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THE LONDON SCHOOL
OF ECONOMICS AND
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Message from the Dean



As a Recognised Teaching Centre of the University of London (UOL), ISBF has been imparting world class education under the academic direction of London School of Economics & Political Science (LSE) for the last fifteen years. It has earned strong reputation for becoming an excellent place of learning based on its challenging academic environment, innovative approaches to college life and diverse perspectives in skill building that make a holistic impact on our students' personality.

Enquiry based learning and critical analysis of relevant disciplinary issues are integral to the academic experience at ISBF. It is not surprising that both our faculty and students are inclined towards research activity in the normal course of their academic work. It is a matter of great pleasure and pride that the College is launching a new peer-reviewed Journal namely ISBF Journal of Economics, Management and Finance which is to be published annually. The primary purpose of this Journal is to encourage students and teachers both at the UG and PG levels to share their research work on current topics with their peers and the society at large. This initiative is the outcome of constant efforts by ISBF faculty & students as part of the ISBF Research Cell.

While publishing this Journal, we have taken due care to uphold the high standards of publication, ethical principles and academic integrity. All research papers have passed through rigorous screening, expert review and required plagiarism check. The papers have been published after the authors had revised their drafts in the light of suggestions provided to them.

I congratulate all the authors whose research papers are published in this Issue of ISBF Journal of Economics, Management and Finance and express my sincere appreciation for the contribution made by the ISBF's faculty and the communications team in making this publication possible. I hope this Journal will be received well by the academic community.

Sincerely,
Dr. G L Tayal

Message from the Editor-in-Chief



It is with immense pleasure that I write this message for the first issue of the ISBF Journal of Economics, Management and Finance. A peer-reviewed publication which we aim to produce annually, this journal aims at providing a platform to showcase student research in the areas of economics, management and finance.

The application-oriented nature of the LSE-led programmes taught at ISBF, along with the pedagogy adopted here, place a premium on fostering a spirit of inquiry among students. The Research Cell is an integral part of this mission, since it serves as a forum for budding researchers with burning questions to receive guidance and direction. Using this, along with the research methodologies and theories that their courses equip them with, they have already unearthed several new and interesting findings so far.

To give further impetus to student research, ISBF organised an inter-college Paper Presentation Competition earlier this year. Over a hundred submissions were received from undergraduate and postgraduate students from most of India's pre-eminent higher education institutions, while a few came in from overseas too. The topics ranged from artificial intelligence and managerial economics to monetary policy and human resource management. The presentations made by the shortlisted teams were then adjudicated upon by an esteemed jury that included former member of India's Monetary Policy Committee, Dr. Chetan Ghate, and Director of Adfactors PR, Dr. Samir Kapur.

This journal comprises of the top papers submitted towards the above competition, following a review and thorough plagiarism check by the referees. It starts, in fact, with the winning paper, titled "*Twenty years of Liquidity Adjustment Facility: A structural VAR analysis of the role and transmission of monetary policy in India*", which I'm proud to share is authored by two final year undergraduate ISBF students.

Going forward, this journal aims to maintain high ethical standards and contribute quality research work in economics, management and finance. We hope to soon have an International Standard Serial Number (ISSN) for this journal. We would strongly encourage young researchers across the country to contribute to future editions, and also exhort more and more ISBF students to take the rich research tradition forward strongly.

I would like to express my heartfelt gratitude to all members of the Editorial Board as well as the referees for putting in large-hearted efforts without which this journal would not have seen the light of day. I would also like to thank all the authors and ISBF's Communications Team for making this publication a reality.

I hope you will find the entries in this issue interesting and insightful, and wish that over time this journal blossoms into a rich repository of economics, management and finance ideas.

Atika Gupta
Editor-in-Chief

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Twenty Years of Liquidity Adjustment Facility: A Structural VAR Analysis of the Role and Transmission of Monetary Policy in India

Siddharth R. Jamad & Yash N. Patel

University of London & ISBF*

Abstract

Roughly two decades ago, India's central bank, the Reserve Bank of India (RBI), adopted a new monetary policy framework – the Liquidity Adjustment Facility (LAF) – with the introduction of which it abandoned targeting monetary aggregates in favour of setting interest rates. The key interest rates introduced under the concerned framework are called the repo and reverse repo rates, and the central bank uses these to fulfil its mandate of stable growth and inflation. This paper, therefore, investigates how specifically the RBI deploys the repo rate to achieve its objectives (i.e., what is its reaction function) and, equally important, how changes to these rates affect the Indian economy via different channels of transmission. In particular, we study four major channels of monetary transmission in India: interest rates, bank credit, exchange rates, and asset prices. We find a strong presence of the interest rate and exchange rate channels in the country, and a weak presence of the others: a most disconcerting result, for it suggests a collapse of what was once the strongest channel of monetary policy transmission in the nation – bank credit. This failure can be traced back to the growing Non-Performing Assets (NPA) crisis afflicting the nation's banking system, an issue that calls for urgent policy intervention, though not only, of course, of the monetary policy kind.

Keywords: monetary policy, vector autoregressions, liquidity adjustment framework, channels of transmission.

* We are grateful to all our ISBF professors – especially Dr. Khan Masood Ahmad, Professor Navni Kothari, and Professor Atika Gupta – for their inputs, feedback, and suggestions without which this paper would be even more naïve than it currently is.

1. Introduction

Close to twenty years have passed since the Reserve Bank of India – or the RBI as it is popularly referred to – adopted the Liquidity Adjustment Facility (henceforth LAF) in accordance with the recommendations of the Narasimham Committee on Banking Sector Reforms of 1998. The phased introduction of the LAF, beginning in mid-2000, marked a paradigm shift in the central bank’s conduct of monetary policy: the RBI went from targeting monetary aggregates such as reserves and broad money to using interest rates – repo and reverse repo – as a tool to manage liquidity in the country’s banking system. These two rates have since become the key indicators of the Reserve Bank’s monetary policy stance. The shift so described, needless to say, had important economic implications for both the role and transmission of monetary policy in a country that was just beginning to emerge from nearly half a century of economic isolation.

Under the LAF, commercial banks can borrow or lend money (or more technically, reserves) from/to the RBI, on an overnight basis, “against the collateral of government and other approved securities”. This borrowing and lending takes place at the RBI’s policy rates, namely the repo and the reverse repo. The repo rate is the rate at which banks borrow overnight liquidity from the RBI, and the reverse repo rate is the one at which they lend overnight liquidity to it. While repos or repurchase agreements help banks cope with cash shortages and/or meet their mandatory reserve requirements, reverse repos allow them to park surplus liquidity off their balance sheets in exchange for some interest income. Although the definitions of these rates stress their role as instruments of liquidity management, their place in the broader economy exceeds this simple outfit by quite an enormous margin. Changes to the repo and/or the reverse repo rate transmit to the money markets and then on to the financial markets, influencing aggregate demand along the way as they finally ripple through the rest of the economy. Shocks to aggregate demand have obvious implications for output, inflation, and employment, and monetary policy therefore is a crucial determinant of the overall macroeconomic climate in the country. And to the extent that it is aimed at (loosely speaking, that is) stable growth and inflation and sound financial markets, there is a case to be made for some reverse-feedback from fluctuations in these macroeconomic variables to monetary policy itself.

The discussion above implies at least three things about monetary policy as it is presently practiced in our country of interest as well as around the world: that it affects macroeconomic aggregates via different (demand) channels, that it does so with some delay (the so-called transmission lag), and that it is in turn affected by the trajectories of these aggregates. Given such an intricate, circular feedback loop between macroeconomic variables and monetary policy, the econometric measurement of monetary policy lends itself well to the use of vector autoregressions or VARs.¹ And though several attempts have been made at such an econometric assessment of monetary policy in India, very few authors make use of the repo rate to perform such an analysis, resorting instead to the market-determined call rate²; so it is in this respect that our study differs from the existing literature on the topic. Owing to our focus on the analysis of monetary policy in India since the coming into force of the LAF, we have set the sample

1 See Bernanke and Blinder (1992), Galí (1992), and Bernanke and Mihov (1998).

2 The rate at which banks lend overnight liquidity to each other.

period of the study to 2001:2 to 2020:2. Additionally, all the data used in this study have been sourced from the Reserve Bank of India's *Handbook of Statistics on the Indian Economy*.

The rest of the paper is arranged as follows: Section 2 surveys the existing literature on the origins and use of VARs, particularly in the context of monetary policy. Section 3 defends the “optimal policy variable” status of the repo rate by extracting its information content – its ability to account for future movements in output and prices – and comparing it to those of other monetary variables. Section 4 plots a reaction function of the Reserve Bank of India. Section 5 studies the four dominant channels through which monetary policy affects the two variables of ultimate policy interest: output and prices. Section 6 concludes, albeit briefly, by rounding up the paper's most significant findings.

2. Literature Review

The use of VARs in macroeconomics gained widespread popularity after the publication of a string of papers by the American economist Christopher A. Sims (1972, 1980a, 1980b). The most influential of these (1980a), titled “Macroeconomics and Reality”, proposed VARs as a more meritorious alternative to the large-scale statistical macroeconomic models of the time. Speaking critically of the latter, Sims wrote “[that] the style in which “identification” is achieved for these models is inappropriate, to the point at which claims for identification in these models cannot be taken seriously”. VARs, on the other hand, impose no “a priori” (and by Sims' standards, “incredible”) restrictions on the structure of the macroeconomy, which presumably allows them to capture the whole picture better.

Despite the criticisms that followed, VARs became a common statistical tool in applied as well as theoretical macroeconomics, particularly so for the study of monetary policy. Bernanke and Blinder (1992), in arguing that monetary policy affects real variables via, among others, bank-based channels, estimate a series of VARs using six variables: a federal-funds-rate-based indicator of monetary policy (such as the spread between bond yields and the funds rate), the unemployment rate, the log of the CPI, and the logs of bank balance-sheet variables (deposits, securities, and loans). Their findings shed light on both the transmission of monetary policy as well as on what they call “the Fed's reaction function”. The Fed responds to a positive shock in inflation by raising the federal funds rates and to a positive shock in unemployment by slashing them. On the transmission side, their results confirm that tight money, or a positive innovation in the federal funds rate, “does indeed reduce the volume of deposits held by depository institutions”; this fall in bank liabilities is matched by a fall in both loans and securities, though the latter quickly hits a bottom and recovers while the former continues to fall even after two years. A fall in loans, or more generally credit, undermines aggregate demand, which must thus lower output. Since their many results are consistent with economic theory, it is safe to say that their approach – one nested in the use of VARs – holds some promise.

