need model are falling short of compensation.

Interpretation:

Summarizing the above-mentioned results, Job role, fringe benefits, freedom and autonomy, reputation of the company, communication patterns are such factors that cannot be included in any of the needs mentioned in Maslow's hierarchy model. And when we compared each one of these factors against compensation, then compensation always surpassed each one of them easily which essentially means that compensation is having a dominant effect on the behavior of employees at work.

Comparison:

Future Expectations

We draw a comparison between the answers of Employed and to-be - employees.

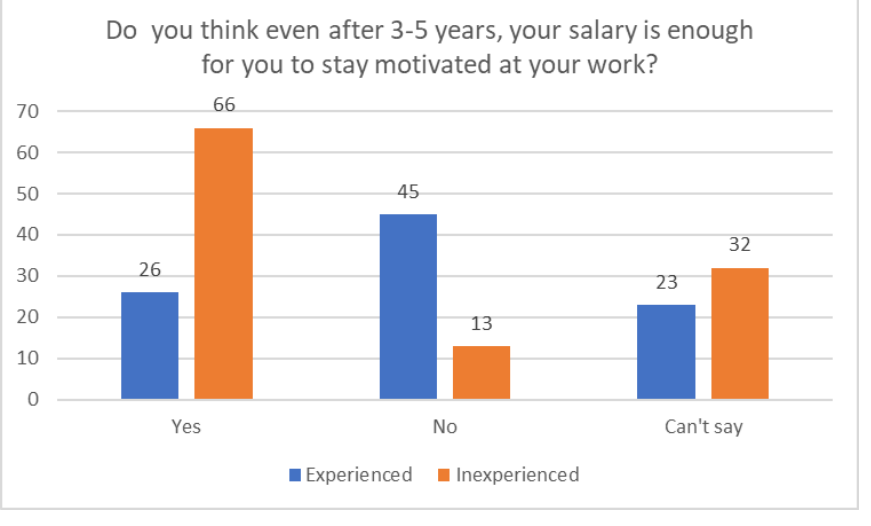

Figure 16

The bar chart shows that out of the 94 employed people who are satisfied with their current compensation structure,26 people will continue to be satisfied in the near future,45 people believe that their current pay structure would no longer be sufficient to stay motivated at work and 23 people are unsure about their future expectations. In

case of to-be employed, out of the 111 people, majority of people i.e. 66 are of the opinion that salary would be enough for them to stay motivated at their work,45 people would expect to have motivating factors other than the compensation in near future and 32 are unsure about their future expectations.

Interpretation:

We see a contrast here between the expectations of employed and inexperienced people. The majority of the latter can stay motivated with their salary even in the near future,only a small portion will want social and hierarchical needs . On the other hand, the majority of employed people would want other non-monetary benefits. Relating this to Maslow's need employed people want to move to higher needs in the need hierarchy and will have social and recognition needs while the inexperienced people are more inclined towards fulfilling physiological needs i.e. lower needs in a hierarchy.

Preference for good work culture

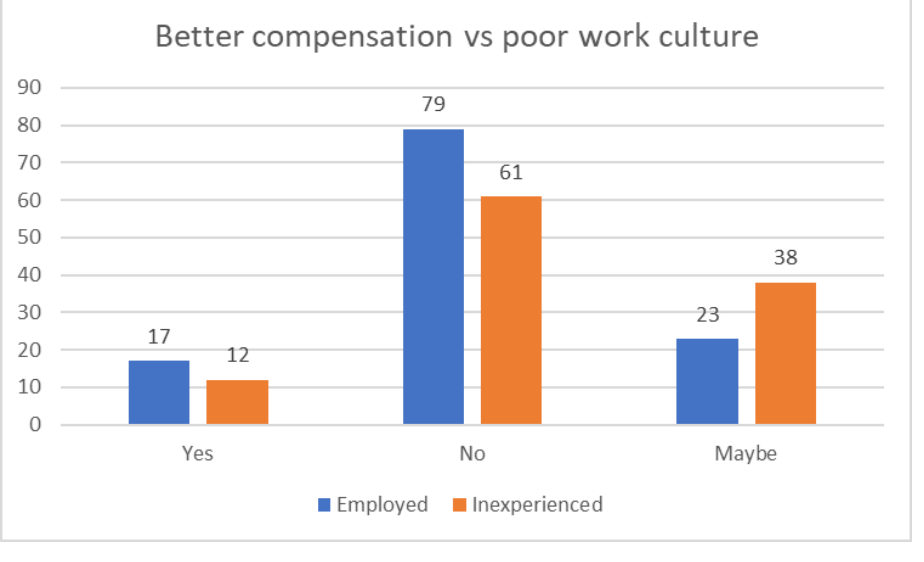

Figure 17

One similarity between the employed and to-be-employees relating to their behavior with regards to compensation is that on being asked

whether they would make a switch if they get a job proposal which has better salary but its work culture and practices are not as good as your current company,majority of people i.e. 79 employed and 61 to-be-employees would prefer better work culture over higher pay.

Interpretation:

A company's culture is essentially its core values, traditions, attitudes, behaviors, and beliefs shared within its workforce. Company culture can attract or repel talent, as it impacts employee happiness, job satisfaction, and overall performance levels. A positive workplace culture improves teamwork, raises the morale, increases productivity and efficiency, and enhances retention of the workforce. Job satisfaction, collaboration, and work performance are all enhanced. And, most importantly, a positive workplace environment reduces stress in employees.

Therefore, organizations should strive towards maintaining a good work culture.

Conclusion:

Maslow's need hierarchy model stands true for both employed as well as inexperienced people. The following 4 conclusions have been drawn from the study:

a) For employed people compensation affects their behavior towards work but after 3-5 years of working, once their physiological needs are fulfilled, other rewards become the motivating factor.

b) Whereas for inexperienced people compensation remains to be the motivating factor even after 3-5 years of working.

c) After 3-5 years of working, When there is a choice between the compensation and the needs mentioned in the Maslow's needs hierarchy model other than self-actualization need, then Maslow's needs have dominance over compensation for both employed as well as to be employed people.

d) In the case of employed respondents, even after working for 3-5 years compensation dominates the self-actualization needs. While in the case of inexperienced people self-actualization is much more important than compensation.

e) When choice exists between the compensation and the factors other than those considered in Maslow's hierarchy model then compensation is having dominance over those factors for both employed and to be employed people.

Since the study is based on need hierarchy all assumptions behind the theory can also be applied here and have been proven to be true throughout the paper.

Limitations:

(a) The sample size consisted of people from India only but we can have a global perspective by studying different people from different countries to have a general idea on the matters of compensation that can help multinationals have overseas employees.

(b) This study is conducted from the perspective of employees but the employer's or the organization's side should also be explored.

(c) Further studies should be carried out in order to do justice to all the issues concerning compensation i.e. more factors can be included to know more about employee behavior.

(d) Due to pandemic, social distancing norms had to be followed. Thus, the study could not be conducted physically which would have led to larger sample size.

(e) Best efforts have been put up in writing this research paper in the given time frame.

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Analysing the Underperformance of IPOs in the Short Run

Abstract

Initial Public Offering (IPO)has been a buzzword among investors for decades. It is an efficient way for companies to provide public ownership by listing equity shares in the stock market. Post-listing, it is believed that IPOs are underpriced initially followed by underperformance in the long run. An IPO is referred to as underpriced when its listing day price is lower than its real value, which creates a greater demand in the market in turn benefiting the company. This paper focuses on evaluating the underpricing theory by analysing average and abnormal returns over a span of 90 days for 58 IPOs issued in the period of 2020-2021. It also examines the relation of macro attributes like volatility index and sector index return, and micro company specific characteristics like promoters holding pre issue, profit earned by the

company and institutional subscription to understand its effecton IPO returns. It seeks to capture the emerging patterns in the Indian IPO market which witnessed the highest number of IPOs in 2021, raising questions of overvaluation and misfit speculation as a large pool of retail investors are attracted by huge short term returns on primary investment as opposed to secondary securities. Through our analysis we found that more than 50% of Indian IPOs are underpriced in the short run and index return turns out tobe the paramount factor affecting IPO returns.

Keywords

Initial Public Offering, IPO underpricing, Short-term returns, Average and Abnormal retur

Introduction

India in 2021, witnessed a record-breaking year for the investment banking sector as $16.59billion was raised through IPOs. This gigantic demand could have been driven by positive market sentiment of the Indian economy as during Covid alternative safer investments yield lower returns as per the loan-friendly policies in that period. Hence riskier stock market investments seemed more attractive. However, the prime reason was quick money (Ljungqvist & Wilhelm, 2003), as it was observed that there was a great difference in the prices at which IPOs were offered and the trade price on the day of listing. Therefore, if shares are allotted to an investor at a lower offer price and it opens at a higher price, he can make substantial returns, which is termed as underpricing.

Consequently, companies sought this mode to raise finance as a lucrative alternative, it wascheaper in addition to being beneficial in terms of bringing public exposure to their undertakings. As 8 loss making start-ups launched their IPOs with high valuation, it raised questions on SEBI guidelines to proof-check their eligibility and price bands. As investors were more informed such companies were trampled in the stock market on their listing day.Yet we observed high positive market sentiment implying over-enthusiasm and optimism

from investors which led them to bid for the IPOs at a price higher than their true fundamental value further leading to underpricing. This was empirically studied under behavioural imperfection theory. (Welch,1992), (Loughran and Ritter, 2002).

Here lies an important question for an investor - What are their return expectations? This is where the division of short-term and long-term investment is drawn as per their portfolio andrisk appetite, usually less than 12 months refers to short run period. 76% of the IPOs give positive average returns in the short run period of 90 days according to our research while only 36% give positive returns in the long run period of 3 years. Hence with such research IPOs are viewed as a short-term investment avenue only. In this paper we will examine the extent of their returns from 1st day to 90th day and check their position every 15 days. We will identify the key factors influencing those returns and perform a regression analysis on the chosen independent variables. It will act as a guide for investors to check on certain characteristics of a company to have a broader view on their choice of investment.

In scope of this paper, we check the effect of volatility in the stock market, index performance, promoter holdings pre-IPO issue, average profit after tax of the IPO boundcompany in the preceding three years and the buoyancy regarding the IPO among the institutional investors on the returns provided by the IPO.

A priori we expect all the factors except volatility in the market to have a positiverelationship with the returns generated by the IPO in the short term.

Literature Review

Extensive research has been carried out on IPO performance indicating under-performance inthe long run and dominant under-pricing in the short run for decades with only few papers discussing rare cases of over-pricing. (Shah and Mehta,2015) showed positive returns or underpricing in the initial month of listing from their study on 113 IPOs on NSE and quoted IPOs as one of the best short term investment

opportunities. While (Chiraphadhanakul and Gunawardana, 2012) analysed a sample size of 111 IPOs industry wise of the Thailand Stock Exchange from the period 2000 to 2004 and got impactful factors on IPO performance as ageof firm, debt ratio, 3 years average return and SET index.(Bansal and Khanna,2012) reviewed 432 IPOs of the Bombay Stock Exchange from 2000-2011 and found age of firm, ownership structure and market capitalisation as showing positive influence to the extent of 44% on IPO underpricing. Moreover (Hasan and Quayes,2008) in a study of 90 IPOs in Bangladesh presented a negative relationship of ownership stake and foreign participation with magnitudeof underpricing. Additionally (Kumar,2015) analysed 211 IPOs from 2007-2011 which concluded that investors who obtained stocks through direct subscription earned positive market adjusted returns opposed to investors who purchased those stocks on the listing day.

Focussing on the problem of asymmetric information between issuers and investors which leads to underpricing (Garima Baluja,2013) criticised the IPO grading method adopted by SEBI which says higher graded IPOs have better listing price performance as grade 1 IPOs are still highly underpriced. For decades across the world there are numerous papers studyingthe underpricing behaviours of IPOs and have developed certain models predicting its implication on the company as well as the market, this will help investors to gauge their risk-reward behaviour better. In addition to literature available there are various theories developed explaining underpricing. (Leland and Pyle's model,1976) states absence of transparent records and incomplete information with investors as opposed to the issuers or promoters, further they stated that the percentage of ownership retained by promoters acts as a signal of fitness of the company. Besides with loss of information, retail investors find it difficult to evaluate the IPO which often leads to projected underpricing.(Baron's model, 1982) explains IPO underpricing as a contracting mechanism between the investment bankerand the issuer because they need help with distribution of IPO and setting the offer at a lower price

incentivizes the banker.(Rock's model of Winner's Curse problem,1986) theory states that informed investors will naturally opt for high underpriced IPOs and steer clear of overpriced IPOs, the uninformed investors speculate on the basis of demand of an IPO, making them buy an already overheated stock, by this time all the informed investors withdraw their application from such shares as they know it has reached it peak. This leads toretail investors falling in the winner's curse trap. In addition to above (Allen and Faulhaber,1989) hypothesised that companies strategically underprice their IPOs to set a good firm standard with investors. It is called Signalling Hypothesis as the fresh issue acts asa signal of good faith for their future equities. Finally (Sherman and Titman,2002) proposed that though investors want higher prices they are more interested in accurate pricing, because mispricing can lead to negative market returns and loss of quality investors. If the issue is underpriced then the IPO will be desired by many investors leading to benefit for all.

Research Objectives

1. To ascertain trends in IPOs showing positive/negative average returns over a15 days interval, starting from the first 15 days of listing to 90 days.
2. To further disintegrate the extent of underpricing in IPOs, we examine theirpositive/negative abnormal returns over 90 days, with 15 days intervals.
3. To inspect factors affecting the average & abnormal returns on the 90th dayfrom listing of 59 IPOs.