Writing in the same year as Bernanke and Blinder, Galí (1992) studies the fit of the ad hoc IS-LM and Phillips Curve model to the post-war US economic data by employing structural vector autoregressions (SVARs). He identifies his Keynesian macro-econometric system using a variety of restrictions – such as no contemporaneous effect of monetary policy on output (again, the so-called transmission lag) and long-run neutrality of money. Having identified the parameters of interest, he proceeds to construct impulse response functions and uses them to study the impact on output, inflation, interest rates, and money balances of a range of structural shocks: supply, money supply, and money demand. In the

conclusion that follows, Galí confirms that “the dynamic response of the economy to different types of disturbances matches closely with the qualitative predictions of a Phillips curve-augmented IS-LM framework”, thus cementing the “empirical relevance” of the otherwise heavily criticised textbook paradigm.

In the Indian context, the work of Aleem (2010) and Paramanik and Kamaiah (2014), among many notable others, merits a mention. While the former estimates three SVARs to study three different channels of monetary transmission, the latter estimate two, one using only domestic variables and one using a mix of both domestic and international (specifically, the federal funds rate). Aleem initially encounters the (in)famous ‘price puzzle’³, which however vanishes with the inclusion of a vector of exogenous foreign variables. Paramanik and Kamaiah are also faced with the aforementioned puzzle, though, unlike Aleem, they do not attempt to alter their model specification to resolve the same, attributing it instead to an “omitted variable bias”. Though the findings of both of these papers afford important insights into the transmission of monetary policy in India, they are both weighed down by a shared limitation: the use of weighted average call rate as an indicator of monetary policy stance. To the extent that call rate is determined in the money market, however, as opposed to being set by the central bank, it does not constitute a policy variable. Consequently, any analysis performed using it can at best throw light on only the lower-leg of monetary policy transmission: the effect of variations in the call rate on output and inflation and the reverse; however, it cannot account for the upper, and arguably more important, leg of this transmission: the effect of variations in the policy rate on the call rate (and then on to the rest of the economy). Equally, the use of call rate can also not adequately capture the role of the central bank in the Indian economy, because since the onset of this century, the Reserve Bank of India has and continues to set the repo rate to dispense its duties rather than explicitly targeting monetary quantities (such as money supply) or prices (such as the call rate).

3. Information Content

Before tackling the more intricate issues of the role and transmission of monetary policy in India under the LAF framework, we first attempt to demonstrate that the repo rate introduced under the same is substantially superior to other monetary variables in predicting future fluctuations in output and prices, and is therefore the optimal choice of policy variable. In keeping with the approach adopted by Friedman and Kuttner (1992), the table below reports the (approximate) forecast error variance decompositions of India’s real income and price index, at four and eight quarters, produced by structural vector autoregressions using four lags of the following four variables: real income, price index, monetary aggregate/price, and the repo rate. We consider four monetary aggregates to compare the repo rate with: reserve money, narrow money, broad money, and the (weighted average) call rate. For the first three of these, the real income and price-index equations in the respective vector autoregressions take the form:

³ This refers to the immediate, counterintuitive rise in inflation following a positive shock to monetary policy. The term was coined by Sims (1992) in the context of the United States, but has been demonstrated to be relevant to a number of other countries including India.

$$\ln(y_t) = \alpha_y + \sum_1^4 \beta_i^y \ln(y_{t-i}) + \sum_1^4 \gamma_i^y \ln(p_{t-i}) + \sum_1^4 \delta_i^y \Delta \ln(m_{t-i}) + \sum_1^4 \varphi_i^y r_{t-i} + \varepsilon_t^y \quad (1)$$

$$\ln(p_t) = \alpha_p + \sum_0^4 \beta_i^p \ln(y_{t-i}) + \sum_1^4 \gamma_i^p \ln(p_{t-i}) + \sum_1^4 \delta_i^p \Delta \ln(m_{t-i}) + \sum_1^4 \varphi_i^p r_{t-i} + \varepsilon_t^p \quad (2)$$

where y_t , p_t , m_t , and r_t are quarterly real GDP, quarterly average Wholesale Price Index (WPI), a measure of the quarterly money supply (reserve, narrow, and broad), and the quarterly average repo rate, respectively. To ensure comparability between money supply and the repo rate, the former is converted into year-on-year growth rates by taking the fourth difference of its logarithms. For the same reason, the call rate in the fourth vector autoregression is taken in levels. For each of these four systems, we consider, in turn, two Cholesky orderings: income–prices–aggregate–repo and income–prices–repo–aggregate. As can be gleaned from the table, however, the order of variables has little bearing on our ultimate findings.

DECOMPOSITION OF REAL-INCOME AND PRICE INDEX
VARIANCE FOR MONETARY AGGREGATES AND THE REPO RATE

System	Real Output		Price Index	
	Aggregate	Repo rate	Aggregate	Repo rate
<i>System with Reserve Money (M0):</i>				
Ordering = aggregate-repo				
Variance at 4 quarters	2 ± 4	12 ± 7	0 ± 3	1 ± 4
Variance at 8 quarters	9 ± 11	28 ± 14	1 ± 5	8 ± 9
Ordering = repo-aggregate				
Variance at 4 quarters	0 ± 2	14 ± 7	0 ± 3	1 ± 4
Variance at 8 quarters	3 ± 7	34 ± 15	0 ± 5	8 ± 9
<i>System with Narrow Money (M1):</i>				
Ordering = aggregate-repo				
Variance at 4 quarters	0 ± 2	16 ± 9	0 ± 3	1 ± 4
Variance at 8 quarters	1 ± 5	36 ± 16	2 ± 6	8 ± 9
Ordering = repo-aggregate				
Variance at 4 quarters	0 ± 2	16 ± 9	0 ± 3	1 ± 4
Variance at 8 quarters	0 ± 4	36 ± 16	2 ± 6	9 ± 9
<i>System with Broad Money (M3):</i>				
Ordering = aggregate-repo				
Variance at 4 quarters	2 ± 4	14 ± 7	6 ± 7	2 ± 4
Variance at 8 quarters	6 ± 9	31 ± 14	10 ± 11	10 ± 10
Ordering = repo-aggregate				
Variance at 4 quarters	1 ± 4	14 ± 8	6 ± 7	2 ± 4
Variance at 8 quarters	5 ± 8	32 ± 15	11 ± 11	9 ± 9
<i>System with Call rate (WACR):</i>				
Ordering = aggregate-repo				
Variance at 4 quarters	6 ± 6	10 ± 7	1 ± 4	0 ± 3
Variance at 8 quarters	10 ± 11	25 ± 14	6 ± 9	3 ± 7
Ordering = repo-aggregate				
Variance at 4 quarters	1 ± 2	16 ± 9	0 ± 3	1 ± 4
Variance at 8 quarters	0 ± 4	34 ± 15	2 ± 6	8 ± 10

Note: Variance decompositions are computed via Monte Carlo simulations with 500 draws. Ranges indicated represent approximate 95-percent confidence intervals. The four VARs include the following four variables: log of quarterly real GDP, log of quarterly Wholesale Price Index, monetary aggregate, and the repo rate.

A cursory glance at the first column of the table cements the repo rate's undisputed status as being the Reserve bank's choice of optimal policy variable. It accounts for, on an average, no less than 10% of the forecast error in output at the fourth quarter, and no less than 25% at the eighth. By contrast, its next best monetary alternative – the call rate – accounts only for 6% and 10% of such forecast error at the aforementioned quarters, and even this is lost if the ordering of variables is changed from call-rate–repo to repo–call-rate. As for the price-index, none of the variables taken into consideration, including the repo rate, account for a large enough share in its forecast error. In fact, broad money marginally outperforms the repo rate as the variable with the most information content about the future course of prices in the country. It must also be noted, however, that the latter enormously outperforms the former in predicting fluctuations in output. In collective view, therefore, it is reasonably safe to say that it is more optimal for the Reserve Bank to set the repo rate than to target, or respond to fluctuations in, any of the other such conventional monetary aggregates as those that have been considered here.

4. Reaction Function

Having established the repo rate's "optimal policy variable status", we now proceed to show how the central bank deploys the same to stabilise output and prices in the presence of unexpected shocks to their trajectories. In consonance with economic theory and institutional knowledge, however, we assume that the Reserve Bank responds to deviations in output from potential as opposed to its gross value, and to inflation rather than prices. To generate the quarterly output gap for India, we detrend the log of the country's quarterly real GDP using the Hodrick-Prescott (HP) filter with the smoothing parameter set equal to 1600.⁴ For the rate of year-on-year inflation, we take the fourth difference of the logarithms of the Wholesale Price Index.

We then estimate a tri-variate structural vector autoregression using our measure of the output gap, WPI inflation, and the repo rate. Instead of using the repo rate's quarterly average, however, we use its value that is closest to the end of each quarter. Such a system is the statistical equivalent of a macroeconomic structure within which the central bank takes full stock of the developments in output (or its proxies, rather) and prices in a period and sets its interest rate accordingly at the end of such a period. Including the end of quarter repo rate in our model also lends more credibility to the order of orthogonalization of its disturbances: income–prices–repo. To enrich our specification even further, we also include in it a string of such exogenous variables as money market lending rates, bank credit, real exchange rates, and stock prices. Since we are interested, specifically, in plotting the Reserve Bank's reaction function, one of the three SVAR-X equations – that of the repo rate – is reproduced below:

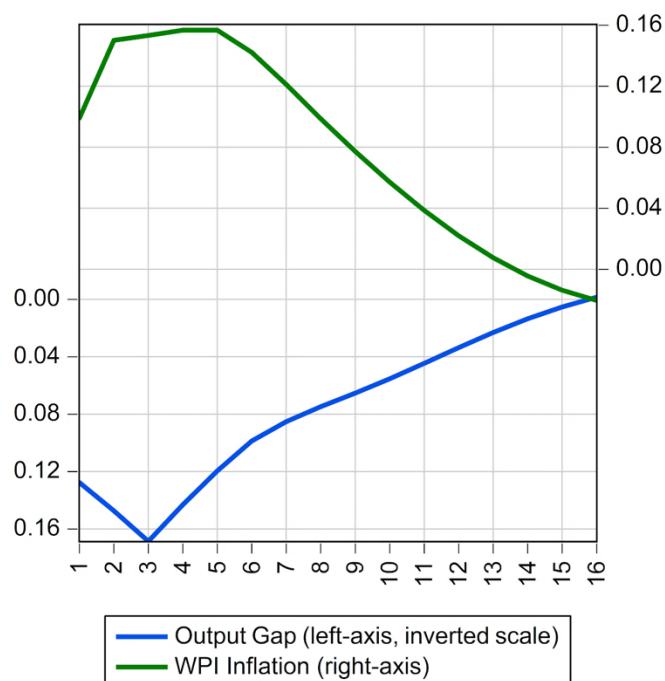
$$\begin{aligned}
 r_t = \Psi_0 + \sum_0^3 \Psi_{1i} gap_{t-i} + \sum_0^3 \Psi_{2i} \pi_{t-i} + \sum_1^3 \Psi_{3i} wacr_{t-i} + \sum_1^3 \Psi_{4i} \Delta \ln(bc)_{t-i} \\
 + \sum_1^3 \Psi_{5i} \Delta \ln(reer)_{t-i} + \sum_1^3 \Psi_{6i} \Delta \ln(nifty)_{t-i} + \eta_t
 \end{aligned} \tag{3}$$

where r , gap , π , $wacr$, bc , $reer$, and $nifty$ represent the repo rate, HP-detrended output gap, rate of WPI inflation, weighted average call rate, bank credit, real effective exchange rate, and nifty stock index, respectively. As for the last three variables, we convert them into growth rates before including them in the vector autoregression. The figure below traces the impulse response of the repo rate to structural innovations in output gap and inflation:

⁴ In applied literature, the standard value of the smoothing parameter is set equal to 14400 for monthly, 1600 for quarterly, and 100 for annual data.

Figure 1

Response (%) of Repo Rate to structural innovations in Output Gap and WPI Inflation



The RBI responds to an unexpected positive shock in output gap by immediately raising its policy rate approximately 13 basis points⁵ above baseline, and continuing to raise it until the end of third quarter. At this point, the repo rate is about 17 basis points above the initial level, and is gradually brought down to it over the course of the next three years. Similarly, the Reserve Bank responds to an unanticipated inflationary shock by raising the repo rate 10 basis points above baseline right away, and raising it further all the way through the end of the fifth quarter. At this point, the repo rate is nearly 16 basis points above the pre-shock levels, and is brought down to the same only over the course of the next nine quarters.

This evidence establishes econometrically the Reserve Bank of India's function as an inflation-targeting central bank with a strong aversion also to output's deviations from trend. This closes the loop on the "role" of monetary policy in India. So, we turn next to the analysis of its transmission.

⁵ A basis point is one-hundredth of a percentage.

5. Transmission

We follow Aleem (2010) in performing two SVARs for each channel of monetary transmission – in one we make the channel’s variable endogenous to the system and in the other exogenous. By making a channel’s variable exogenous to the vector autoregression, as opposed to completely excluding it, we still include its independent impact on output and inflation; this means that the deviations in the response of output and inflation to a monetary policy shock under the two alternative specifications will capture that variable’s role as a channel of monetary transmission. This strategy amounts to performing eight SVARs in total. Even though adopting such an approach means that we lose out on capturing the inter-relations between different channels of transmission, it nevertheless also enables us to sidestep the “curse of dimensionality”; fewer variables in each SVAR means fewer parameters have to be estimated. Moreover, working with fewer parameters also makes it possible to adopt greater lag-lengths. Since it is generally accepted that all shocks affect the economy with a lag, and that these effects are gradual and drawn out, greater lag-lengths help us obtain richer results.

The output and inflation equation in each endogenous-channel SVAR as well as exogenous channel SVAR-X take the form:

$$gap_t = \Phi_0 + \sum_1^3 \Phi_{1i} gap_{t-i} + \sum_1^3 \Phi_{2i} \pi_{t-i} + \sum_1^3 \Phi_{3i} s_{t-i} + \sum_1^3 \Phi_{4i} r_{t-i} + u_t^{gap} \quad (6)$$

$$\pi_t = \Omega_0 + \sum_0^3 \Omega_{1i} gap_{t-i} + \sum_1^3 \Omega_{2i} \pi_{t-i} + \sum_1^3 \Omega_{3i} s_{t-i} + \sum_1^3 \Omega_{4i} r_{t-i} + u_t^{\pi} \quad (7)$$

where in addition to the variables previously described, s_t represents, in successive vector autoregressions, the chosen channel of monetary transmission: weighted average call rate, growth in bank credit, percentage real effective exchange rate appreciation/depreciation, and growth in stock index (nifty).

To estimate the significance of each individual channel of transmission, we generate and juxtapose the impulse responses of output gap and inflation to a structural shock in monetary policy under that channel’s endogenous and exogenous specifications. The results from this exercise are discussed hence.

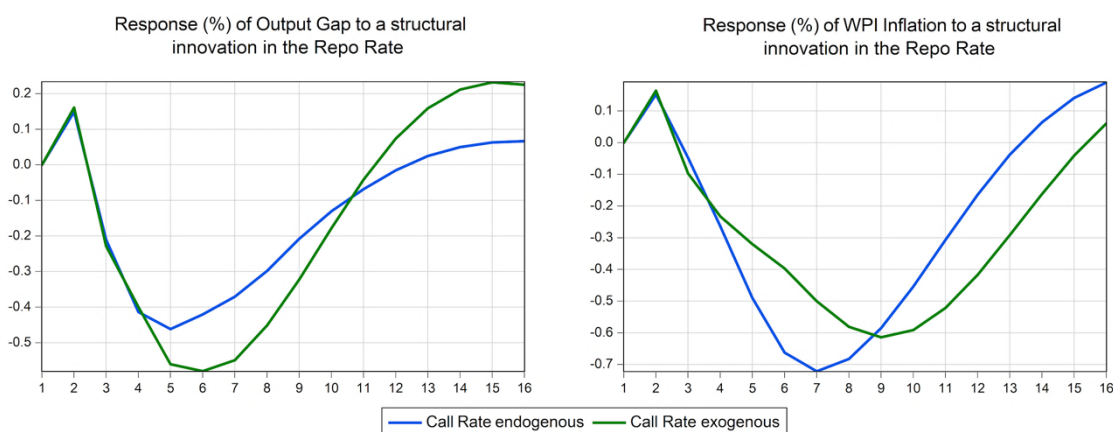
5.1 Interest rate channel

In India, changes to the repo rate are felt first in the money market: in uncollateralised lending rates such as the call rate, banks’ deposit and lending rates, as well as short and long-term government bond yields. The reasoning runs as follows: if a bank is going to park its funds with another bank or lend them to a household, corporation or to the government, it must earn at least as much interest income as it would when keeping them with the central bank. Thus, cuts or hikes to the policy rate spill over into short-term rates/yields one-for-one and almost immediately, and into longer-term rates/yields with some, though

minimal, delay. Lower (higher) deposit and borrowing rates lead to an increase (decrease) in consumption and investment and a fall (rise) in savings, and after some lag, an increase (decrease) in input costs such as wages, and hence in inflation.

Owing to the availability of a long, high-frequency time-series, we use weighted average call rates to capture the interest rate channel of monetary transmission in India. The graphs below plot the response of output gap and WPI inflation to a positive structural innovation in monetary policy under our two alternative assumptions: call rate endogeneity (interest rate channel is present) and call rate exogeneity (interest rate channel is absent):

Figure 2



In response to an unexpected tightening in monetary policy, both output gap and inflation rise at first, and then fall sharply (the so-called price puzzle, but this is discussed in greater detail at the end of this section). There are, nonetheless, important ways in which these responses differ under the two models. Output gap rises for about six months, and then plunges sharply until the end of the fourth quarter under both of the specifications; under the case of call rate endogeneity, however, it bottoms out in the fifth quarter at 0.45% below the pre-shock level, whereas in the case of call rate exogeneity it sinks to nearly -0.6% by the end of the sixth. This is admittedly counterintuitive, for if the call rate channel is present at all, the effects of a monetary policy shock on output must be more pronounced. This unease, however, is put to rest when one observes the recovery of output gap to its initial levels: it is slower and more drawn-out in the case of call rate endogeneity, confirming that real activity remains depressed for longer under the case where monetary policy shocks affect the call rate than under the case where they don't.

As for inflation, it falls more sharply, more quickly, and hits a deeper trough under the case of call rate endogeneity: -0.7% versus -0.6%. This is a fairly palatable result, and consistent with the notion of a strong interest rate channel of monetary transmission in the country.

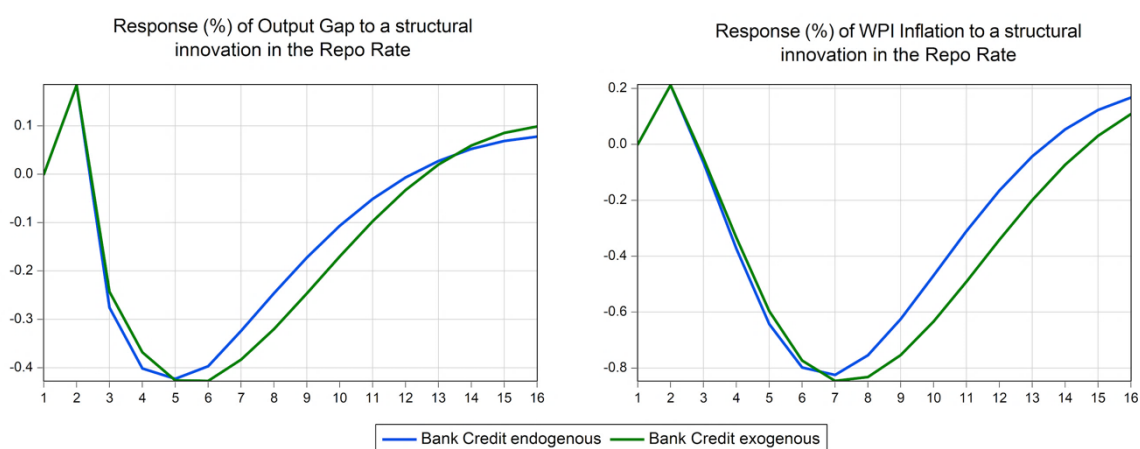
5.2 Bank credit channel

The bank lending/credit channel of monetary transmission is closely linked with the interest rate channel. Consider the case of a fall in policy rate, and the subsequent fall in bank deposit and lending

rates. The ensuing surge in the demand for credit, if met by supply, provides a boost to both consumption and investment, thereby raising output, and in due course of time, prices. The cause-and-effect thus described, however, rests on one crucial, and as we will see, in India's case untenable, assumption: that banks are in a healthy financial position, and therefore have the appetite to take on yet more risk by meeting the rise in demand for credit with supply off their own balance sheets.

The impulse response functions pictured below trace the impact of a positive shock in monetary policy on output gap and inflation under both, the assumption that the credit channel is present (bank credit is endogenous) and the assumption that it is not (bank credit is exogenous):

Figure 3



As under the interest rate channel, output gap and inflation respond to a positive innovation in monetary policy by rising briefly, and then sliding into a precipitous decline. However, unlike under the interest rate channel, these responses do not differ significantly under the contrasting cases of bank credit endogeneity and exogeneity. Under both of these specifications, output gap hits a trough in about five to six quarters – at about 0.4% below baseline – returning to pre-shock levels in about thirteen. Similarly, the fall in inflation turns around after approximately seven quarters – at which point it is around 0.8% below baseline – returning to pre-shock levels in also around thirteen to fourteen quarters.