Research Methodology

Sample selection

Fifty-eight IPOs listed in the Indian stock market in 2020 and first 2 quarters of 2021have been taken to evaluate IPO performance trends in the short run.

Data collection

IPO details have been collected from chittorgarh.com, the IPO dashboard of India, further stock prices of these IPOs and index numbers have been collected from NSEportal.

Methodology

The methodology used to analyse the IPO performance is normal multiple regression analysis over average returns and abnormal returns in the first 90 days with macro- economic factors - Volatility index [average return of VIX in the 90 days followed after listing date] and company specific sector's index return , and micro-company factors - Qualified Institutional Buyer [QIB] subscription times [magnitude of oversubscription in comparison to prescribed allotted share], profit After Tax [PAT i.e. the average profit after tax of past 3 years] and promoter's holding pre-issue[percentage of ownership held by promoters before going public].

The above Average return is calculated using CAGR formula:

$$\mathrm{CAGR} = \left(\frac{V_{\text{final}}}{V_{\text{begin}}}\right)^{1/t} - 1$$

CAGR- Average Return

V(Final) - The day for which it is calculated [15th, 30th, 45th, 60th, 75th and 90th]

V(Begin)-The IPO issue price

t - Number of days the stock market was operational in that time period.

Abnormal Return- Abnormal return has been calculated as the difference in the average return provided by the company in the period to the average return provided by that particular company's sector index in the same period.

Abnormal return = Average return - Index return

Standardised Multiple Regression- The factors used in the normal regression are first standardised and then the regression analysis is conducted. This brings out the relativeimportance of the factors used in the study by providing the factor most important in affecting the returns of an IPO the largest coefficient.

Analysis

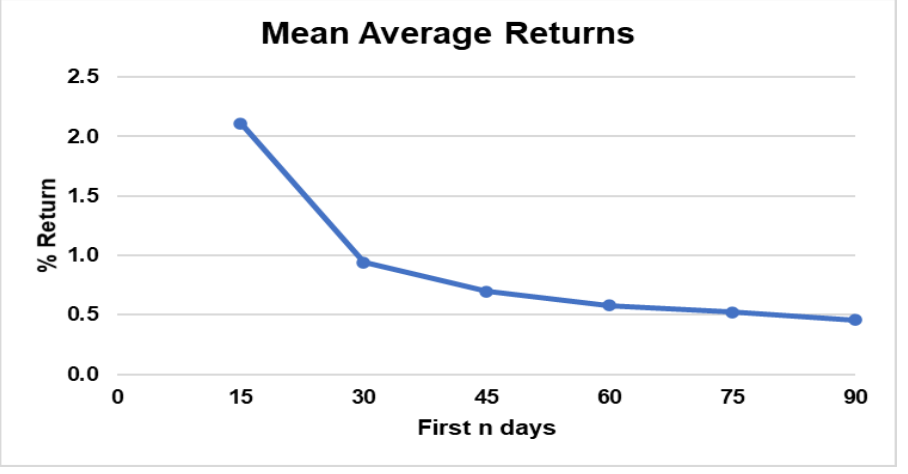
In this section we analyse the trends for short term average returns of IPOs, followed by ananalysis of short-term abnormal returns.

Finally, we conduct regression analysis for both average and abnormal returns over the 90days period.

Table 1: Descriptive Statistics of Average Returns (%) for First n Days

	15 Days	30 days	45 days	60 days	75 days	90 days
Mean	2.11	0.94	0.70	0.58	0.52	0.46
Median	1.44	0.84	0.65	0.51	0.41	0.38
Standard Deviation	2.68	1.43	0.99	0.82	0.73	0.63
Kurtosis	0.17	-0.63	-0.42	0.89	1.20	0.34
Skewness	0.75	0.16	0.34	0.69	0.71	0.42
Minimum	-2.23	-2.10	-1.23	-0.84	-0.77	-0.71
Maximum	10.10	4.09	3.04	3.24	2.90	2.34
Count	58	58	58	58	58	58

Source: Own Calculations



G1: Line Graph of Mean Average Returns over the Period

G1 depicts that the mean average return provided by the IPOs over the period declines with itbeing the highest in the first 15 days at 2.11% and declining to 0.38% for 90 days. Table 1

shows that the volatility of these returns also decreases as standard deviation declines from2.68% to 0.63%.

The data also confirms that IPOs are being issued at a significantly premium price [largescale underpricing] as observed in various other studies (Kim, Krinsky and Lee, 1995); (Sullivan and Unite, 1999); (Omran, 2005); (Vong, 2006); (Reber and Fong, 2006); and (Khurshed, Pande and Singh, 2008). Thus, giving positive average returns over the shortterm.

Table 2: Frequency Distribution of Positive and Negative Average Returns

Returns	15Days	30 Days	45 Days	60 days	75 days	90 Days
Positive	44	40	41	45	46	44
Negative	14	18	17	13	12	14
% of Positive	76%	69%	71%	78%	79%	76%
% of Negative	24%	31%	29%	22%	21%	24%

Source: Own Calculations

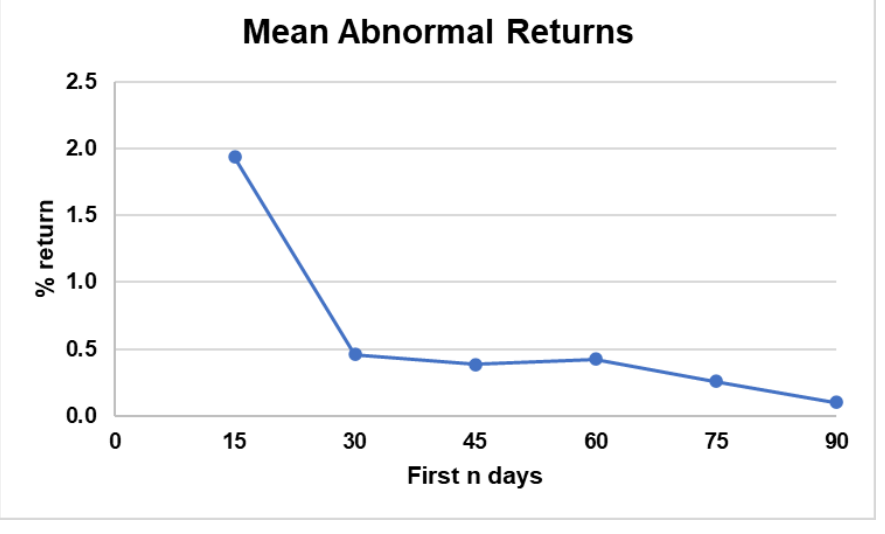
Table 2 shows that over the short term almost 70-80% of the IPOs provide positive average returns, with almost 76% giving positive returns in the first 15 days, hence confirming the underpricing theory.

Analysing further we look at the abnormal return statistics.

Table 3: Descriptive Statistics of Abnormal Returns (%) for First n Days

	15 days	30 days	45 days	60 days	75 days	90 days
Mean	1.94	0.46	0.39	0.42	0.26	0.10
Median	1.21	0.70	0.40	0.33	0.25	0.21
Standard Deviation	2.65	3.02	2.25	0.81	1.35	1.19
Kurtosis	0.23	35.23	26.04	0.49	28.03	21.20
Skewness	0.74	-5.26	-3.70	0.69	-4.34	-3.91
Minimum	-2.50	-19.62	-13.46	-0.87	-8.26	-6.85
Maximum	9.83	3.75	6.89	2.97	2.56	2.05
Count	58	58	58	58	58	58

Source: Own Calculations



G2: Line Graph of Mean Abnormal Returns over the Period

According to G2 the mean abnormal returns generated by IPOs declined from being at 1.94%for the first 15 days to 0.10% for the first 90 days, though it still remains positive, which confirms to the

definition used by us for overpricing that is excess returns generated over the market. Hence, we can say that on an average Indian IPOs in the year 2020-21 were underpriced.

Table 4: Frequency Distribution of Positive and Negative Abnormal Returns

Returns	15 days	30 Days	45 Days	60 days	75 days	90 Days
Positive	43	37	39	38	38	40
Negative	15	21	19	20	20	18
% of Positive	74%	64%	67%	66%	66%	69%
% of Negative	26%	36%	33%	34%	34%	31%

Table 4 confirms the underpricing phenomenon prevalent in Indian IPOs as almost 74% ofthe companies handed abnormal returns to its investors in the first 15 days, with the magnitude falling to 69% but still high in the first 90 days. Overall, the range remains from64-74% giving positive abnormal returns in the short run.

Regression Analysis

Below are the results for regression analysis performed on 90 days average return as the dependent variable and independent variables of Index return, QIB (times), Profit After Tax(PAT), Promoters Holding - Pre-Issue and Volatility Index (VIX).

Table 5: Regression Results for Average Returns

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.40128	0.38404	-	0.30090	-	0.3693
			1.0449		1.1719	5
			0		1	
Index	0.95529	0.07865	12.145	0.00000	0.7974	1.1131
return			31		5	2
QIB(Times)	0.00383	0.00123	3.1080	0.00305	0.0013	0.0063
			0		6	0
PAT (Three	-0.00003	0.00001	-	0.05209	-	0.0000
years			1.9879		0.0000	0
average)			6		5	
Promoter	0.00798	0.00315	2.5337	0.01434	0.0016	0.0143
Holding -			7		6	0
Pre-Issue						
VIX (90	-0.00357	0.01571	-	0.82130	-	0.0279
days			0.2270		0.0350	6
Average)			2		9	

Source: Own Calculations

The above results confirm to a priori expected coefficient signs barring profit after tax whichturns out to be negative for our sample but it is statistically insignificant at 5% level of significance. Index return significantly affects the stock return with a coefficient of 0.95 which means if the index return increases by 1% the stock return also goes up by 0.95%. Theconfidence that QIB's show in the IPO also positively affects the stock return, similarly promoter holding-Pre issue is also a determining factor in IPO returns and has a positive relation with it. Though Volatility in the market has the expected negative sign but is statistically insignificant, hence does not affect the IPO return. Our model is a decent fit with a R^2 value of 0.767005 which means that almost 76% of thevariation in the stock return is explained by the explanatory factors that we have chosen andonly 24% is unexplained variation is caused by some other factors which is incorporated as an

error term in the model.

Now we look at the standardised regression results:

Table 6: Standardised Regression Results for Average Returns

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Index Return	0.827248	0.067467	12.261 54	4.22E-17	0.691927	0.96257
QIB(Times)	0.209735	0.066843	3.1377	0.002779	0.075665	0.343804
PAT (Three years average)	-0.15588	0.077671	-2.0069 9	0.049863	-0.31167	-9.6E-05
Promoter Holding - Pre-Issue	0.200777	0.078489	2.5580 17	0.013422	0.043347	0.358207
VIX (90 days average)	-0.01525	0.066549	-0.2291 9	0.819604	-0.14873	0.118228

Source: Own Calculations

According to the table among all the 3 relevant variables found above, index return is the most important factor affecting the stock returns with a coefficient of 0.82 which means if thestandard deviation of index return goes up by 1 the stock return standard deviation increases by 0.82. Next most important variable is QIB times followed by promoter holdings pre issue both having almost similar coefficients.

Further we move on to analyse the regression results for abnormal returns over the 90 daysperiod.

Table 7: Regression Results for Abnormal Returns

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0024804	0.005358	0.46293	0.645344	-	0.013232
		1	17	9	0.008271	3
					4	
Index return	-0.9872875	0.109739	-	0.000000	-	-
		2	8.99667	0	1.207495	0.767079
			28		2	7
QIB(Times)	0.0000341	0.000017	1.98597	0.052319	-	0.000068
		2	25	8	0.000000	6
					4	
VIX (90 days	-0.0002108	0.000219	-	0.340710	-	0.000229
average)		2	0.96158	6	0.000650	0
			06		6	
PAT (Three	-0.0000001	0.000000	-	0.475509	-	0.000000
years average)		2	0.71875	6	0.000000	2
			47		5	
Promoter	0.0046275	0.004393	1.05333	0.297059	-	0.013443
Holding - Pre-		2	16	0	0.004188	2
Issue					1	

Source: Own Calculation

The table above has the expected signs except PAT which is statistically insignificant. The index return has a negative and statistically significant coefficient because of the formula wehave used that is the difference between actual return and the index return, so as index returnrises it is difficult for the company to generate abnormal returns or surpass the benchmark returns, therefore justifying a negative relation. Apart from this all the other factors are insignificant showing no effect on the abnormal returns of the stock.

Our model is a decent fit with a R^2 value of 0.637346 which means that almost 63% of thevariation in the stock return is explained by the explanatory factors that we have chosen and 37% is unexplained variation caused by some other factors which is incorporated as an errorterm in the model.

Conclusion & Implications

This paper examines the after-price performance of 58 IPOs issued in the period 2021-22, observing fresh evidence of premium issue of IPOs in the short run that is initial day to 90 days underpricing of IPOs. We report that the IPO trends from the past have only been risingto 70% IPOs being underpriced due to various theories as mentioned above.

Further to extent the scope of our research we can observe that underpricing leads to long run underperformance (Ritter, 1991);(Loughran and Ritter, 1995); (Levis,1993); (Firth, 1997); (Megginson, et al2000); (Omran, 2005);(Aggarwal, Liu and Rhee, 2008);

(Sohail and Nasr, 2007);(Hoechle and Schmid, 2007) in these IPOs as observed in table 7 below. This imitates the behaviour observed in the window of opportunity analysis, where investors hope to grab the excess returns observed initially which led to inefficient premium pricing further leading to less returns in the long run performance of the companies.

Table 8: Underperformance in the long run (Prabina & Seshadev, 2010)

Author/Year	Sample Period	Country	Abnormal return (%)	Underperformance up to
Sohail & Nasr (2007)	2000-2006	Pakistan	-38.1	12 months
Aggarwal et al (2008)	1993-1997	HongKong	-48.03	36 months
Jaskiewicz et al (2005)	1990- 2000	Germany	-32.8	36 months
Alvarez & González (2005)	1987-1997	Spain	-27.8	36 months
Derrien & Womack (2003)	1992-1998	France	-6.3	24 months
Ritter and Welch (2002)	1980-2000	USA	-23.45	36 months
Espenlaub et al	1985-1992	United	-21.3	60 months

(2000)		Kingdom		
Almeida & Duque (2000)	1992-1998	Portugal	-13.8	12 months
Khurshed et al (1999)	1991-1995	United Kingdom	-17.8	36 months
Keloharju, M(1993)	1984-1989	Finland	-21.1	36 months
Ritter (1991)	1975-1984	USA	-29.1	36 months

Irrespective of the pricing mechanism, it's important to scrutinise the market and company's factors that can better inform the investors on their expected returns. We confirm the positive/negative/no impact of various factors earlier studied and additionally introduced newmicro and macro factors that can help us be better informed, like Promoter's holding pre issue and volatility index respectively. The same has been discussed extensively in table 8 below.

Table 9: Factors affecting average returns of IPO in short run.

Independent Variable	Description	Impact
Issue Price	The price band at which the company invites public to purchase their lot of shares does not impact the returns on IPO, implying that the investors are more focused on the extent of optimism surrounding the IPO issue and not itsabsolute issue price.	No Impact (Pradeepta, Shikar,Rishi & Shubham,2018)
Promoters Holding Pre-Issue	% ownership of promoters before going public, this proved to increase the reputation of the company and hence forms a positive relationship with returns and performance of the IPO in the market.	Positive Impact (Our research)
Promoters Holding Post Issue	% ownership of promoters after going public, with various external parties, QIBs, HNIs, NIIs, Retail, Employees does not have a greater role to play in expected returns.	No Impact (Pradina Rajib & Seshadev-Sahoo, 2010)
Qualified Institutional Buyers [QIBs]	Magnitude of subscription (in times) proving the response of institutional market to the IPO, retail investors tend	(Chui Zi Ong, Rasidah Mohd-Rashid, Kamarun

	to follow their pattern considering institutions undertake detailed market analysis with precise strategies in their purchases. Therefore, higher QIBs show greater demand and lead to a positive effect on returns.	Nisham Taufil Mohd, 2020 Positive Impact (Our research)
Age of Company	Years from commencement of operations to the present day, with many new-gen companies having different business models, age of company does not seem to have any significantimpact on returns.	No Impact (K.S Manu & Chhavi Saini, 2020)
Profit After Tax [PAT]	The company's last 3 years average profits are considered, with loss-making funded start-upshaving high valuations, the role of PAT in returns have become insignificant, goodwill of the company matters more.	No Impact (Our research)
Volatility Index [VIX]	Average index value of past 90 days is taken which has insignificant impact as huge demandin the market by over-optimistic investors ignore the market volatility.	No Impact (Our research)
Index Return	Positive relationship is found between average return of IPO and the index return to which it belongs, this implies that a newly public company aligns with market returns initially.	Positive Impact (Our research)

With all these findings an investor will be in a better position to make an informed decision while subscribing to an IPO and time his entry and exit according to his return expectations from the stock regarding whether he wants to play a short term or long-term bet on the stock.

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Climate Change and Energy Transitions

Abstract

This paper aims to quantitatively study India's energy transition trajectory away from fossil-based fuels and towards more renewable and sustainable sources, its multifaceted impacts and expected roadblocks. This is elucidated specifically from the standpoint of States, analysing the federal structure of the country and also highlighting the importance of India's contribution towards the global climate change mitigation strategies. It utilises the 'E3 India' macro-econometric model developed by Cambridge Econometrics to study and predict the various trends in energy consumption, electricity demand and CO_2 emissions given a set of Tax Policy Scenarios (Energy and Carbon Taxes) as a comparison from the Baseline. This paper concludes that the impact of the energy transition will be heavily skewed among the states and that fiscal tools shall not be completely effective in ensuring reduced emissions inter alia. It also takes a look at how the necessitated energy transition will have a bi-pronged impact on a

developing nation like India, while also acknowledging that political agenda and national commitments only defer policy implementation.

Keywords:

Energy Transition, E3 India model, carbon taxation, subsidised electricity

Introduction:

Climate change, an observable and long-term shift in weather patterns and temperatures, has evolved into an issue of growing concern for all countries. Such a shift can be both natural and induced. However, in the last few centuries, human activities have been the major catalyst towards propelling the risks of climate change (IPCC, 2021). This human-induced climate change has resulted in immoderate harms towards nature, despite the presence of climate change mitigation policies. Our dependence on energy for all our needs and more so from thermal sources has resulted in perilous consequences for the environment, wildlife as well as the human race. From 1901 to 2020, a rise in global temperatures by 1.98 °F (1.1 °C) has been observed (IPCC, 2021). In 2021, we detected CO_2 levels 50% higher than pre-industrial levels. Other acute repercussions of indiscriminate human activities have been rising sea levels and consequent death of marine life, melting of ice-caps, extreme droughts and floods caused by changes in weather and climatic patterns among others.

Fig 1: Timeline of Global CO_2 emissions

Source: Met Office

The affair of climate change remains even more complex at its core. Given the intertwined nature of sectors affected by climate change, its impacts are multifaceted too. Droughts directly affect the food security of a region and human health; excessive flooding can lead to loss of property, the spread of diseases and damages to ecosystems; warmer temperatures increase the intensity of heatwaves; the rising sea levels affect the coastal communities and ecosystems; changes in patterns of rainfall also affects the streamflow and thus the water supply. All of these can collectively impact human mortality, life expectancy, food availability and limit productivity. What becomes a matter of growing significance, is the fact that these issues stand to become increasingly pronounced in the near future. According to an IPCC estimate, the combined effects of ice melting and sea water expansion from ocean warming might cause the global mean sea level to rise by between 0.1 and 0.9 metres between 1990 and 2100 (IPCC, 2018). To elucidate with an example, in Bangladesh alone, a 0.5-metre sea-level rise would place about 6 million people at risk from flooding.

The response towards tackling climate change involves a bi-pronged approach: mitigation and adaptation. A realisation and acknowledge-

ment of the need for global efforts towards the same are of prime importance. The United Nations Framework Convention on Climate Change (UNFCCC) was drafted and signed in 1992 to combat "dangerous human interference with the climate system" by stabilising emissions of greenhouse gases in the environment (UNFCCC, 2022). The implementation of the Kyoto Protocol of 1997 was the first undertaking of the UNFCCC followed by the Paris Agreement. It is a multilateral environmental agreement that hosts the Conference of Parties (COP) each year to discuss the impacts of climate change and its mitigation. The United Nations Environment Programme is another establishment that caters to the problem of climate change and coordinates responses accordingly. The 13th Sustainable Development Goal (SDG) is Climate Action; taking urgent action to combat climate change and its impact. An SDG is a global goal designed to achieve a better and more sustainable future, set up by the UN General Assembly in 2015. These are a few of the numerous measures taken by multilateral organisations to tackle the problem of climate risk. Since we know that the political landscape of countries is remarkably distinct, it becomes all the more important for multilateralism to trump all forms of governance in such a case and expose the implications of deferred response towards climate change. In a world that places economic gains over environmental losses, where governance isn't uniform and short term gains outweigh long term losses for the majority, for climate change to receive its due importance, "we need a multilateralism where the voice of youth is decisive in shaping our future" (Guterres, 2020).

Climate change, and greenhouse gas (GHGs) emissions more specifically, is commonly referred to as a stock-flow problem. This can be explained by expounding the concepts of stocks and flows in the context of GHGs emissions. Stock is the current concentration of GHGs in the environment, while the flow is the rate at which the GHGs are emitted as a consequence of human activities. In the given premise, one of the most exceptional implications has been the fact that the West has been primarily responsible for the stock of GHGs in the past. The levels

of industrialisation and development have a high correlation with emissions of such gases. Focusing on the flow argument, however, isn't in favour of developing countries given that it dissolves the presence of a greater responsibility of the West in tackling the same. In the light of stock, India and China haven't been the biggest polluters, but the equation changes as we look at the flow of emissions of GHGs. Thus, the argument of high contributions of GHGs to the environment by the West (developed nations) stands valid in the political sphere, but such an agenda only defers the required policies and shifts the focus away from the shared responsibility towards climate change mitigation. Although the same makes theoretical sense, the situation is not black and white. It is hence imperative to exist in the grey space wherein the developed nations provide the structural support (financing etc.) for the policy frameworks and initiatives of the developing nations to mitigate and adapt to climate risk.

In the same light, the Conference of Parties (COP) is an annual conference organised by the UNFCCC in order to discuss the staggering levels of emissions of GHGs and measures to counter the same. The summit was held in Glasgow this year and was the 26th edition of the conference, called COP26. This was an eagerly awaited event since last year because of its relevance due to its postponement from 2021, and it is a major driver towards the implementation of the Paris Agreement of 2015. The expectations from this year's COP were particularly high, and the results were again treated with both appreciation and criticism. India has announced its phased Panchamrit scheme, the five nectars, which it regards to be its gift to the world for combating the problem of climate change. Many developed and developing countries pledged their climate action goals and Net Zero Targets at the summit, while some experts still remark that the pledges remain short of achieving the levels of reduced emissions to reach the Paris Agreement goals. Figure 2 below, explains the same in some detail.

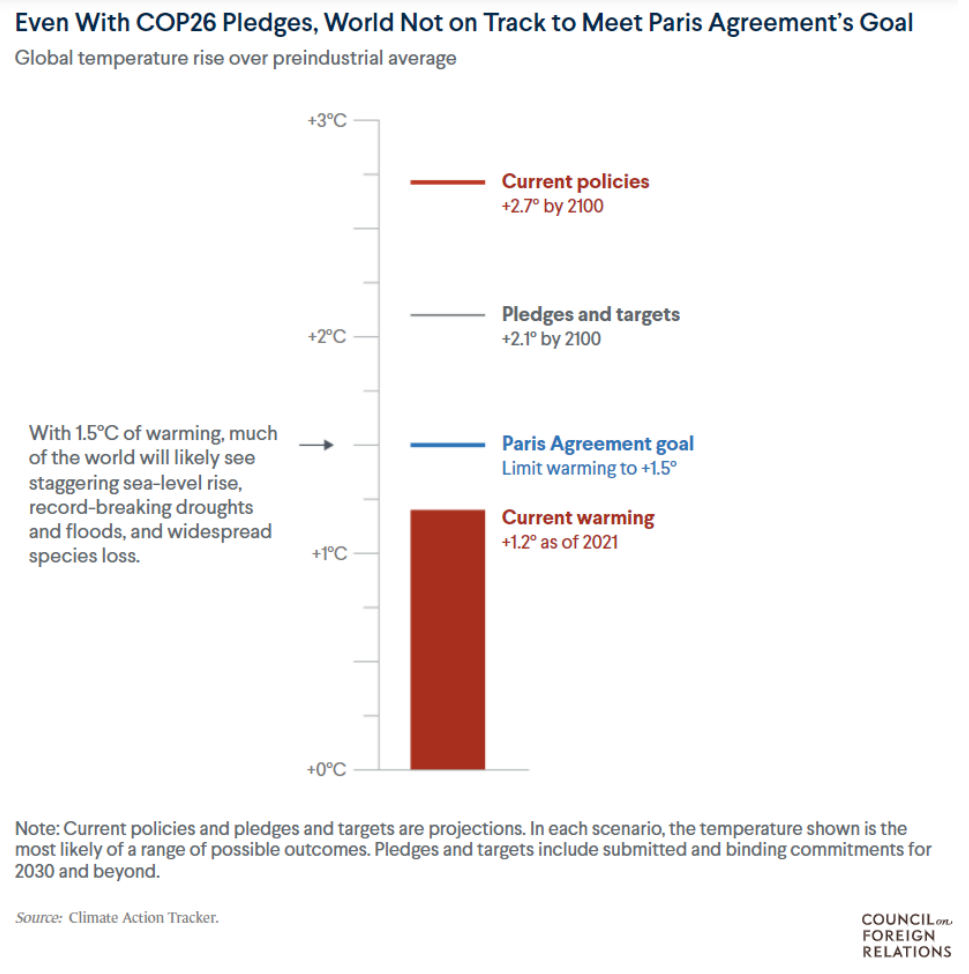

Fig 2: Rate of emissions as per -

1. Future emissions at current policies
2. Pledges at COP26
3. Paris Agreement Goals
4. Current levels

The aforementioned arguments posit that there is an increasing need to look at forecasted figures of climate change risk and subsequently work on policy measures, basis the country's form of governance, resource availability, levels of development, consumption of non-renewable energy, population et cetera. In the following sections, we

discuss the role and the presence of India in the climate sphere and the impediments and roadblocks it is bound to face in the near future.

India's Role in Climate Change

India, a developing country, over 55% of whose energy needs are met by coal and other thermal sources, housing 1/6th of the world population ranks 10th in the list of carbon-emitting nations (Climate Change Performance Index, 2022). India's consumption of coal is rising and is further expected to rise because of several drivers, the likes of rising population, an enlargening economy, and the shift towards achieving an improved quality of life. The graph below clearly demonstrates the increasing consumption of coal throughout the years owing to industrialisation, growing demand for electricity and energy et cetera. This makes India one of the major players responsible for climate change and also for taking lead in curating mitigation and adaptation strategies. The world is looking at energy transition to combat the issue of climate change; a myopic eye would fail to understand the significance of India in the said transition. Given its population (as well as growth rate), rate of growth of the economy, and coal consumption levels, it becomes almost impossible to witness an energy transition without India's contribution and involvement.