These results suggest the absence of the bank credit channel of transmission in India, a result in direct violation of the findings of Aleem (2010) who instead found the channel to be one of plenty statistical significance. For a country that has been repeatedly described as being a bank-based economy⁶, this notion is almost revolting. There do, however, exist plausible explanations for this finding. For most of the past decade, the Indian banking system at large, and the country's large public sector banks in particular, have been at throes with an unseemly economic evil: Non-performing assets, or NPAs, as they are popularly called. These consist of loans that have been defaulted upon, and their share in the nation's banks' total assets has steadily grown over the last couple of years.⁷ Former RBI governor

⁶ Describing the bank lending channel of transmission in India, Aleem (2010) writes, "India is a bank-based economy with a predominance of bank financing."

⁷ See Appendix Section 7.4.

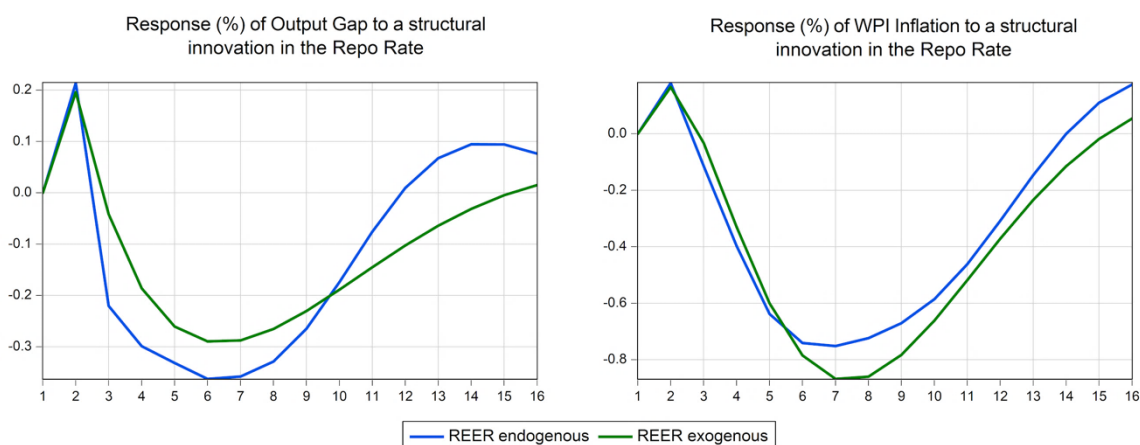
Raghuram Rajan, in his 2017 book titled “I do what I do”, outlines how the (sluggish) growth in public sector bank credit has not been determined by monetary policy, but instead by the system’s own balance-sheet woes.⁸ This makes a case for the lack of monetary policy transmission to bank credit and thereon to the rest of the economy, at least during the past decade or so. This line of reasoning helps reconcile, both statistically as well as in principle, the stark disparity between the results we have obtained, and the conventionally-held views about the relative importance of bank lending’s role as a channel of monetary transmission in India.

5.3 Exchange rate channel

The exchange rate channel of transmission is straightforward: lower policy rate, matched by greater money supply, results in a depreciation of the domestic currency. This, on one hand adds to domestic demand by boosting export competitiveness – that is, making domestic products cheaper for international consumers and businesses – and on the other hand undermines imports by making them more expensive, thus incentivizing the purchase of domestic goods/inputs. We use the quarterly Real Effective Exchange Rate (REER), which captures the relative price of a basket of commodities in the domestic country versus the rest of the world, to account for this channel.

The responses of output gap and inflation to a positive shock in monetary policy, under the assumptions of the presence versus the absence of the exchange rate channel, are graphed below:

Figure 4



⁸ As a further confirmation of the same, consider what Dr. Viral Acharya, an ex-deputy governor at the RBI, said about the Indian banking system’s credit growth in one of his speeches: “As explained earlier, even as the Reserve Bank has reduced its policy repo rate by 50 bps since October 2016 and by a cumulative 200 bps since December 2014, the banking sector’s credit growth has remained much muted. While weak demand for bank credit could be one of the factors leading to the observed slowdown in credit growth, a primary cause of the slowdown had also been the weak balance sheets of public sector banks in view of large non-performing assets which seem to have made banks risk averse and induced them to reduce the supply of credit: under-capitalized banks have capital only to survive, not to grow.”

The impulse responses under REER endogeneity and exogeneity – or rather the differences between them – point strongly to the presence of an exchange rate channel of monetary transmission in India. Although this finding too is in direct conflict with that of Aleem's (2010), it can be attributed to the multiple differences between the two studies: sample period, for instance, and the use of different indicators of monetary policy. Alternatively, the finding can be read as a sign of improvement in the importance of the exchange rate channel of transmission in the country. Under exchange rate endogeneity, the decline in output gap following a surprise monetary policy contraction is sharper and its trough (-0.375%) both deeper and flatter in comparison to the case of exchange rate exogeneity (-0.3%). This is in harmony with conventional theory. When one turns their attention to inflation, however, one notices that it falls somewhat more softly under the assumption of exchange rate endogeneity. Still, this seemingly counterintuitive result can be reconciled by considering the strong presence of Fisher effect in the impulse response of the real effective exchange rate to an unanticipated positive shock in monetary policy: the former falls for the first six quarters (implying depreciation), before beginning to recover and rise above the pre-shock levels.⁹ A depreciation in the domestic currency makes imports costlier, allowing domestic producers to raise prices without jeopardizing their competitiveness against their international counterparts. This effect reverses some of the disinflationary/deflationary effects of the monetary policy shock observed under the assumption of exchange rate exogeneity, hence justifying the lower fall in inflation under the endogenous channel specification.

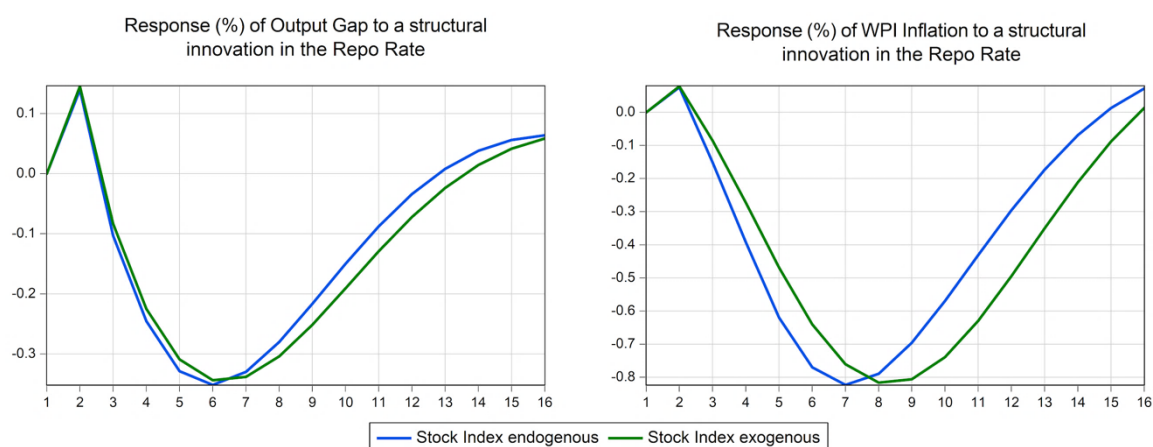
5.4 Asset price channel

Finally, cuts to the policy rates, and then in the lending and borrowing rates across the economy, make the purchase of assets such as real-estate and equities cheaper, leading to a rise in their demand. This boosts their prices. This in turn improves the market value of the wealth/net-worth of households and corporations – the owners of such assets – providing a nudge to their consumption and investment activities, respectively. In addition to this, higher net-worth also improves households' and firms' creditworthiness, allowing them to take on more credit and up their spending. This ultimately raises domestic output and, given slow supply adjustments and nominal rigidities, prices.

The graphs on the next page plot the response of output gap and inflation to a positive shock in monetary policy, for the same two cases as for the three channels above – the presence and the absence of the asset price channel of monetary transmission:

⁹ See Appendix Section 7.3.3.

Figure 5



Like in the case of bank credit, the impulse responses shown above highlight a lack of evidence of an asset price channel of monetary transmission in India. The response of output gap to a structural shock in the policy rate under the endogeneity and exogeneity assumptions are only “just shy” of being exactly alike, falling 0.35% below baseline before beginning to recover. Nor is the response of inflation all that different: it hits the same bottom (-0.8%) under both the models, though a quarter apart, and recovers similarly to pre-shock levels. In a nutshell, our finding of a weak presence of the asset price channel in India is consistent with that of Aleem (2010).¹⁰ The implication of this is that not only was the asset price channel (found to be) absent in the late 1990s and the early 2000s, but that even today it continues to only be weakly present.

A number of salient results about the transmission of monetary policy in India emerge from our study of the channels of such transmission: first, interest rates and exchange rates are two of the stronger among the four channels considered in this paper: that is, they enhance the (intended) impact of monetary policy on output and inflation; second, the importance of the bank credit channel has steadily waned in the wake of the country’s NPA crisis whilst the importance of the asset price channel continues to be absent from the transmission landscape; and third, the results from all of the eight of our VARs, as though in keeping with a worldwide tradition, expose the ‘price puzzle’ underlying the Indian macroeconomic data. Contrary to both theory and common-sense, output and inflation first rise after an unanticipated monetary tightening under each of the eight specifications, and begin to fall only after about six months. Although this result is unsettling, we find some reassurance in observing that inflation only begins to fall at the same time as, or after, the output gap; this is in harmony with economic theory. Monetary policy first affects aggregate demand, and hence output, and via that then transmits to prices. As for the puzzle, instead of being understood to mean that monetary policy contractions are initially inflationary in nature, it can be attributed to an “omitted variable bias”: that is, it must disappear with the inclusion of a list of such exogenous variables as interest rates in advanced economies and a proxy for global demand conditions, say total world exports. Since Aleem (2010) demonstrated this to be the case

¹⁰ He writes, “[These] results suggest that the asset price channel is not important in the transmission of monetary shocks to the real sector in India.

with India, and since the puzzle's presence anyway is a minimal detriment to the overall fabric of our study, we do not pursue it any further.

6. Conclusion

In this paper, we have demonstrated the Reserve Bank of India's key rate's optimality as a policy variable: in simple words, the repo rate predicts future fluctuations in GDP and prices – the two variables of ultimate interest to all central banks – better than not only the call rate but also the RBI's diverse measures of domestic money supply. This justifies the central bank's use of repo to guide the paths of output and inflation (and other variables of economic interest). Using a rich SVAR-X specification, we show how the Reserve Bank responds to unexpected shocks in these two macroeconomic aggregates – by jump-raising the repo rate and bringing it down slowly over the next several quarters – and this result is consistent with both economic theory and intuition. Coming at last to the channels of monetary transmission in India, here too we have arrived at a number of remarkable results that are perhaps worth reinforcing.