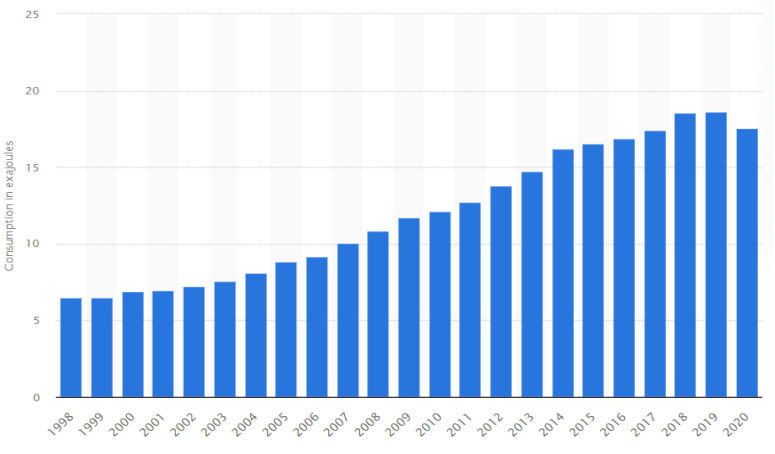

Fig 3 : Consumption of Coal in India (1998-2020)
Source: Ministry of Coal

In the same context, India being a developing country witnessing fast-paced growth is also faced with a major challenge. While we have committed to moving away from thermal sources of energy and phasing out, we also have a parallel challenge of seeking development with reduced usage of coal and other non-renewable sources. Since the usage of electricity is a direct implication of development and improved standards of living and job opportunities, we also have to tackle the issue of meeting this demand via renewable sources simultaneously. This in part exposes a bi-pronged challenge for the country that needs to be looked upon from the policy makers' perspective. The Figure above highlights the per capita energy demand of coal by the major states and UTs of India. We can clearly observe that the same is significantly low for most countries, and for the ones that have high energy demand, the same is met primarily by non-renewable sources. Hence, an increase in demand for electricity and energy can be seen in a positive light initially, for it is a marker of development, but eventually, it also poses a problem because of the necessitated movement away from fossil fuels in the future.

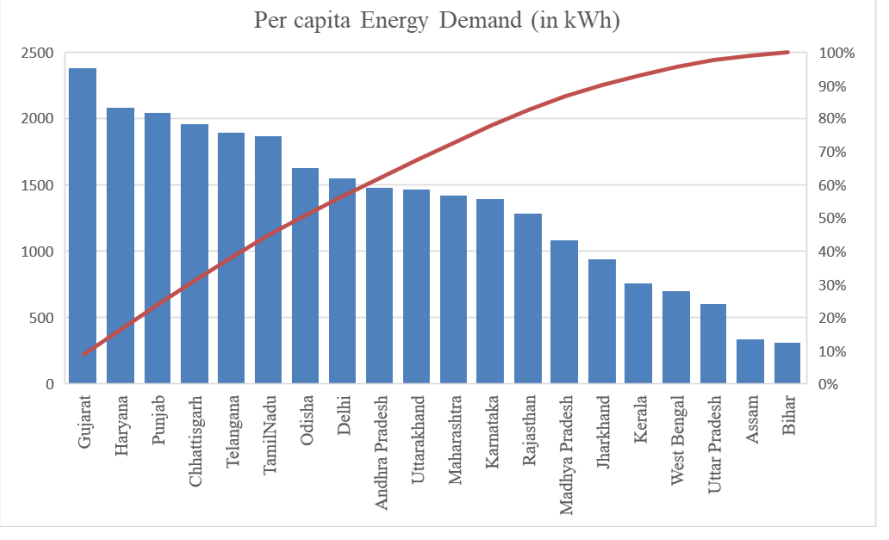

Fig 4 : Per Capita Energy Demand in India

Source: IEA 2020

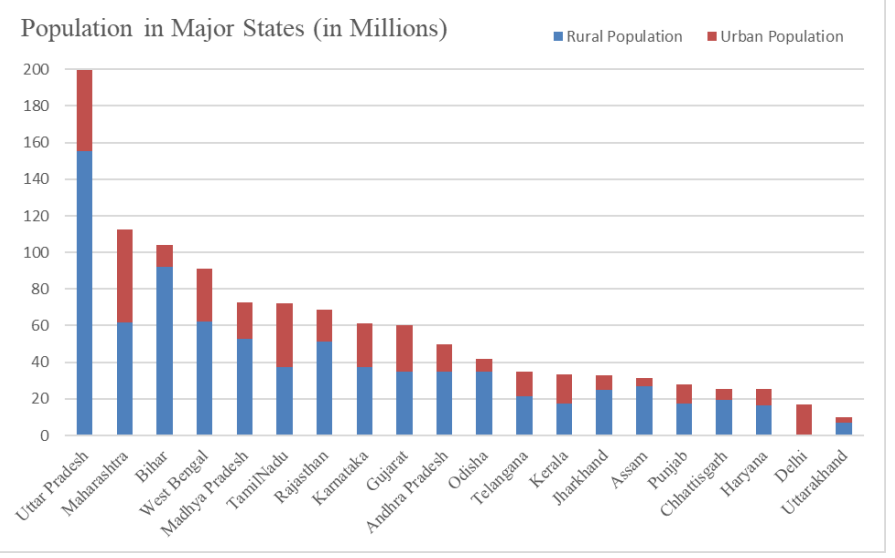

Fig 5: Population in Major States

Source: IEA 2020

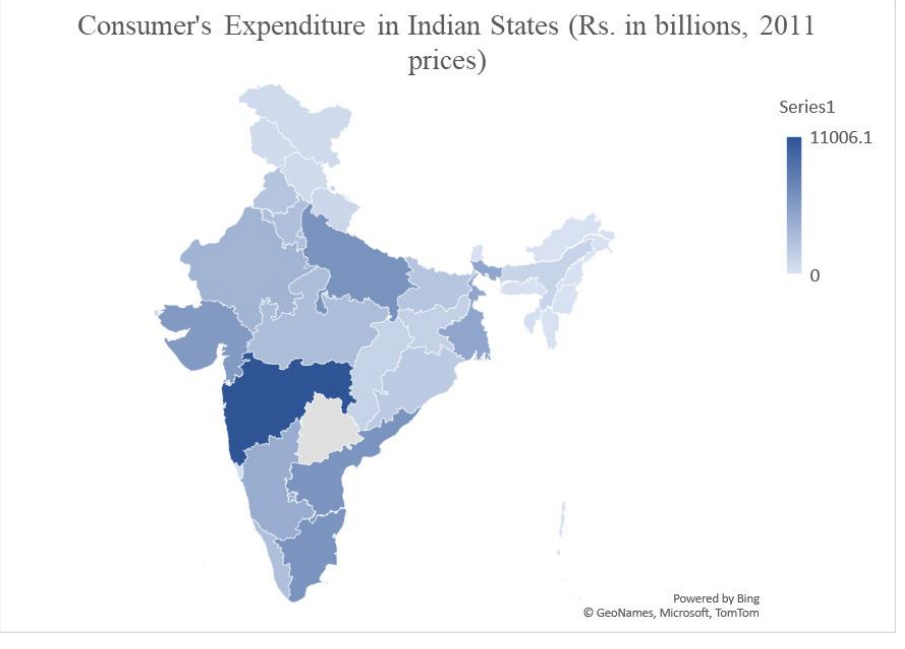

Fig 6: Total Consumption Expenditure in Indian States

Source: E3 India

Another major factor to notice will be India's political economy. India has a federal structure that shall come into play when deciding India's energy consumption trajectory. The transition from non-renewable to renewable sources will play out differently for different States because of differences in energy requirements, socio-economic indicators and levels of development. States' dependency on fossil fuels is a factor of all aforementioned criteria as well as their dominant occupations and sectors of employment. For example, the state of Odisha has a relatively high demand for energy, but it is imperative to look at the composition of energy sources it is met with. A large proportion of this demand is accounted for by coal and other fossil fuels.

Moreover, the year 2022 was supposed to be the last year for compensation benefits received by states from the centre under the Goods and Services Tax (GST) law, due to their loss in revenue since its inception. It is known that the revenues of the states have fallen significantly since the introduction of GST, additionally, the energy transition will also have a similar impact since renewable sources cannot be taxed as much as fossil fuels. This will lead to severe repercussions for the state governments due to reduced revenue and thus increased difficulty in tackling the challenge of increasing demand for energy because of the fast-paced economy of the nation. Many states are demanding the tax base to be expanded with the inclusion of petroleum products. The Centre and the States used to collect a large pool of revenue from petroleum products. The taxes of both the Centre and States constituted nearly 60% of the cost of petrol with cess being a major component. Cess particularly hurts the States since it is not shared. Total cess and surcharge as a proportion of gross income increased from 12.2 per cent in 2016-17 to 20.2 per cent in 2019-20, according to the 15th Finance Commission.

Research Question

The critical examination of the context of Climate change, energy transition and sustainable development, especially in the Indian scenario, reveals the imminent need to study the multiple

repercussions energy transition can have on the Indian states. This leads us to our research question:

"What shall be the future effect of the energy transition on the States of India?"

Analysis

Introduction to the E3 Model

'E3 India' is a macro-econometric model developed by Cambridge Econometrics involving the energy-environment-economy realms of India. This model can be employed to assess state policy at the state level, thereby unravelling the linkages between the energy sector and the Indian Economy (Cambridge Econometrics Ltd, 2019). This model considers the following dimensions: 32 Indian states and territories, 39 economic sectors, 21 users of 5 different energy carriers, CO2 emissions from 8 sources and the annual projections of the indicators till the year 2035. The model provides a comprehensive understanding of a wide range of fiscal and macroeconomic policies with a special focus on the energy sector and the negative environmental consequences from the same. This understanding shall help to suggest the required changes in the power-generation industry; fiscal measures that promote renewable energy; pricing of carbon instruments; and the regulation of discoms. E3-India is a simulation model built using the coupled input-output econometric approach. It is based on the globally accepted E3ME model which has been in existence since the mid-1990s and itself builds on the UK MDM-E3 model that has existed since the 1970s (Sarraf, 2018). The model is based on an economic loop structure formed in each state that links output, expenditure, demand, trade, inter alia. (Shown in Fig.1.) The model represents best practices for sectoral policy implementations while also reflecting the behavioural characteristics visible in Indian states from historical data.

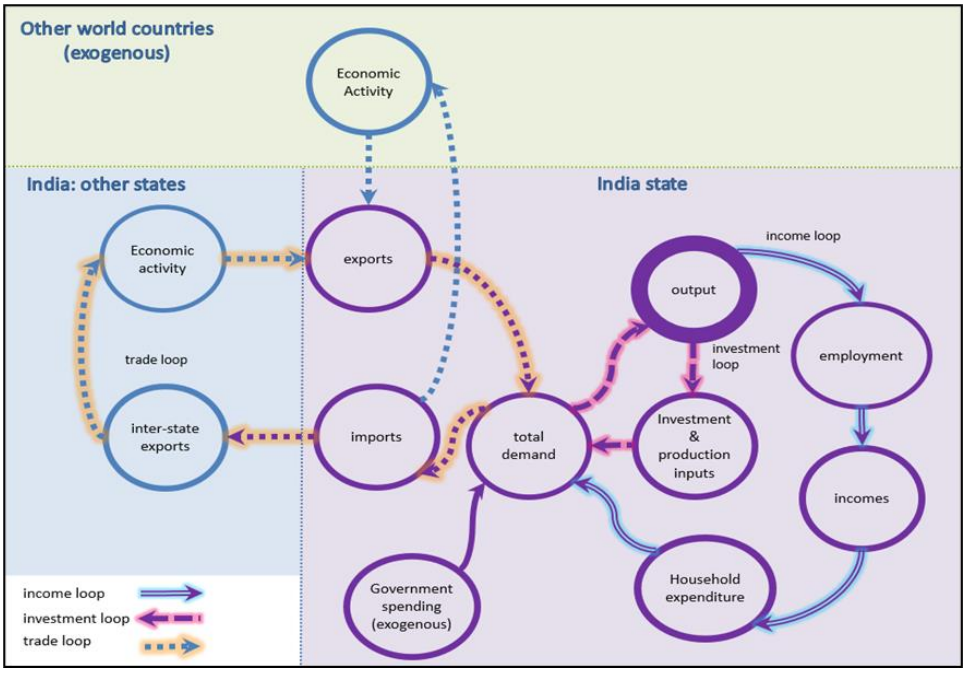

Fig 7: E3-India's basic economic structure Source: Cambridge Econometrics 2019

E3 India is not a Computable General Equilibrium Model (CGE), which is usually used for climate and energy policies, as it neither considers full employment nor perfectly competitive markets. Since this is a Macro econometric model, and not a Stock-Flow-Consistent model (eg. CGE), it articulates all relations exclusively through econometric inference of historic data. As pointed out by King (2015), most of the core principles of post-Keynesian economics remain consistent with the original work of Keynes, for example, that the economy is 'demand-driven' and unemployment is an important feature of the economy. Post-Keynesian attributes of the model are seen for instance in the consideration of carbon taxes. While a CGE model would consider taxes to be a distortion of equilibrium, this econometric model reveals it to be a tool to alter behaviour by shrinking the money supply.