Among the four principal channels of transmission in the country, the interest rate and exchange rate channel are the strongest, whereas the once dominant bank lending channel seems to have broken down quite spectacularly in the wake of the NPA crisis in the Indian banking system. In addition to this, we also infer that the asset price channel still continues to be absent from the transmission landscape, though it is our belief that this may not in fact be the case: we believe, instead, that the nifty stock index is quite poor a proxy for capturing the so-called Pigou effect, and so that there is some scope for future research in investigating especially the concerned channel of monetary transmission in India. One could look to, for example, an index of housing prices which may serve as a better proxy to capture monetary policy's impact on the standard measures of wealth in the country.

In summary, one finding from our research that we believe is of immediate policy merit is the sudden and complete disappearance of the bank credit channel of monetary transmission in India. Until the same is taken care of, monetary policy's ability to guide growth and inflation in the economy remains limited by the absence of one of the most important channels through which it used to affect these variables. This need to address India's banking system's woes is accentuated when one considers how the Reserve Bank has had to lock horns with what has produced the worst economic downturn in the country: the coronavirus pandemic. The central bank has already spent what some economists would call a decade's worth of monetary firepower in containing its economic fallout, and the end of the virus is still not in sight. When the global economy emerges from what has come to be labelled as one of the worst humanitarian tragedies in history, the RBI will have not much space left before it joins other central banks around the world at the zero-lower bound. Naturally, then, to maximise the recession-staving utility of each basis point worth of rate cut, it will want to fix the now dysfunctional bank lending channel of monetary policy transmission. Of course, the central bank realised this some time ago and has already engaged the nation's banking system in a long-overdue process of balance sheet clean-up, but the problem remains far from resolved. And yet, for so dire the times already are, there is little merit in stirring more scepticism. We remain, therefore, hopeful.

7. Appendix

7.1 Unit root tests

Model fit <i>Variable</i>	Intercept only		Intercept with a trend	
	<i>Augmented Dickey-Fuller</i> <i>p-value</i>	<i>Phillips-Perron</i> <i>p-value</i>	<i>Augmented Dickey-Fuller</i> <i>p-value</i>	<i>Phillips-Perron</i> <i>p-value</i>
Output Gap	0.0291*	0.0092*	0.1157 (0.8531)	0.0442* (0.8531)
WPI Inflation	0.5329	0.1891	0.3524 (0.0228 [#])	0.2098 (0.0257 [#])
Repo Rate	0.1570	0.3035	0.2966 (0.2646)	0.5107 (0.3808)
Call Rate	0.0000*	0.0000*	0.0000* (0.0138 [#])	0.0000* (0.0138 [#])
Bank Credit	0.8080	0.3721	0.5209 (0.0208 [#])	0.2646 (0.0529)
REER	0.0000*	0.0404*	0.0002* (0.3002)	0.1548 (0.6350)
Stock Index	0.0056*	0.0127*	0.0298* (0.7513)	0.0573* (0.8380)

p-values of trend are inside parentheses

* indicates *rejection* of the presence of a unit root at 5% level of significance

[#]indicates presence of a trend at 5% level of significance

The lag lengths for the ADF tests were chosen in accordance with SIC

For the Phillips Perron tests, Bartlett kernel was chosen as the method of spectral estimation

Bank Credit, REER, and Stock Index are expressed in % annual growth

7.2 Breakpoint unit root tests

<i>Variable</i>	<i>Model Specification</i>	<i>Break Specification</i>	<i>Break Date</i>
WPI Inflation	Intercept only	Intercept	2017Q2
Repo Rate	Intercept only	Intercept	2019Q1
Call Rate	Trend and Intercept	Trend	2003Q3
Bank Credit	Trend and Intercept	Trend	2007Q1

The method of breakpoint detection was minimization of the ADF test's t-statistic

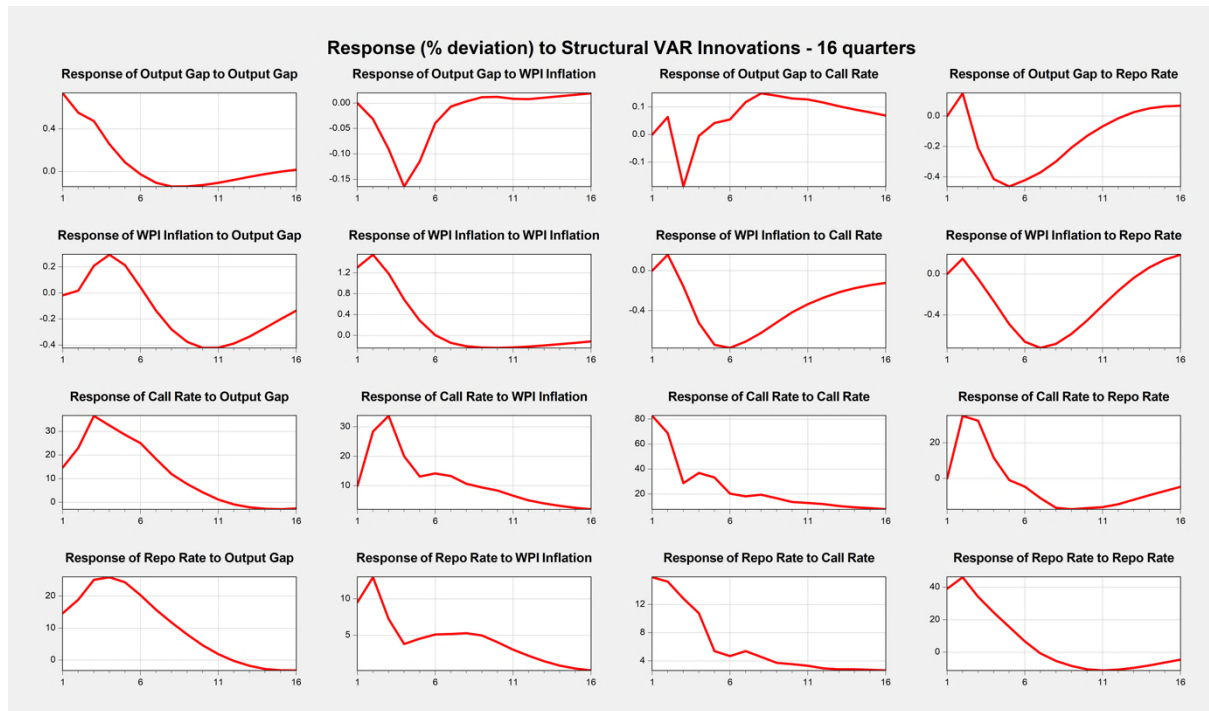
Lag lengths were chosen in accordance with SIC

Innovation outliers were chosen as the Break type

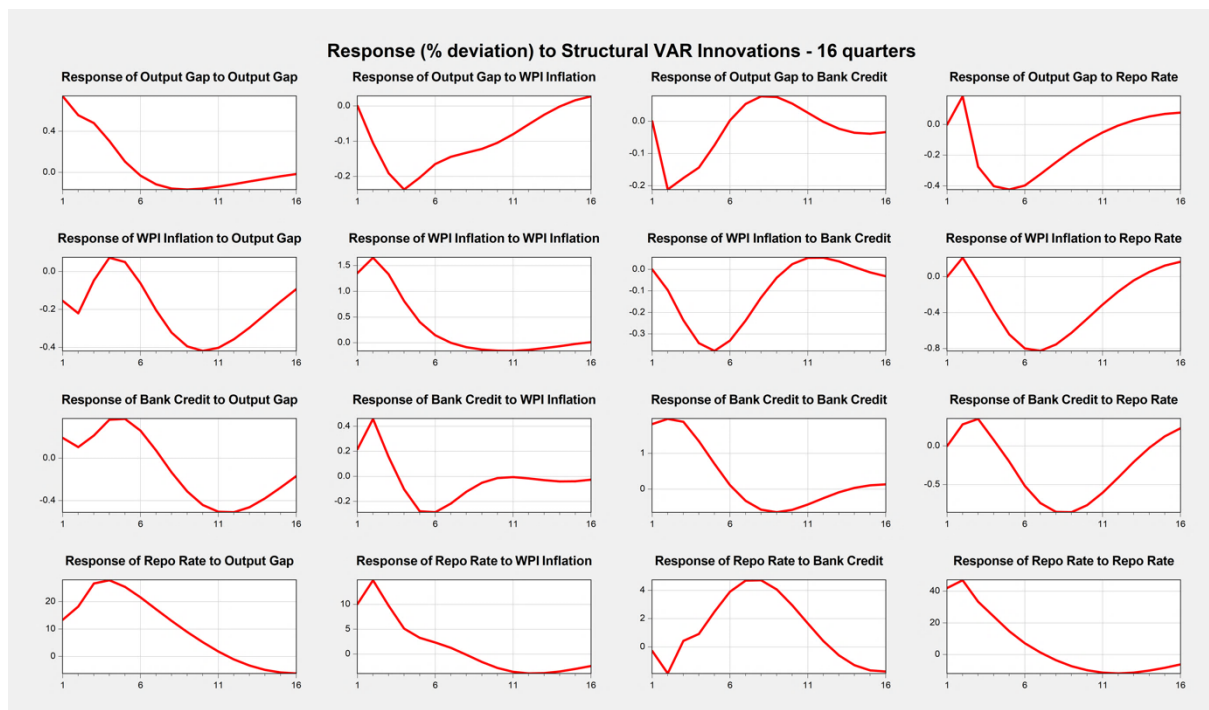
Bank Credit is expressed in % annual growth