While the model captures local expertise to readily identify and explain the best practices for sectoral policy and reflect behavioural characteristics of Indians visible from the apposite data, it also answers

the policy questions on direct regulations for energy efficiency, carbon pricing instruments, promotion of renewable uptake and the required changes in power sector mix. The model has application in multiple sectors due to the pervasiveness of the output, which includes international & interstate trade, GDP, unemployment etc in addition to energy balances, energy-related emissions and power sector related technologies.

Data, Inputs and Parameters

The data used in the model forms the most important input into the E3-India model. The model uses data on various indicators pertaining to population, labour, national income, domestic and international trade inter alia. Cambridge Econometrics has sourced the relevant data from various government departments including National Census, NSSO consumer surveys, National Income Accounts, Central and State government Budgets. The same is also pre-loaded with the model. The other indicators in the model are either assumed (solved from equations) or expressed via an identity (GDP and its components), which are obtained from econometric forecasting.

The model takes in data in the form of assumptions, instructions and scenarios. Various assumptions considered, as elaborated in the next section too, relate to the market exchange rate, indirect tax rates, defence spending and so on. The instruction file contains specific determinants of the model such as feed-in tariffs of technology, energy savings on fossil fuels and so on. The scenario files contain the more important aspects. The different scenarios such as carbon tax (under various modalities), revenue recycling, electricity subsidy and so on are quantitatively demarcated and fed into the model.

Assumptions in the Model:

As mentioned above, assumptions are a key input used for each iteration of the model. The assumptions here are added as the exogenous data, mostly on the RoW sector, relevant for the model's accurate working. Similar to any other econometric model, the data

under assumption are believed to be true within the model's framework and remain unchanged throughout. The model already contains data values as assumptions, however the same can be revised by the user.

Assumptions of the model consist of multiple parts, all given as growth rates in percentage terms. First is a comprehensive set of commodity prices at the global level, with a focus on the groups of energy covered here (such as wood, construction minerals, coal, oil, ferrous ores etc). Second is the GDP of various countries (such as the USA, China, Russia); country groups (such as the EU, NICs, OPEC), and the Inflation and interest rates in the entire world. The level of taxation, government final consumption expenditure and interest rates at the state level comprise. Similar to other models in New-Keynesian Economics, E3 India also interstitially believes in the following (Cambridge Econometrics Ltd, 2019).

i. Markets always adjust perfectly, with prices moving freely to balance supply and demand. No firms have the unrestricted market power to gain abnormal profits.

ii. Wage rates are fully flexible and move to rates at which there is no involuntary unemployment.

iii. All individuals and companies have a complete 'perfect' knowledge about all the potential ways that they can spend their resources. They are also identically rational and aim to maximise their welfare/returns.

iv. The economy has a fixed and limited monetary supply.

v. Technology is exogenous from policy-induced development.

Limitations of the model:

Despite being a comprehensive aggregation of the three Es in the Indian Context, the model faces certain limitations. The model does not accredit some issues related to data modelling of labour migration and interstate trade. It also takes certain longhand measures like non-

segmentation of investments, assuming energy demand to move symmetrically, treating biomass consumption as a fixed ratio to total energy demand among many others. The feature to analyse the output visually is incorporated within the interface, however, it lacks the option to export them to other formats. The utility of the model is currently limited to the policies envisioned by the makers (Sarraf, 2018). The inability of the model to incorporate various combinations of theoretical logic into the simulation hampers its versatility.

Incompetencies in the source data, such as incompleteness, collection errors and omissions, are sure to get reflected in the final output too. Since, the data is pre-loaded in the model, ensuring their accuracy goes beyond the scope of the user. Additionally, the deficiency of accurate data has forced the E3 India model to reach certain theoretical assumptions within itself. These include that, the prices are set by the firms as a markup over cost; Central government transfer to states is in line with the final year of historical data, coal production in India has the capacity to sustain in the same level; carbon taxation will only cause a price effect in the demand for fuels and so on.

How is the model used in this paper?

Understanding the utility of the E3 model, this paper is an endeavour to analyse the future of Indian states under a few selected policy scenarios. The outcomes of the same, under the following indicators, have then been analysed against the baseline scenario (explained below):

a) total fuel use for energy, in thousands of total oil equivalents (FR0- th toe)
b) electricity use in total oil equivalents (th toe)
c) user emission of carbon dioxide in thousand tonnes of carbon (th tC)

These variables were specifically chosen for analysis considering their relative importance in analysing the policy impacts for the future.

Scenarios

Similar to other modelling exercises in public policy, this paper also models scenarios and compares them to a baseline scenario. After the initial discussion on the Indian perspectives on climate change, economic development and energy transition, the researchers realise that fiscal interventions like taxation on carbon & energy and removal of subsidised electricity shall be the few appropriate policies appropriate to the Indian context. Given the behavioural traits of Indian Consumers, these policies are expected to give positive results to the country's ambitions. The policy scenarios have been modelled using the scenarios in the E3 Model. The details of the scenarios employed are as described below.

Baseline scenario

The baseline scenario, with regard to this paper, is the default scenario provided by the model. This is technically a reflection of the status quo, for instance, a zero rate of energy tax and so on. A common requirement of E3-India analysis is that the baseline is made to be consistent with officially published forecasts. Since the state-level economic and energy projections are unavailable, the E3-India baseline is calibrated to national projections from the World Energy Outlook (IEA, 2015). The three inputs of the model, namely assumption, instruction and scenario are direct econometric projections of the actual available data.

Energy Taxation

The scenario of Energy Taxation involves the imposition of a tax of ₹400/tonne of oil equivalents to all energy users on all fuels. This entails an additional flow of revenue to the government, and it is implicitly assumed that the government does not recycle this revenue for a specific purpose. And exemptions in remittance for any sector are not considered in this case, though the scope for that still remains. The 'RTEA-Regional Energy tax rate as additional excise duties' component of the Scenario input is hence changed while modelling this scenario.

Carbon Taxation

Similar to the previous scenario, a carbon tax involves the imposition of a tax of ₹400/tonne of carbon emitted on all energy users of all fuels. However, this does not include taxing CO2 emissions. It is also implicitly assumed that this additional stream of revenue shall not be recycled for a specific purpose. It shall contribute only to reducing the budgetary deficit. The RTCA-Regional Carbon Tax rate as additional excise duties' component of the Scenario input is hence changed while modelling this scenario.

Removing electricity subsidy

This scenario looks at the impact on various users when the price subsidy currently provided on electricity in each state is removed. The model considers subsidy to be a negative tax; hence the removal of subsidy is taken as a positive tax on an agent's electricity consumption. For electricity use, the model includes modelling electricity price subsidies to different household types. "This provides results on households' income distribution from changes in electricity taxation and subsidies" (Cambridge Econometrics, 2019). Here, complete removal of the subsidy for all types of users (households, transportation, manufacturing etc) irrespective of the area is considered. As seen earlier, subsidisation of electricity is a key factor causing exploitative utilisation of the same. Hence, this analysis is important to shape the future of electricity consumption.

Results and Discussions

The modelling was performed over the aforementioned scenarios. The results obtained are discussed below.

Scenario - Energy and Carbon Tax

Here 'Scen 1', refers to the scenario after the imposition of an Energy Tax and 'Scen 2' refers to the scenario of imposing the Carbon taxation.

The emission of CO2, total energy use and electricity consumption in a few major states of India are described in the tables below.

Sl. No	State	Baseline	Scen 1	Scen 2	%age change in Scen 1 from Base	%age decrease in Scen 1 from Base
1	Andhra Pradesh	140847.7	139119.7	138736.5	-1.23%	-1.50%
2	Assam	22682.29	22344.45	22523.53	-1.49%	-0.70%
3	Bihar	67844.56	67457.24	67925.1	-0.57%	0.12%
4	Delhi	110578.3	110122.3	109526	-0.41%	-0.95%
5	Gujarat	235967.5	232955.6	234436	-1.28%	-0.65%
6	Haryana	88433.7	86797.84	86693.05	-1.85%	-1.97%
7	Kerala	45155.94	44662.12	44595.05	-1.09%	-1.24%
8	Madhya Pradesh	61625.57	60833.5	59863.44	-1.29%	-2.86%
9	Maharashtra	314598.8	311379.2	308952.2	-1.02%	-1.79%
10	Odisha	65703.68	66079.05	64707.56	0.57%	-1.52%
11	Punjab	63384.97	62823.92	62272.92	-0.89%	-1.75%
12	Rajasthan	93121.16	91643.42	91921.16	-1.59%	-1.29%
13	Tamil	158877.1	157112.1	155770.6	-1.11%	-1.96%
14	Uttar Pradesh	106272.4	105561	105938.8	-0.67%	-0.31%
15	West Bengal	99258.5	99232.53	97608.62	-0.03%	-1.66%

Table 1: User Emission of CO_2 (in tonnes) in major states in the year 2035 under the different scenarios

Findings based on Table 1:

Since Scenario 1 represents an Energy Tax (Rs. 400/tonne on all energy) on emissions of CO2 (in tonnes), and Scenario 2 represents a Carbon Tax (Rs. 440/tonne on Carbon emissions), it is clearly identifiable that a proposed/prospective tax on Carbon emissions will

reduce emissions in all states except in states of Assam, Rajasthan, Gujarat, Uttar Pradesh, and Bihar. These states are observing an increasing shift towards Solar, Biogas, Wind, Tidal and Nuclear sources, hence, an Energy Tax is expected to lead to lower emissions in these states as compared to simply a Carbon Tax.

Sl. No	State	Baseline	Scen 1	Scen 2	%age change in Scen 1 from Base	%age decrease in Scen 1 from Base
1	Andhra Pradesh	197448.4	193669.8	195503.2	-1.91%	-0.99%
2	Assam	36967.46	35148.04	36776.77	-4.92%	-0.52%
3	Bihar	101985.1	100478.4	101925.8	-1.48%	-0.06%
4	Delhi	83062.2	82886.25	83295.57	-0.21%	0.28%
5	Gujarat	292801.4	288551	290723.1	-1.45%	-0.71%
6	Haryana	111948.2	109995.8	110327.9	-1.74%	-1.45%
7	Kerala	65302.32	64348.97	64815.45	-1.46%	-0.75%
8	Madhya Pradesh	96314.55	95112.44	94659.75	-1.25%	-1.72%
9	Maharashtra	397492	393088.2	392392.5	-1.11%	-1.28%
10	Odisha	81970.2	81823.22	81097.64	-0.18%	-1.06%
11	Punjab	85773.87	84948.06	84558.69	-0.96%	-1.42%
12	Rajasthan	138423.3	135241.1	137067.5	-2.30%	-0.98%
13	Tamil	226531.5	223825.2	223645.6	-1.19%	-1.27%
14	Uttar Pradesh	217235.6	214834.3	216606.9	-1.11%	-0.29%
15	West Bengal	136873.2	135503.9	135317.7	-1.00%	-1.14%

Table 2: total fuel use for energy (in tonnes) toe, in Major states in the year 2035 under the scenarios.

Findings based on Table 2:

Just as remarked previously, all States experience the impacts of a Tax/Subsidy differently owing to their differing requirements and compositions of energy usage. However, for most states, the Scenario 1 (Energy Tax) has a greater implication on the total fuel use for energy.

Sl. No	State	Baseline	Scen 1	Scen 2	%age change in Scen 1 from Base	%age decrease in Scen 1 from Base
1	Andhra Pradesh	22350.19	21865.89	22456.76	-2.17%	0.48%
2	Assam	1833.612	1809.415	1856.135	-1.32%	1.23%
3	Bihar	2539.633	2517.313	2542.711	-0.88%	0.12%
4	Delhi	8903.238	8876.837	8962.244	-0.30%	0.66%
5	Gujarat	27656.82	27257.33	27550.33	-1.44%	-0.39%
6	Haryana	9856.734	9547.603	9846.489	-3.14%	-0.10%
7	Kerala	6514.029	6431.941	6579.137	-1.26%	1.00%
8	Madhya Pradesh	10210.84	10118.69	10234.14	-0.90%	0.23%
9	Maharashtra	38354.92	37994.19	38488.02	-0.94%	0.35%
10	Odisha	5943.968	6003.566	5974.806	1.00%	0.52%
11	Punjab	11777.15	11634.7	11745.21	-1.21%	-0.27%
12	Rajasthan	15302.81	14896.89	15268.29	-2.65%	-0.23%
13	Tamil	25871.82	25675.78	26052.37	-0.76%	0.70%
14	Uttar Pradesh	18431.19	18289.97	18509.37	-0.77%	0.42%
15	West Bengal	12655.11	12670.44	12687.77	0.12%	0.26%

Table 3: total electricity use in kWh, in Major states in the year 2035 under the scenarios.

Findings based on Table 3:

All states experience a lower usage of electricity given an Energy Tax as compared to a Carbon Tax since it impacts the cumulative electricity sector by way of the overarching tax and not a tax simply on Carbon emissions. The State of Odisha observes a marginally lower electricity usage in the case of a Carbon Tax since the majority of its energy needs are met by coal and fossil-based sources.

Scenario - Removal of Electricity Subsidy

In this scenario, the absolute value of the indicators with the scenario of electricity subsidy being removed is analysed. The absolute values of each of the indicators in time series from the year 2020 to the year 2035 are presented below.

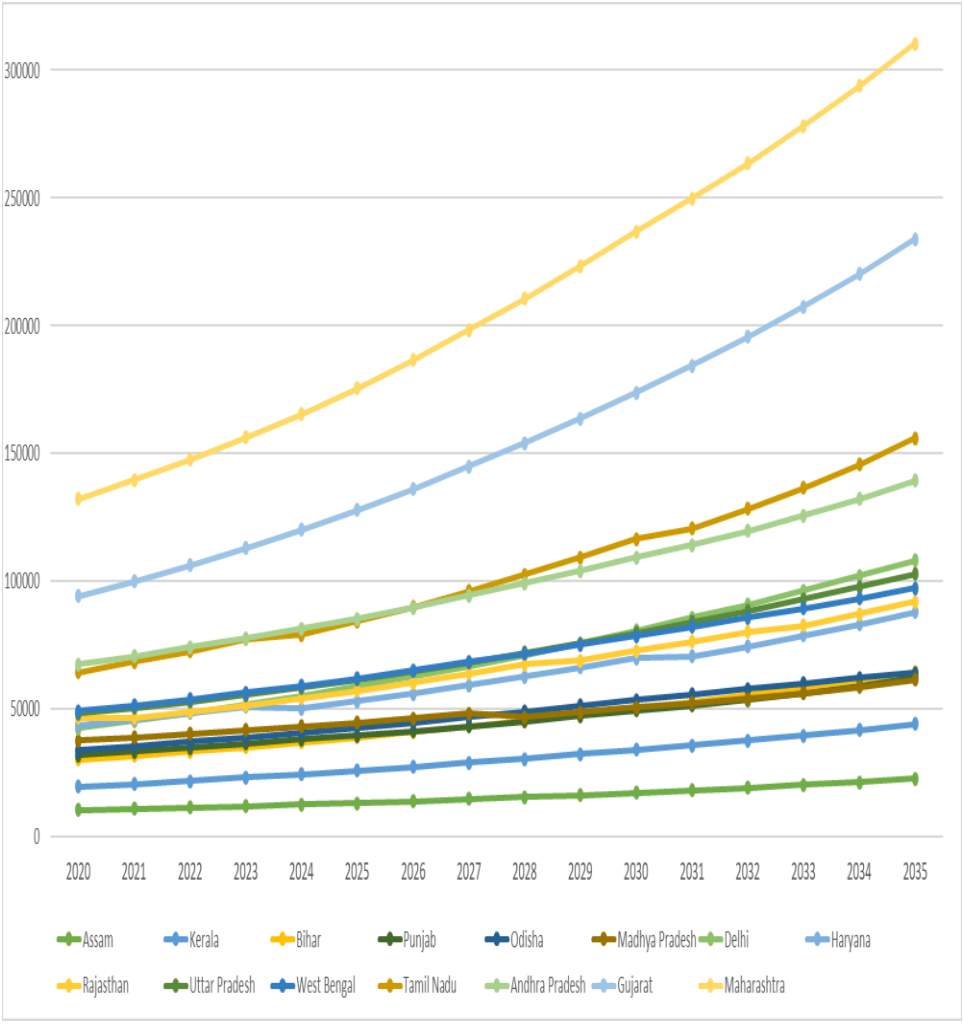

Fig 8: Total CO2 emitted (in tonnes) by Major states

The emission of Carbon Dioxide is still observed to increase significantly in most of the states (Fig). Maharashtra, the highest emitter currently, shows a similar trend, but at an increasing rate and continues to become the highest emitter of Carbon Dioxide even 15 years from now. Gujarat also shows a similar trend of increasing emissions at an increasing rate. The growth rate in emissions of most states, however, tends to be approximately constant.

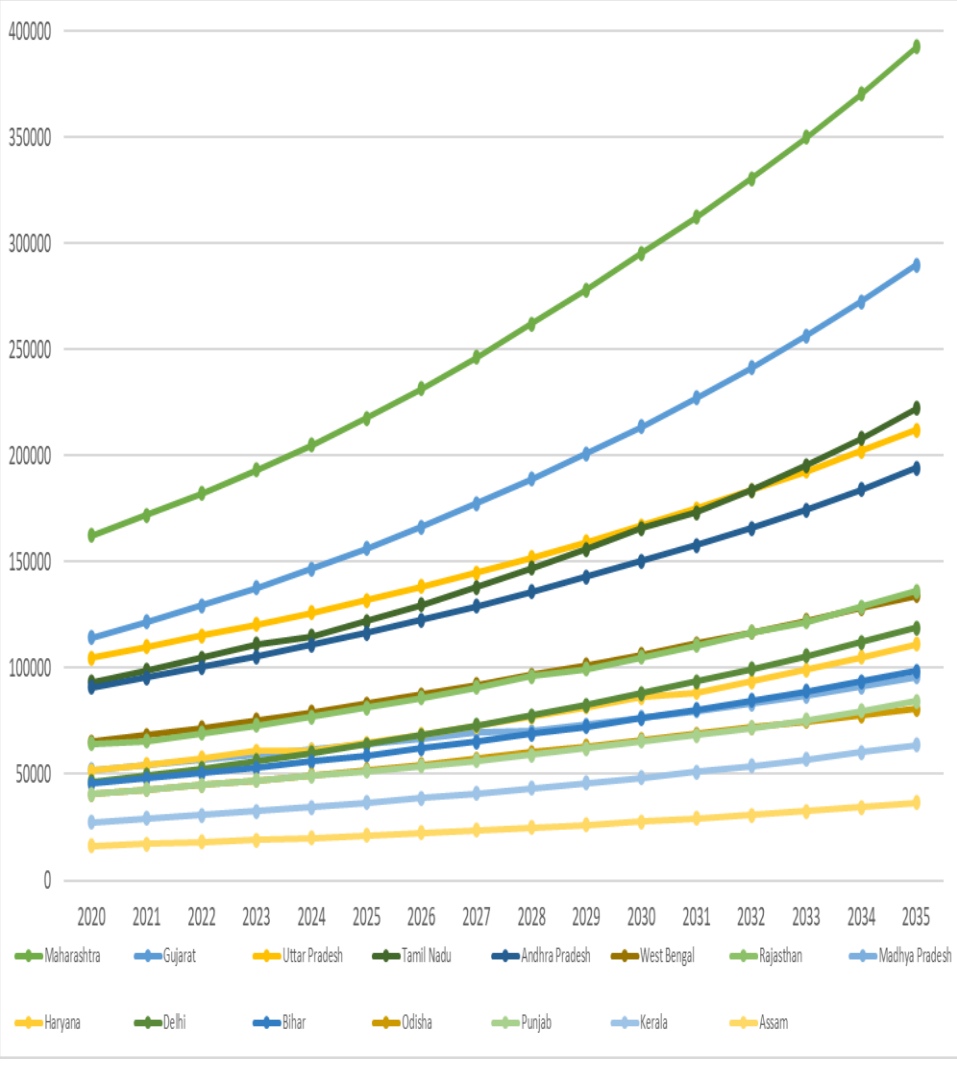

Fig 9: Total fuel use for energy in tonnes toe, in Major states

The total use of fuels of energy is also observed to increase majorly, rising by at least 50% in each state (Fig). Maharashtra is still the highest consumer of fuel with fuel usage rising three folds in the 15 years. The projected rise in fuel consumption of each state is an important observation to be made at this point. Gujarat also shows a similar trend of increasing emissions at an increasing rate. The growth rate in emissions of most states, however, tends to be approximately constant.

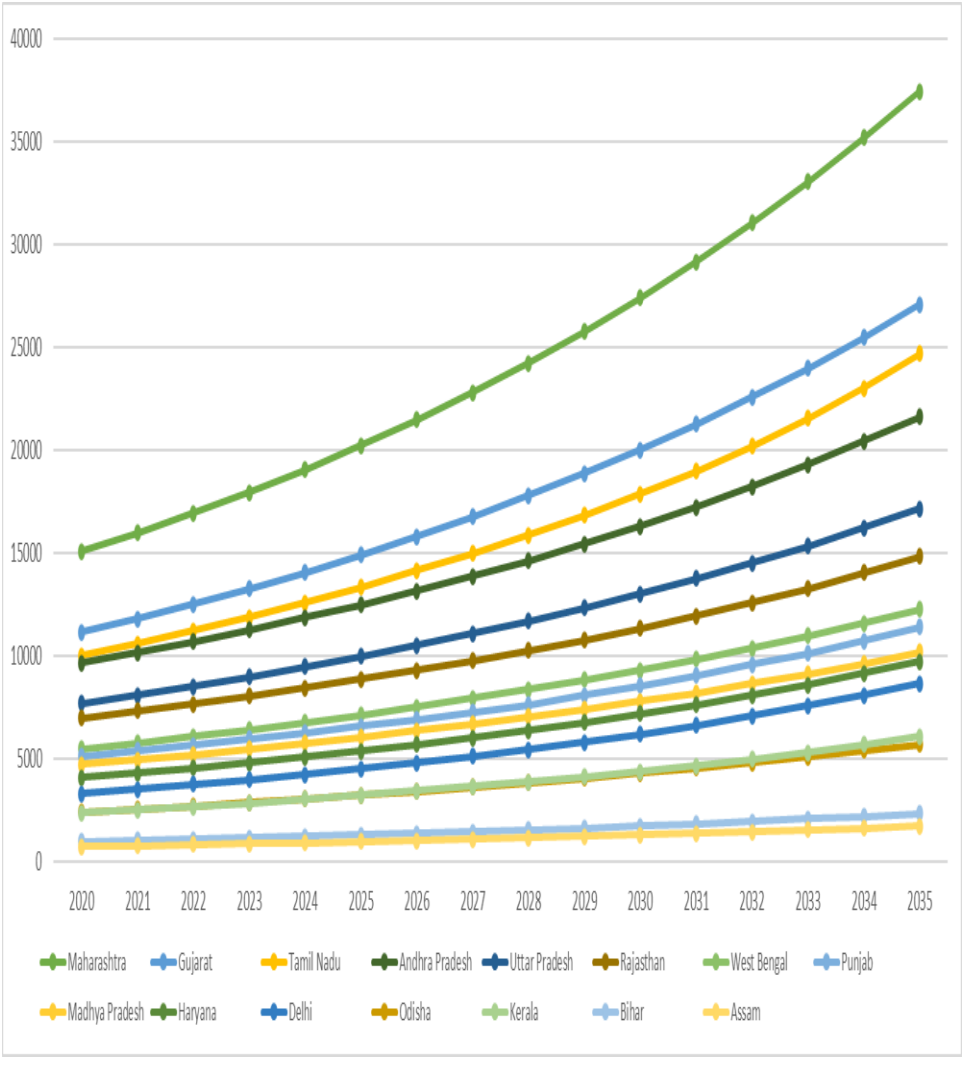

Fig 10: total electricity use in kWh per capita, in Major states

As mentioned above, per capita use of electricity is a major indicator of development, especially in the rural sector. The total rise in per capita electricity signals the rudimentary nature of the subsidy system in our country. Still, we observe a disparity between the rich and poor states. The uptake of electricity in states such as Bihar, Assam and Odisha show negligible to zero growth. This suggests that a subsidy or a similar governmental intervention shall be necessary to promote electricity, only in those areas.

Conclusion

Climate change is undoubtedly the single large threat the world shall face in the next few years. The necessity of reorienting oneself to abate this crisis has been in discussion well in the recent past. The need to reorient our sources of energy from non-renewable pollution indicating fossil fuels also gains traction in this context. This multifaceted crisis certainly puts an additional burden on developing economies such as India. The initial discussion of this paper is hence straight with the realisation that Climate change and energy transition thereof shall cause non-uniform impacts on each state. The three policy scenarios analysed here are also hence relevant. It is observed from the modelling that both a carbon tax and consumption tax on electricity (removal of subsidy) will not lead to a significant change in emissions or fuel usage in the next 15 years. Though a slight and favourable deviation from the status quo is visible in all the cases. They are still understood to be much below the required levels. This reveals the need for bi-pronged policies that cover all the granularities of energy consumption, production and utilisation in a large country like India.

This paper had been an endeavour to analyse the impact of two diverse yet critical policy tools in ensuring the climate resilience of India. It is realised that the perspective of the paper had been through the macro-lens ostensibly to maximise the perspectives considered. Both the heads analysed in this paper can be developed as separate works. The forecasting done in this paper is to be assimilated by considering the limitations of the E3 Model. This paper intended only to create a new line of thought in the field of climate policy. We understand that a more complex policy scenario, by considering each of the numerous stakeholders in this field can be constructed and analysed. Much scope also remains in establishing the causality and exploration of further implications. This paper has also been largely numerical and analytical, and all the observations and conclusions made here can be qualitatively explained too.

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The Impact of Emojis on Consumer Behaviour

Abstract

With the Internet and social media platforms playing an essential role in everyday life, the need to keep customers satisfied online has never been greater. Various service recovery strategies have already been studied thoroughly, but they have not particularly been linked to the use of emojis. There have been several examinations on the use of emoji and emoticons in computer mediated communication amongst peers and colleges but there is yet academic research to be done on the impact of businesses using these paralinguistic cues when responding to online consumer reviews or the way these impact the behaviour of consumers.

This research examines the influence that these paralinguistic cues have on the consumers perception of the company's quality of the response to brand relationship, online consumer review and purchase intent. While emojis have been

found to sometimes cause a decrease in the level of professionalism of a company, they seem to influence perceived relationship investment positively.

Keywords

eWOM, consumer behaviour, emoticons, OCRs, Computer Mediated Communication, Purchase Intentions, hedonic products, utilitarian products

Introduction

Consider the above tweet from Burger King's official Twitter account. It contains a short sentence "wonder why burgers taste sorta like euphoria" followed by three emoji showing big smiles with stars. Would this promotional tweet be perceived differently by the customers if these emojis were missing? Would the effect caused by these emojis change, if they were used instead to advertise a less hedonic/more utilitarian product? Does the presence of the emoji influence consumers' purchase intentions? These are the questions that I will try to answer in this paper.