7.3 Impulse Response Functions¹¹

7.3.1 Call Rate – Endogenous

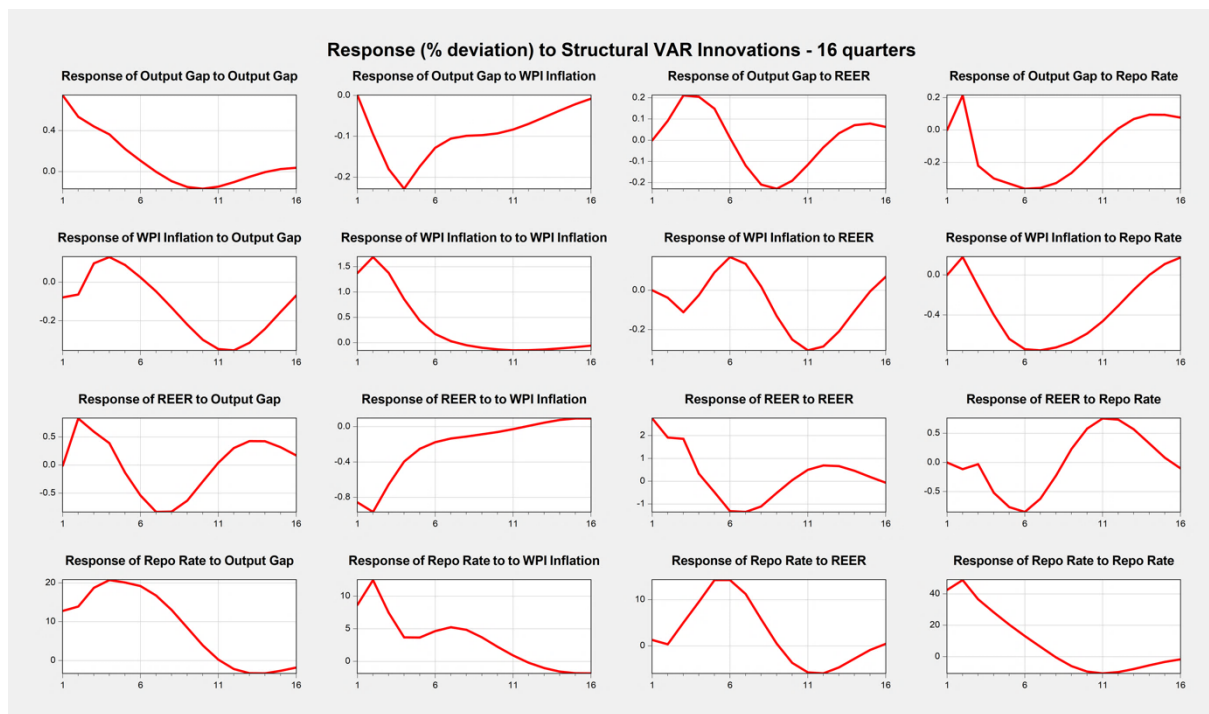


7.3.2 Bank Credit – Endogenous

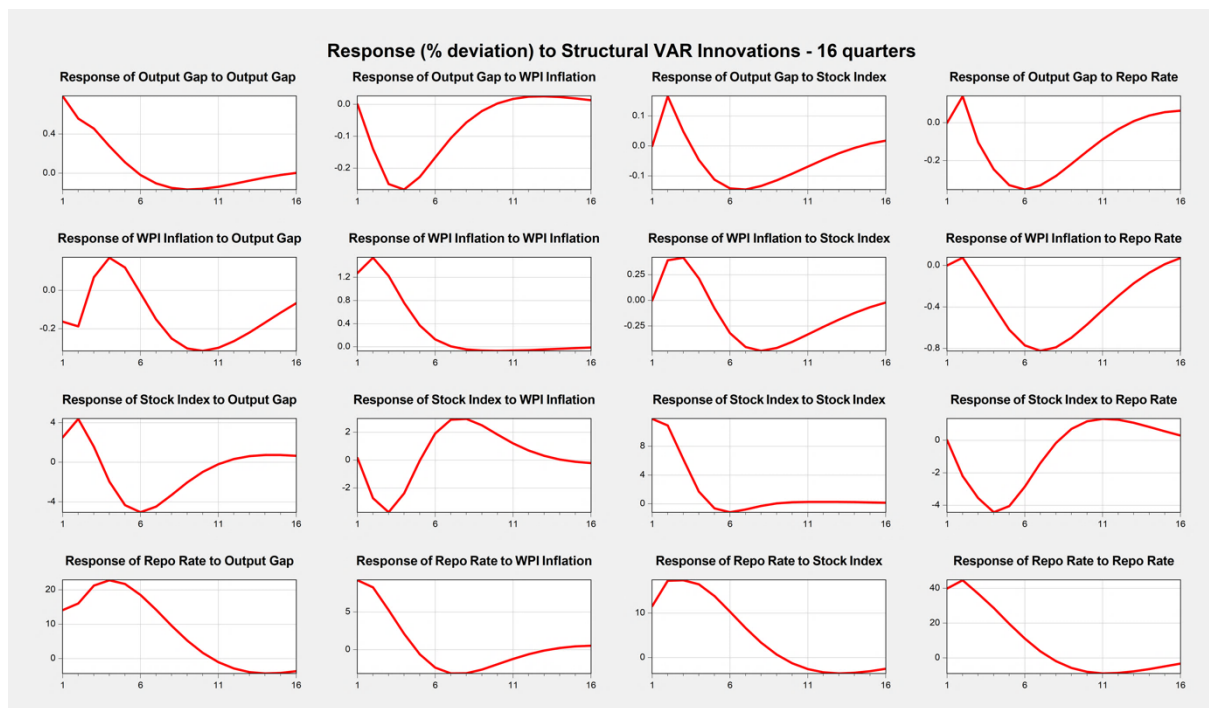


¹¹ For all of the impulse responses presented below, the left-axis for repo rate must be read in terms of “basis-points”; for the rest of the variables, it must be read in terms of “percentage points” as indicated.