Given, the emerging use of emoji across marketing, the answers to these questions have both theoretical and managerial significance. Emoticons are ubiquitous on the internet with 92% of users reporting they employ emoji in their online communications.

Development of Emojis

Emojis have originated from smiley, which first evolved into emoticons, followed by emoji and stickers in recent years. Smiley first appeared in

the 1960s and is usually a yellow circle with two dots for eyes and a grin.

Emoticons were first introduced in 1872 and used ordinary punctuation marks from a standard computer keyboard to build up a representation of a face with a particular expression. They are a paralinguistic element often used at the end of a sentence.

Even before emojis existed, users of Instant Messaging (IM) would often use emoticons. Similar to non-verbal clues in face-to-face communication, emoticons can help express emotions, clarify intentions in ambiguous contexts and improve the efficiency of communication. They can help the receivers to correctly understand the attitude, sender's emotion, and level of attention, promote interaction, community identity and bring enjoyment.

It has also been suggested that emoticons could be applied to real life, for example in fields such as psychological testing, emotional monitoring, and designing signs.

In 1999, the first set of emoji was created by Shigetaka Kurita from Japan. “Emoji” is a transliteration of the Japanese word 絵 (e=picture) 文 (mo=write) 字 (ji=character). Using emoji can add extra emotional or contextual meaning to communication, help users in tone adjustment, enhance the attractiveness of the message to receivers, and conversation management and play a role in managing and maintaining interpersonal relationships.

Name	Time of occurrence	Form	Content	Usage scenarios	Unicode	Examples
Smiley	1960s	Static	Single smiley face	Daily life	Without unicode	
Emoticon	1982	Static	Various facial expressions	Daily life /CMC	Without unicode	^_^
Emoji	1999	Static	Facial expressions, abstract concepts, emotions/feelings, animals, plants, activities, gestures/body parts, and objects	Daily life /CMC	Own unicode	
Sticker	After the 21st century	Static/Animated	Texts, facial expressions, abstract concepts, emotions/feelings, animals, plants, activities, gestures/body parts, and objects	Daily life /CMC	Without unicode	

In recent years, in order to understand the interpretability of information transmission and to better express its meaning, stickers came into being. Stickers can help users dynamically and strategically choose the best way to express their opinions, emotions, and intentions and to achieve communicative fluidity.

Well-known brands regularly punctuate their tweets with emoji of everything from pizza (e.g., Dominos) to dart boards, shoes, bicycles, and lightning bolts (e.g., Target).

The Emoji Movie was released in 2017, and since 2014, July 17 has been celebrated as "World Emoji Day".

The interpersonal need of humans to connect has inspired the creativity and rapid evolution of communications' media along with their standards. With the rise of smart phones, companies are now noticing a shift in consumer service outreach and transactions that previously took place in person, are now happening online either on the telephone or tweeted and tagged in a SNS post.

According to Lee, Rodgers & Kim (2009) Electronic word of mouth (eWOM) is referred to as any positive or negative content generated by a consumer and posted on the internet. Previous eWOM researches have focused on the impact of online consumer reviews (OCRs) on purchasing intent, consumer participation, customer satisfaction, brand relationships and willingness to pay. Positive and negative consumer review can cause significant influence on an individual's purchase decision and perceived value of the product.

Consumers are actively using their mobile and search engines to know all about products and services they are considering to purchase. In effect, these acts to eliminate cognitive effort, cognitive dissonance, and anxiety of the purchasing decision by providing independent and authentic third-party reviews of the product or service.

Consumers nowadays use platforms to show both their likes and dislikes for the product. These Online Consumer Reviews (OCRs) when properly responded to can provide monetary benefits, an additional

platform to connect with customers, foster and enhance the brand image, increase customer satisfaction, influencing purchase content and decreasing their cost per resolution.

Consumers now search products and their OCRs online before purchasing any product to ensure maximum satisfaction. A recent example would be of Twitter which examined a large US Airline company and discovered that by responding directly to an OCR it produced higher consumer satisfaction than by involving any other medium and increased the amount an individual would spend with the company by an additional $9.00.

Although Computer Mediated Communication (CMC) affords a virtual instant gratification, it is considered to be a "lean" media due to the lack of nonverbal cues such as: facial expressions, body movements and postures, eye contact, touch, gestures, space that are used to pursue interpersonal goals. This can result in a decreased feeling of connectedness or intimacy.

As per Derks, Bos, & Grumbkow, 2008, emojis are pictorial representations of facial features, animals, and objects mostly included to strengthen and clarify the message between the sender and receiver. Emoji and emoticons are now a capacious language that is proposed to have the ability to carry more command than words alone. This language can almost accurately describe not only what a person did or ate that day but also illustrate emotions that would have previously gone unnoticed such as sarcasm, sadness, happiness, anger and even calmness. As per "The Appboy Emoji Study the Rise and Rise of Emoji Marketing", 2016, currently 87% of individuals who are of the age 14 and older use emojis in their CMC with 64% of those individuals responding that they "liked or loved them".

In 2015, the popular Emoji 'Face with Tears of Joy' made up 20% of all emojis used in the UK and 17% of those in the US. Oxford Dictionaries,2016 named the emoji 'Face with Tears of Joy' as the **word of the year** because it was the 'word' that best reflected the mood, ethos and preoccupations of 2015.

To date, there has been no research on the impact of emojis and emoticon and their effect on consumer satisfaction, brand relationship, and purchasing decisions. This research seeks to understand the effects by inserting positive and negative emojis and emoticons in the company's response and its' impact on the above criterias.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Use of Emoji in Communications

In this paper, we focus our investigation on visual kinesics, or emoji that show movement of the body or a part of the body, such as a smiling face or a pair of clapping hands. Communicating feelings and emotions, particularly light humor, was the function of the original emoji (Ganster et al., 2012), and to this day, emojis that communicate positive emotions are the most commonly used (Novak, Smailović, Sluban, & Mozetič, 2015). Therefore, I have opted to limit my investigation to emojis that convey positive emotions—specifically those that include smiley faces.

The Positive Impact of Emojis

Before looking into how emojis may influence consumer purchase intentions, let us first turn our attention to the more urgent question of how exposure to emojis in an advertisement may activate certain feelings in the viewer. Much of the existing research on emojis has shown that they have a significant effect on viewers' emotions. For example, research by Ganster (2012) has found that people who receive a message which includes a smiley face felt significantly happier than those who received a message with no emoji, While, those who received a message with a negative emoji felt worse.

Similarly, a study of viewer reactions to receiving an e-mail from a friend about their recent vacation, which either contained a positive or a negative emoji, found that receiving the same message with a negative emoji made participants automatically feel less joy and more

distress (Lohmann, Pyka, & Zanger, 2017). The exact reason why emojis affect consumers' emotions is not entirely clear and is outside the scope of our current investigation, which primarily focuses on the marketing implications of increased positive affect. However, there are a number of different theories that exist and attempt to account for why exposure to emojis might influence consumer affect. For example, Lohmann et al. (2017) suggested that they do so because of emotional contagion, which argues that people simply "catch" the feeling depicted by the emoji, such that the viewers' emotions come to match the valence of the emoji.

However, even within their own study, Lohmann et al. found only partial support for this observation. Specifically, they found that individual differences in response to emotional contagion moderated the connect between exposure to the negative emoji and feeling distress. However, inconsistent with emotional contagion, they found that viewing a smiley emoji led to more feelings of distress than joy!

The authors ascribed these results to the possibility that emojis enhance the emotional intensity of the communication, such that a positive emoji makes the message seem more positive than intended and a negative emoji makes it seem more negative. Therefore, when the positive statement about a vacation included an emoji, the vacation seemed better than it did when the same statement did not contain an emoji. It was hypothesized that participants became jealous of their friend's very positive and happy vacation in the emoji condition and so felt distress. However, the exact reason as to why emoji influences emotions is still up for debate.

Emoji and purchase intentions

While it is useful to learn that emoji can activate positive effect, however, from a business perspective, we are more interested in whether emoji can influence the downstream consumer behaviour variables, such as purchase intentions. Up till now, primary and secondary research on emoji in marketing is dearth and focused mainly

on how service providers are looked at when they do or do not use emojis in their online communications with customers. Differing from past work in this area, we examine the effect of emoji in a different context and on a different outcome variable. It is generally accepted that customers in a good mood make more purchases than the ones having a foul day. It directly implies that emojis with a positive effect on feelings have a positive and increasing effect on purchases.

Contextual factors affecting the influence of emoji

Investigations of the emoji literature have also suggested that use of emoji may not always be beneficial. Research in psychology, marketing, and information science has found varied effects when including emoji in professional communications. For example, consultants who used emoji in e-mails to their clients were perceived as being lower in expertise and unprofessional than those who did not. However, an analysis of chat logs from a Chinese e-commerce website found that sellers who used emoticons in their interactions with potential buyers were more likely to make a sale than those who did not. Hence, consumer behaviour as a response to an emoji is mostly dependent on the context in which it is used. For example, Li et al. (2018) report that customer service employees who used emoticons when responding to online customer questions, reviews and comments were perceived as warmer, but less competent, than those who did not. Hence, it seems that emojis are helpful for increasing viewer's perceptions of the writer's warmth and friendliness, but they may hurt perceptions of the writer's expertise and competence. It was found that in situations where the consumer views the interaction as part of a communal relationship, the use of emoticons increased service satisfaction. However, when consumers view the interaction as part of an exchange-based relationship, the use of emoticons decreased service satisfaction.

Subsequently, we discuss product type as a contextual variable that may neutralise the effect of emoji on consumer positive affect and purchase intentions.

The moderating effect of product type

The next important factor is product type: hedonic vs. utilitarian that might account for as to when emojis are considered appropriate or inappropriate in an advertisement. It is proposed that emojis are more useful in advertisements for hedonic products than for utilitarian products, and hence might also be more effective at increasing positive affect and purchase intentions for hedonic as compared to utilitarian products.

Utilitarian products are considered to satisfy functional needs, such as quality, convenience and safety. In contrast, hedonic products tend to satisfy the need for fun, fantasy, aesthetics and pleasure. As per Chitturi, Raghunathan, & Mahajan (2008), customers focus more on brand excitement and fun when considering the purchase of hedonic products, whereas they focus more on brand competence and credibility when purchasing utilitarian.

Kronrod and Danziger's (2013) have found that consumers exhibit more positive attitudes towards hedonic products than utilitarian products when the products are described using figurative language such as metaphors, similes and the like. However, such language does not fit well with the conversational, expected and rational norms associated with a utilitarian product, where people tend to favor a review that communicates competence. In such cases, consumers feel that a norm has been broken and finds the response disruptive. Similar to figurative language, emojis are a form of language that communicate emotion, but not a great deal of specific information. Therefore, emojis are a perfect fit for the conversational norms and emotional profile of hedonic products, but not utilitarian ones.

However, we also expect that in the utilitarian product condition, the mismatch between the advertised product and emoji will attenuate the good impact of emoji on positive affect and purchase intentions. For the utilitarian product, the mediated effect of the emoji on purchase intentions will also be attenuated.

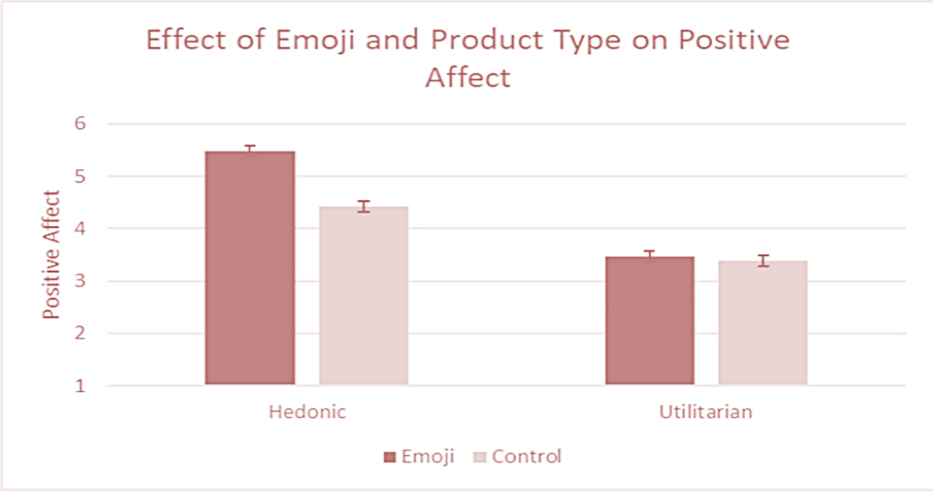


Figure 2: Interaction of product type and emoji on positive affect (G. Das et al)

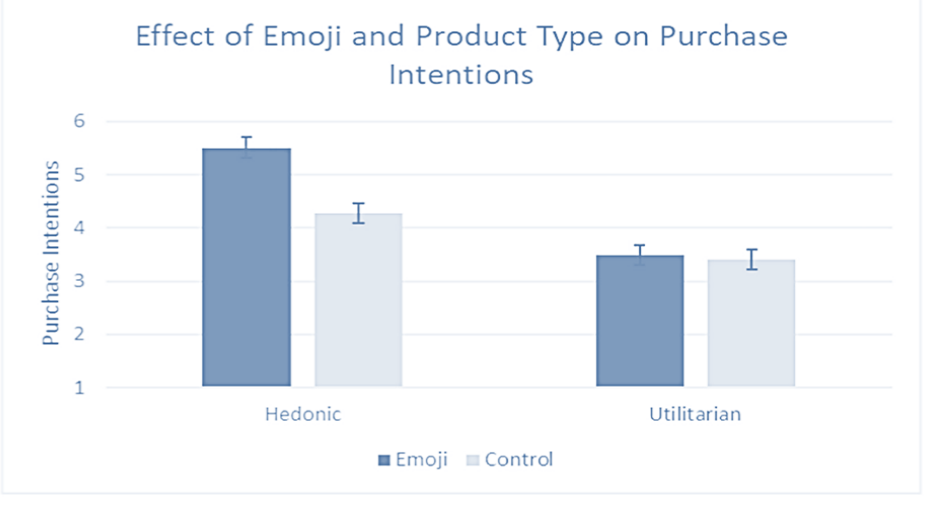


Figure 3: Interaction effect of product type and emoji on purchase intentions (G. Das et al)

Theoretical point of view

The results of this study add to the emerging literature on text-based nonverbal communication, by exploring the link between the inclusion of emoji in promotional materials and purchase intentions. Second, emojis are being explored in a new domain for the marketing literature

and with a new category of outcome variables. A contribution to understanding why emoji affect emotions through our finding that product type (i.e., utilitarian vs. hedonic) moderates the effect of emoji on consumer affect is also contributed. Finally, the results of these studies extend the literature on fit of various kinds leading to positive affect and thus other positive consumer behaviors.

Managerial Implications

While the use of emoji in advertisements is expanding little is known about whether or how managers can use emoji effectively when interacting with customers. It is recommended that managers should primarily employ emoji when advertising hedonic products, rather than utilitarian ones.

Research Methodology

The findings of the research are based on a survey conducted by Anna Dmitrieva(Master Media Studies - Media & Business, Erasmus School of History, Culture and Communication) in June, 2019.

The **quantitative method** was used to answer the research questions and explore how the presence of emoji in online advertisement influence consumer's purchase intention. This method aims to determine the relationship between dependent and independent variables.

Research design

The study had 2 (including vs. excluding emoji) x 2 (product framing: hedonic vs. utilitarian) between-subjects design. Experimental groups were exposed to the product's advertisement containing emoji in the text of one of the product types, while the participants in control groups had the same promotional post but without any emoji. Each participant was exposed to one treatment, in this case, only one digital advertisement. Two advertisements were created in the form of a promotional Facebook post with the same picture of the product, with different text description depending on the product framing. Emoji

were incorporated in a text and and it is to be noted that emoji used in advertisements were not intended to replace words in the text, but to intensify the effect of the message and visually highlight the key points. In this regard, the number of emoji was limited to prevent the readers' confusion and not to cause distractions. This research only focused on positive emoji as they are more prevalent in the advertisements. The emoji added were relevant in the context of the advertisement.

Sample selection

Considering the fact that the aim of this research is to investigate the effect that emoji presence (vs absence) in social media advertising has on consumer behaviour during purchase, the sampling plandid did not have any specific restrictions due to the fact that the age groups of frequent emoji users are almost equally wide, implying that any age group will be applicable for this study.

The aim of the sample plan was to collect minimum of 35 participants per condition, resulting in a total number of 140 participants for the study. The responses were collected via Amazon Mechanical Turk, an online platform that operates as the micro-tasks market where researchers can post their tasks that are completed by users for minimal compensation. This study was restricted to those who had a satisfactory level of previously completed tasks above 95 per cent, thus excluding unreliable participants. Participants were invited to participate in thesurvey for minimal compensation of $ 0.15

Experiment materials

The stimuli for this study was presented in the form of a Facebook advertisement of a fictional brand. Facebook was chosen for being a leading social media platformwith the highest number of active users in 2019. It is also one of the largest digital advertising seller with 72 per cent of marketers using Facebook on a regular basis as a platform for paid digital advertising.

The advertisement was based on a fictional brand named "K&C" to

ensure that participants had no prior associations with the brand and that the familiarity with the brand would have no influence on the participants' judgment and answers.

Each advertisement contained the brand name, a headline,a product description accompanied by a photo. The "shop now" option was chosen as a "call to action" button to investigate the consumer's purchase intention. To ensure the texts differ between hedonic and utilitarian characteristics, each advertisement had a different description of the product. The utilitarian product description was focused more on the usefulness and quality of the product (using words such as "waterproof materials", "sensor technology", etc.) The hedonic product framing focused more on emotional aspect (words such as "looks good", "comfortable", etc. were used).

In the control groups, for each product type emoji were not presented. In the experimental conditions, up to six emoji were incorporated in the text. For both product types emoji included in the advertisement represented related to the product description activities such as "🏊", "🧘" and positive facial expressions such as "😍", "🤩".

The research conditions

Conditions	Emoji presence	Productframing
Condition 1	Yes	Utilitarian
Condition 2	No	Utilitarian
Condition 3	Yes	Hedonic
Condition 4	No	Hedonic

Reliability test results for product framing

Product	Framing	Cronbach's alpha for utilitarian scale	Cronbach'salpha for hedonic scale
Sneakers	Utilitarian	.87	.93
Sneakers	Hedonic	.93	.92
Shower gel	Utilitarian	.91	.96
Shower gel	Hedonic	.89	.92

Headphones	Utilitarian	.89	.92
Headphones	Hedonic	.87	.90
Smartwatch	Utilitarian	.87	.90
Smartwatch	Hedonic	.88	.90

In order to analyze how hedonic or utilitarian participants perceived each product in both framings, a paired t-test was conducted. Each product was compared between two framings based on utilitarian and hedonic scales separately, resulting in 8 pairs.

Findings

There were two products within one pair that showed a significant difference such as utilitarian shower gel and utilitarian headphones. However, no pair of the products showed a significant difference between the extent to which the product was perceived as being both hedonic or utilitarian. Therefore, there is no definite choice of product that could be picked with the absolute certainty that it would be perceived as hedonic and utilitarian, depending on the description.

Paired t-test results comparing product framings

Product pairs	Framing scale	Mean	Standard deviation	*t*	*df*	*p*
1.Utilitarian watch	Utilitarian	3.69	.64	.41	20	.686
Hedonic watch		3.61	.57			
2.Hedonic watch	Hedonic	3.36	.78	2.00	20	.059
Utilitarian watch		3.01	.72			
3.Utilitarian sneakers	Utilitarian	3.53	.72	1.41	20	.173
Hedonic sneakers		3.24	.82			
4.Hedonic sneakers	Hedonic	3.18	.91	.77	20	.448
Utilitarian sneakers		3.03	.99			
5.Utilitarian gel	Utilitarian	3.74	.79	2.82	20	.010
Hedonic gel		3.13	.86			
6.Hedonic gel	Hedonic	3.00	1.03	.56	20	.582
Utilitarian gel		2.89	1.03			
7.Utilitarian headphones	Utilitarian	3.91	.58	6.83	20	.000
Hedonic headphones		3.05	.68			

8.Hedonic headphones	Hedonic	3.36	.78	1.34	20	.194
Utilitarian headphones		3.12	.80			

Experiment procedure

The survey was created by the use of Qualtrics software, which allows all treatments to be automatically randomized for different experiment groups. After the survey had been created, it was posted on Amazon Mechanical Turk.

Participants were asked to sign a manual form agreeing to take part and were automatically allocated to one of the groups. All the subsequent questions were presented as five-point Likert scale with the goal to measure the affect, purchase intention and perception of the product framing.

Measurement

All respondents were provided with the same set of questions that appeared in the same order for all the groups. After filling the questions about demographic characteristics, participants were exposed to the Facebook advertisement with or without emoji, depending onthe group they were in.

The results of the reliability test for measurements

Measurements	**Cronbach's alpha**
Utilitarian framing	.78
Hedonic framing	.91
Affect	.94
Purchase intentions	.92

Results of the two-way analysis of variance (Positive Affect)

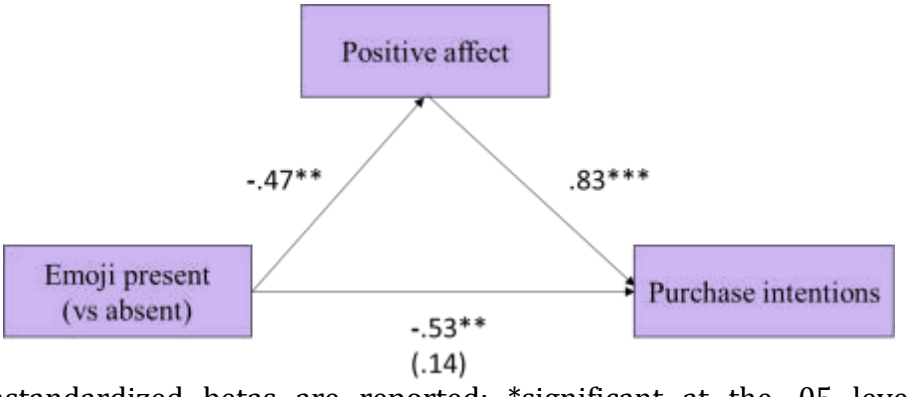
	Sum of squares	*df*	Mean Square	*F*	*P*
Emoji presence	11.63	1	11.64	9.25	.003
Product framing	.38	1	.38	.30	.583
Emoji presence *	1.33	1	1.33	1.06	.305

Product framing					
Error	267.43	213	1.258		
Total	2293.44	217			

Results of the two-way analysis of variance (Purchase Intention)

	Sum of squares	*df*	Mean Square	*F*	*p*
Emoji presence	15.14	1	15.14	11.92	.001
Product framing	.60	1	.60	.47	.492
Emoji presence *	.08	1	.08	.06	.801
Product framing					
Error	270.53	213	1.270		
Total	1978.89	217			

Mediation by positive affect



Unstandardized betas are reported: *significant at the .05 level; **significant at the .01level; *** significant at the .001 level

Limitations and Future Research

This paper is a first attempt at *empirically* observing and examining consumer reactions to the use of emoji in advertising communications. It provides a starting point, but many questions are yet to be answered. Future research should be focused on directly measuring the role of fit in influencing consumer reactions to advertisements containing emoticons. More research is also required into whether different types, placements, numbers and sizes of emoji have different effects.

Next, since context is critical in determining the effect of emoji on consumer behaviour, it is important to explore them in a variety of environments, systems and settings. Most research on emoji has examined their use in live chats with customers, and a new area has been explored by examining them in advertisements, but there are still other ways in which they could be used. Offline uses such as a television advertisement or in-store display may be particularly interesting scenarios to examine. It will be important to explore consumers' reactions to emoji in these and other contexts in future research. Finally, another important aspect related to context is which brand is promoted through the marketing communication.

Conclusion

The research and study have shown that advertising communications that include emoji lead to greater positive affect and more favourable purchase intentions than those that do not, at least for hedonic products. Much more work needs to be done in this area of non-verbal communication, but these results provide early indications that including emoji in marketing communications is a potentially fruitful direction for advertisers, mangers and even consumers.

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STRIDES – A STUDENTS' JOURNAL OF SHRI RAM COLLEGE OF COMMERCE

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HISTORY OF THE JOURNAL

The idea to launch this Journal was discussed in the year 2016 by the former Officiating Principal, **Dr. R. P. Rustagi** with **Prof. Santosh Kumari**, the Editor of the Journal. The idea appealed to Dr. Santosh Kumari and she took the initiative to create this new academic research Journal and took the responsibility for its Creation, Registration, License, and ISSN (International Standard Serial Number) etc. along with *Editorship*. Therefore, she was appointed as the Editor of the Journal in March, 2017. She meticulously worked hard for developing the structure of the Journal. She introduced the concept of COPE (Committee on Publication Ethics) to maintain high academic standards of publication.

On behalf of the college, Prof. Santosh Kumari made every effort in seeking License from Deputy Commissioner of Police (Licensing), Delhi to register the Journal at "The Registrar of Newspapers for India, Ministry of Information and Broadcasting, Government of India". First issue of the Journal "Strides – A Students' Journal of Shri Ram College of Commerce, Volume 1, Issue 1, 2016-17" was successfully released on the 91st Annual Day of SRCC held on April 13, 2017 by Shri Prakash Javadekar, Hon'ble Union Minister of Human Resource Development, Government of India.

On December 18, 2017, the College got the license "License No. - DCP / LIC No. F. 2 (S / 37) Press / 2017" to publish 'Strides – A Students' Journal of Shri Ram College of Commerce'. On April 26, 2018, the SRCC Staff Council unanimously appointed Prof. Santosh Kumari as the 'Editor of Strides' for the next two academic years. On May 04, 2018, the college received the 'Certificate of Registration' for Strides – A Students' Journal of Shri Ram College of Commerce and got the Registration No. DELENG/2018/75093 dated May 04, 2018.

On May 07, 2018, Prof. Santosh Kumari submitted the application for seeking ISSN (International Standard Serial Number) at "ISSN National Centre – India, National Science Library, NISCAIR (National Institute of Science Communication and Information Resources). Weblink - http://nsl.niscair.res.in/ISSNPROCESS/issn.jsp". Finally, the College received the International Standard Serial Number "ISSN 2581-4931 (Print)" on June 01, 2018.
We are proud that this journal is an add-on to the enriched catalogue of SRCC's publications and academic literature.

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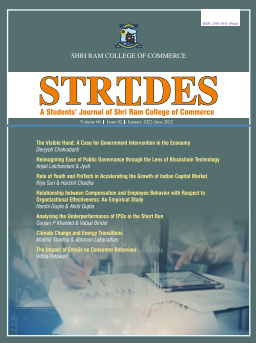

RELEASE OF FOUNDATION ISSUE OF STRIDES

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