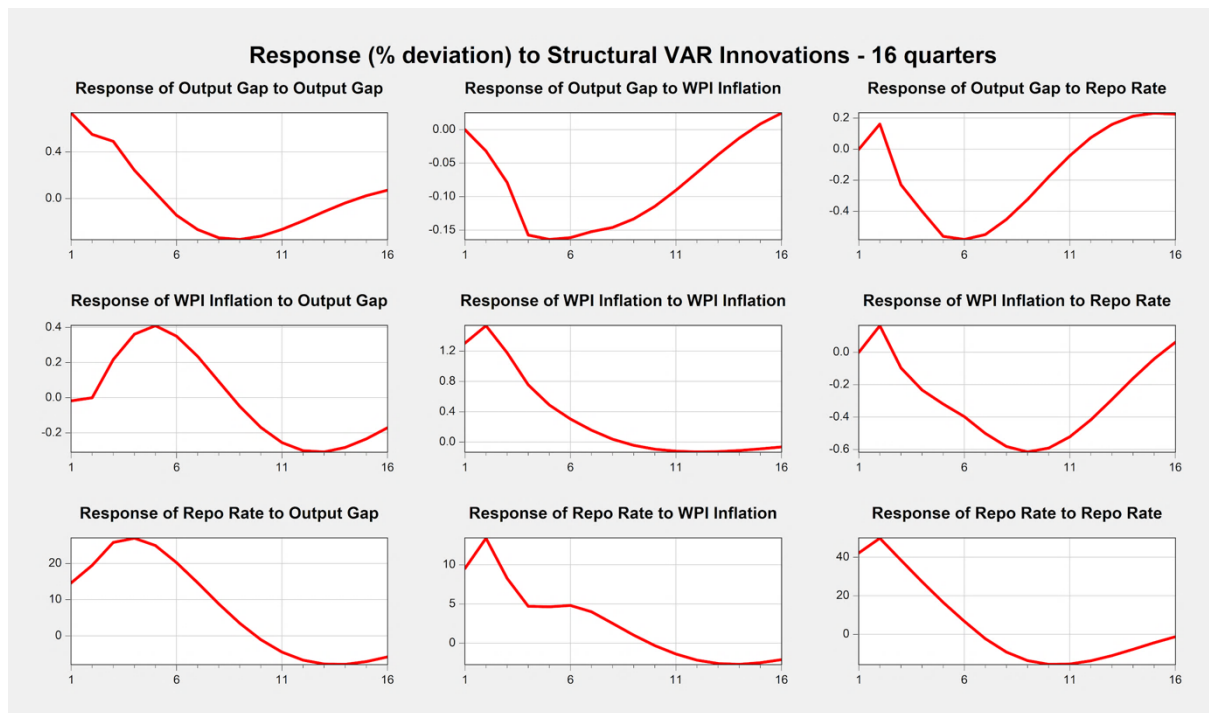
7.3.3 REER – Endogenous



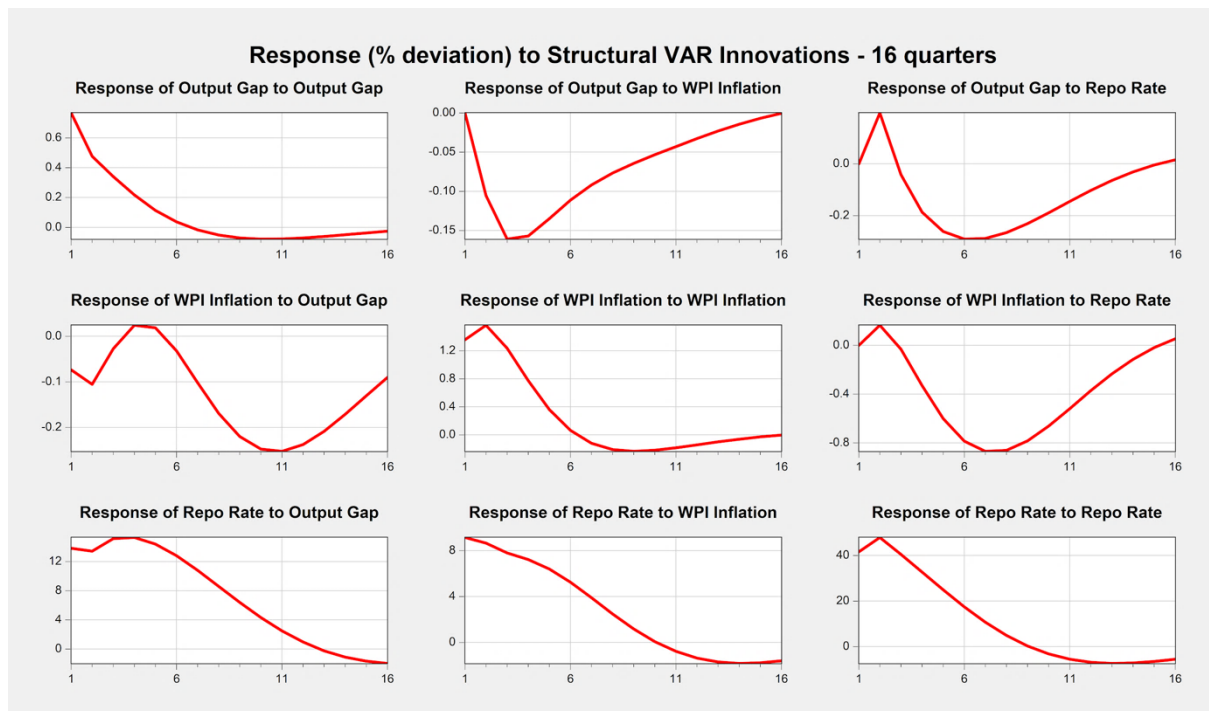
7.3.4 Stock Index (Nifty) – Endogenous



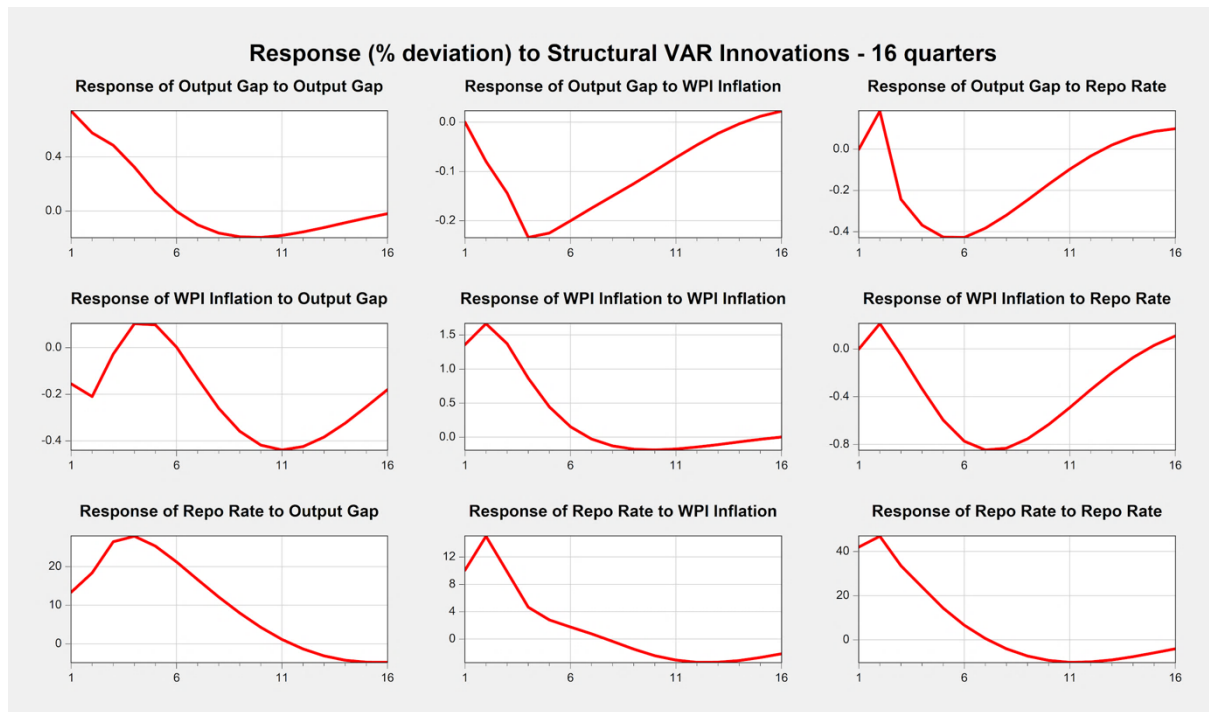
7.3.5 Call Rate – Exogenous



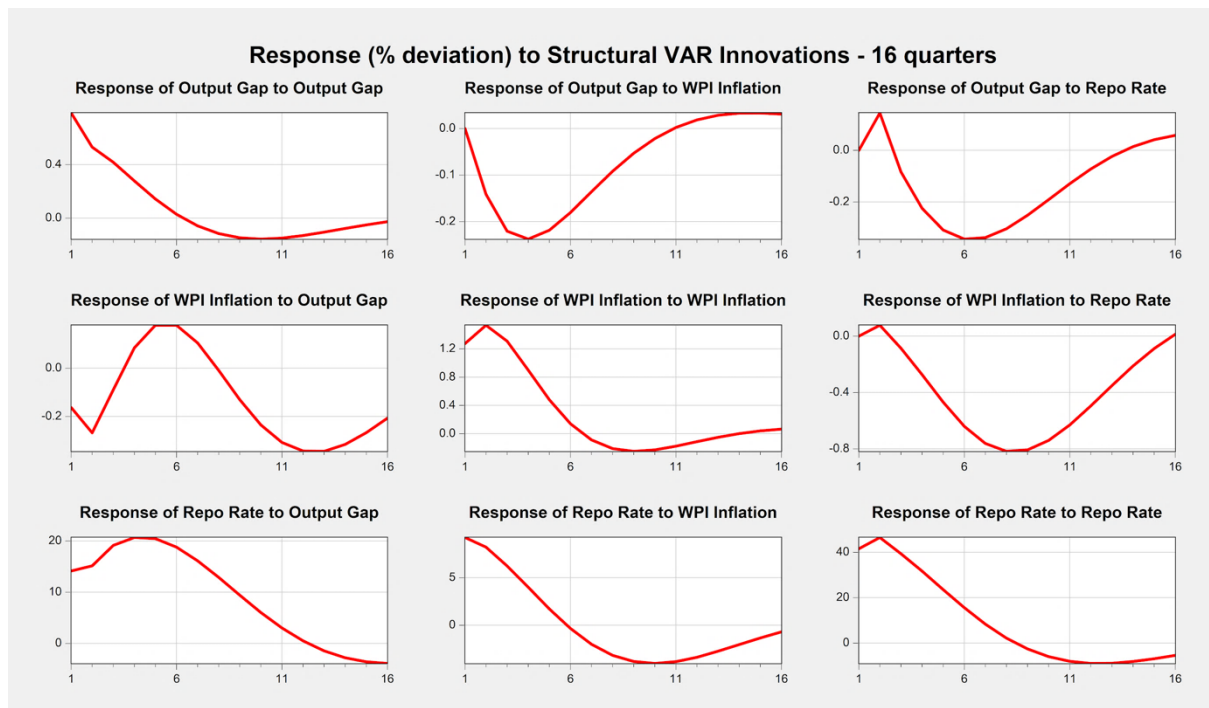
7.3.6 Bank Credit – Exogenous



7.3.7 REER – Exogenous

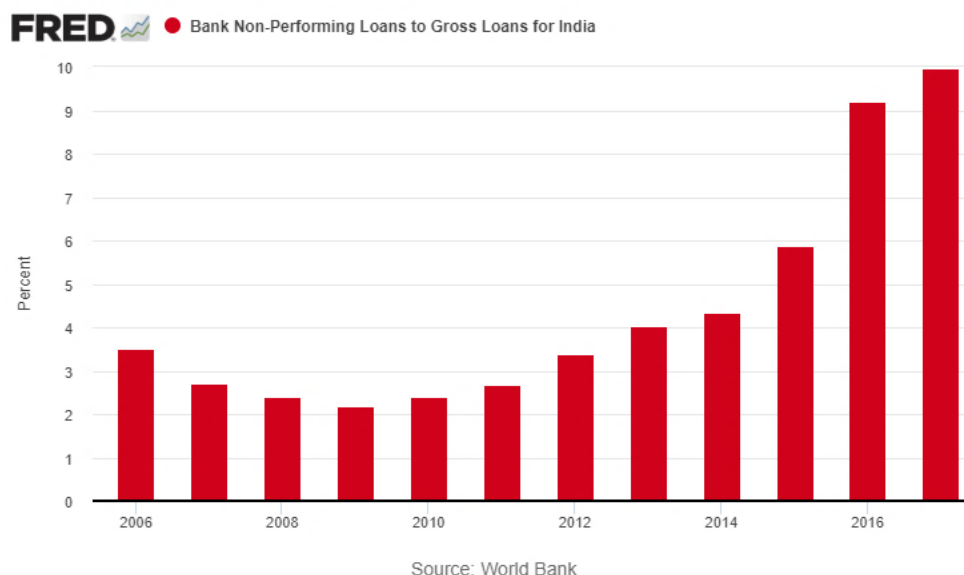


7.3.8 Stock Index (Nifty) – Exogenous



7.4 Non-Performing Assets Ratio for India

Source: Federal Reserve Economic Data (FRED)



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Economic Nationalism During the Pandemic

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Abstract

This paper attempts to evaluate the rising popularity of rightwing political standards in the backdrop of the Covid-19 pandemic. It relies on studies undertaken by eminent scholars to define economic nationalism and explain its sustenance in the emerging political and global situation. The cited article from the BBC¹ quotes that “the new global economic system brings huge benefits but also huge risks of contagion- both medical and financial”. This review examines this risk in the backdrop of rising nationalist and protectionist tendencies in major economies.

Economic nationalism is, simply, a prioritization of the state market over the global market, seeing out relative gains over mutual gains, thus establishing clear winners and losers in any bargain.

In the quest for sustenance, we see that economic nationalism is far from successful. Experts argue that the ideology is far from its prime and wouldn't hold ground in the current multilateral, interdependent world, where an evident prioritization of national interests over the common good would work against the party, especially when they are disadvantaged in the status quo.

The review concludes with the inferred insight that the need for multilateralism and the creation of an interdependent global village, founded on the principle of mutual gain and welfare for all, will definitely stand the test of time, given it manages the inherent risks and negate exploitative influences on the state.

Keywords: Economic Nationalism, Multilateralism, Sustainability, Pandemic, globalization

1 Bloom, Johny (2020)- Will Coronavirus reverse globalisation? <https://www.bbc.com/news/business-52104978>

1. Introduction

Economic nationalism, a term that slowly regained prominence in a rapidly closing up world, essentially presents itself as a variant of protectionism. Once proposed to actively shun foreign participation and imposition on newly independent nation states, its scope has now far receded, given the extent of interdependence between economies from the spread of globalization.

Pryke (2012) defines economic nationalism as “an ideology consisting of practices to create, bolster and protect national economies in the context of world markets”. This definition, theorized to include the history, the essence of ideology, and leaving space for any future modifications, is one of the best theorized definitions of the concept of economic nationalism.

In the said article, the author establishes that economic nationalism is a dated ideology, belonging to the time when active establishment of authority (economic and political) was a pre-requisite to the peaceful existence of newly formed nation states. The author reasons that the formative reason for nationalist economies, immobility of capital and establishment of authority are both irrelevant in today’s globalised world, and thus, as a natural consequence, economic nationalism loses prominence. The author underlines that the necessary backdrop for the overwhelming popularity of economic nationalism- when, in the early twentieth century, more and more nation states were declaring independence and coming out of colonial shackles, when national autonomy was more prized than any welfare from trade- is absent in today’s globalised and multilateral world.

Nevertheless, it is commonly observed that in any crisis situation, be it the bubble of 2008 or the recession of 2011 or the current viral spread, there is a lot of, mostly rhetoric, statements to lend assurance to the populace that their nation will be protected, even at the cost of others and recovery measures are mostly centred on protectionism.

Pryke (2012) quotes Anthony D. Smith, an ethno-symbolist’s explanation for the surge of nationalism in any crisis situation. Dr. Smith argues that as long as the ideas of nation and national identity are prominent, nationalism in its various forms, will endure. He reasons that the ever-widening scope of globalization threatens the prominence of national and indigenous identities, its subversion and smothering by globalization could be effectively exploited by politicians to create paranoia and a favourable vote base for the far-right.

2. Methodology

This literature review has attempted to analyse the sustenance of the far-right ideology of economic nationalism, in the backdrop of the recent prominent political atmosphere and the pandemic, which has cast pallor of suspicion on a ‘coming-together’ of any kind.

It addresses the following questions:

1. How is the far-right gaining prominence and how is economic nationalism helping the process?
2. Are these nationalist models of economics sustainable in the present world?

3. Is the reversal of globalisation a plausible outcome of the surge of nationalism, given the backdrop of the Covid-19 pandemic?

It answers them by following and inferring from studies and theories on related topics.

Ausserladscheider's (2018) thesis helps shed a perception on how the far-right manages to play to the emotions and insecurities of the populace to secure their vote base. The cited reference² article from Brookings' blog addresses the sustainability of nationalist models and Pryke's (2012) article on historic and economic contexts of the ideology proves with reason how a reversal is far-fetched, even with the fear mongering during the pandemic.

3. Results and Discussion

3.1 Political sustenance of the right wing

The first question that the review addresses is how the right wing manages to secure political prominence. Ausserladscheider (2018), in her study states that this might be because far right parties construct an interconnection between economic and cultural discourse. The study theorised two major reasons for the rise in favour of the right wing:

1. Economic insecurity that fosters public sentiment in support of isolationist, nationalist policies.
2. Cultural backlash or the "othering" narrative.

This theory has been validated by the common learning that economic instability is a perfect breeding ground for the far-right policies of isolationism, by emphasising on the 'national interests' narrative. The far-right's success comes from framing policies that integrate economics with nationalist sentiments.

The 'cultural backlash' part of the theory is more layered. While it gains favour as a venture to protect the indigenous, it has also been used as a poor excuse to further the interests of the powerful and suppress the powerless minorities within the 'culture'. The right vows to protect the powerful to keep the status-quo intact and justifies this as the will of the 'nation' whereas it is the will of the 'privileged'. The trigger that helped the surge in the political favour for the right can be traced to forward looking change and progressive integration and societal changes, as the right takes in the role of 'protector of culture and values.

Ausseladscheider's (2018) main contention is that these two components of economic insecurity and cultural backlash should not be looked at in dichotomy. The study establishes that these forces work in tandem with the rhetoric of the right. The economic insecurity feeds into the othering narrative and helps it gain prominence, thus giving space for a 'saviour' to step in and creates the perfect fertile ground for right wing politics.

² Soli's, Mireya (2020), The post covid-19 world: Economic nationalism triumphant?

<https://www.brookings.edu/blog/order-from-chaos/2020/07/10/the-post-covid-19-world-economic-nationalism-triumphant/>

3.2 Sustainability of the nationalist model in the present world

A cited article³ states the ‘increased risk of contagion’ as a side effect of globalisation. The spread of the pandemic- its scale and rapidity, stands testimony to the truth of this. It has put most economies in isolationist courses, with the chain of lockdowns, sending the world into quarantine and admitting the global economy to the ventilator.

The earliest worries about economic repercussions of the pandemic started with the collapse of the supply chains and a predicted recession with fall in supply. The plans to shift operations to havens closer home have fallen flat, mainly because of the huge costs associated and the impracticality in transporting raw materials over such distances.

Experts, though, suggest that the outbreak has exposed more than faulty supply chains, overly reliant on a single entity. It has hinted at the possibility of restructuring of the health infrastructure, more equitable lifestyle conditions, where children wouldn’t suffer because education was in their ‘unaffordable bracket’.

Vaccine diplomacy that nation states have been following is another indicator of how only globalisation and interdependence will see us through the crisis. The now popular slogan “we aren’t safe if everybody isn’t safe” is a testimony to the need for global cooperation in vaccinating and immunising the world’s population.

The COVID-19 outbreak has also proven that inward looking, limiting models that argue for a gain at the cost of another have a bleak long run existence. The global cooperation on aid measures and vaccine distribution is ample evidence on why isolationist policy seems best suited for a short run, knee-jerk political response and cooperation and planning is indeed required for a smooth sailing.

3.3 Reversal of globalisation – rhetoric

Though the paper has been covertly pessimistic about a heads-on reversal of globalisation, there remains scope of fear. As a quote from *The Economist* (2009) echoes “... when ‘nationalism’ is on the march, every commercial logic gets trampled underfoot”, possibilities of an emotional bailout, especially in a politically charged environment, cannot be ruled out.

In his article, Pryke (2012) argues that although occasional surges of nationalism are warranted, they will, invariably, pass. In a globalised economy, recurrent rise in trade barriers and import tariffs, the only recourse available to states, are not effective. The varying degrees of power also make it difficult of an individual state to make a concrete impact. The author lists several reasons to prove that the fears of a reversal are unfounded:

1. ***Integration and therefore interdependence of economies:*** There can be no good that is fully indigenous. The flow of ideas, capital and information, enabled with greater ease with improved

3 Bloom, Johny (2020) - Will Coronavirus reverse globalisation? <https://www.bbc.com/news/business-52104978>

technology, has not just increased quality of life and created economic flows, it has also limited the scope for alternatives, because of the scale of its spread.

2. ***Complexity of the world economy:*** The interdependence factor feeds into this. Capital flows and investment boosts in the form of MNCs spreading operations across the globe, blurs borders of ownership and rigidity of nationalities. The recognition of culture as an ever evolving identity plays a further role in preserving the intricate complexities of everyday life.
3. ***Extensivity of world markets:*** The market has been redefined as an interaction between buyer and seller, without regard for the physical requirements. In such a scenario, where loyalties and boundaries are ever shifting, actions taken in isolation might have larger than intended consequences, especially if the parties involved have their power equation in imbalance.
4. ***Redundancy of existing models of nationalism:*** Economic nationalism, like most right-wing policies, work only if power is concentrated. Such a political setup has the potential to easily degrade into fascism and be counterproductive to any national interest which was to be protected.

All the stated reasons give enough confidence to believe that the surge of economic nationalism in the 20th century was more of an aberration, a product of the times of increased instability, economic crisis, nationalist movements and enlarged states.

The author argues that a possible way out of this instability and unforeseen future is the reliance and adherence of tried and tested models of economic diversity to further global trade and cooperation, stress on the importance of effective planning and regulations. Protectionism might work, but only as a launch pad to a globalised future. A return to the twentieth century ideals is unwarranted and counterproductive. Global trends also show an urgency to return to the old normal of a globalised and connected world.

4. Conclusion

The paper aims to examine the possibility of a resurgence of the policy of economic nationalism, in the backdrop of the COVID-19 pandemic. It draws on the pre-published works to infer that the possibility of an isolationist future is bleak.

It examines three major aspects of the possibility of resurgence- the reasons for the political favour of the right wing, sustainability of nationalist economic models and if a reversal of globalisation is realistically possible, given the setting of COVID-19 pandemic.

The reasons of the political favour were summarised as the economic insecurity and cultural backlash, which provide fertile ground for exploitation of sentiments in favour of the right wing. Sustainability was a stretch in the current premise of globalisation, given current efforts for mobilising health care infrastructure to reach the needy, and global cooperation for the vaccination drive, and the possibilities of a heads on reversal was proven to be non-existent, even with the pandemic. The pandemic could be

bracketed as any other crisis, which raises insecurities, thus giving a base for the right wing. We conclude at the optimistic note that there is only a pessimistic possibility of a revival of nationalism.

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Assessing the Effectiveness of Online Learning Methods: University of Delhi

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Abstract

The unexpected lockdown announced by the Government of India on 21 March 2020 with an aim to control the COVID-19 pandemic has had several effects on educational attainment of school and college going students. In this paper, we examine the effectiveness of teaching and preparedness of the stakeholders of the University on Delhi, and the impact of the lockdown on undergraduate study of students currently enrolled in the University. Our analysis draws on a regression study, which uses the data of 181 undergraduate students collected through an online survey. We find that average student participation and teaching regularity drops significantly in an online setting. From the regression model established, efficient curriculum coverage implies a reduction in the probability of adoption of ineffective online methods by 25 percent. A majority of students would prefer on-campus classes, which throws light on the efficacy of existing educational infrastructure.

Keywords: COVID-19, Lockdown, Online Learning, University of Delhi

1. Introduction

The Coronavirus Pandemic has forced the education sector to move entirely to an online setting without a warning. Although the teacher quality, course requirements and material remain identical in an offline and online setting, noticeable differences arise among the two, which is bound to have effects on class participation as well as class performance.

Studies conducted on classroom participation of students in each of the two settings reveal interesting insights. Galyon, Heaton., Best, et al (2015) studied group cohesion, class participation, and student performance in a physical classroom as well as a hybrid setting (which included online teaching and physical examinations). The study found that participation in both settings was high, but group cohesion

and student performance were significantly lower in a hybrid setting. Despite identical course requirements, the participants favored a conventional classroom over a hybrid one. Caspi, Chajut, and Saporta (2008) found certain gender differences in participation in the two modes of teaching, where men were more interactive in a physical classroom setting whereas women were more active in participating through written communication in an online setting. Their study also concluded that all in all, an online environment was not conducive for either gender. Within the context of COVID-19, the sense of isolation and extreme individualism for a new online learning community cannot go unnoticed. Community based learning outcomes can be vastly different with the mode of instruction (McInnery and Roberts, 2004). These outcomes are also influenced by the impact of this transition on students' mental health and anxiety levels, which have heightened due to technical issues, changes in daily responsibilities and routine, and academic disruption from the usual (Cao, 2020) However, there is a dearth of studies to measure the effectiveness of a sudden transition to the online mode of teaching, forced by the pandemic, in the University of Delhi.

The University of Delhi is a collegiate public central university which witnesses students from diverse backgrounds each year. It offers a plethora of courses, such as language courses, arts courses in subjects including, but not limited to Philosophy, Psychology, Economics, History, Geography, Political Science, Sociology and Journalism, and commerce based courses such B.Com, Business Economics and Business Studies. These majors contain little to no practical elements, and can have a somewhat smoother transition to an online platform. For subjects such as Mathematics and Statistics, an online transition is less feasible, but possible with the proper tools such as an online interface to type mathematical equations and formulae. However, most other science subjects including but not limited to Applied Science, Biomedical Science, Botany, Chemistry, Physics, Zoology and Radiography require exposure to experimental lab work and self-practice of the same. For subjects such as Computer Science, Fine Arts, Music and Dance, it is important for students to have the required tools such as software compatible computers along with required software, paints and canvas, musical instruments, and an open space to practice, as these components form an integral part of their course learnings. Subjects such as Physical Education, Vocational Studies and Social Work also struggle with similar issues. Apart from a diverse array of subjects, regional differences among students impact their learning outcomes, as the problem of access to these online facilities comes into picture. While internet penetration is low in the country, even within the internet using community, there are several other considerations that limit proper interaction and access to the various facilities offered. For instance, lower socio-economic status as compared to fellow classmates can hinder one from using their camera or speaking out in class, and can thus get sidelined and lose the confidence required for routine participation. (Varyani and MS, 2020)

In this paper, we shift the attention to analyzing the perspective of undergraduate students of the University towards pre and post pandemic teaching effectiveness and class participation. The main contribution of this paper is to assess the participation of students in current times along with measuring the effectiveness of online teaching and preparedness in handling the transition to an online teaching environment. This paper is the first step towards acknowledging the problems in the e-learning process, which highlights how this seemingly progressive transition to online leaning might, in reality, be a move that takes us back insofar as gender, regional, and income inequalities are concerned.

2. Methodology

2.1 Data Collection

Primary data was collected via an online survey and circulated among students and peers using social media platforms such as WhatsApp and LinkedIn. The survey was split into two questionnaires, each serving a pool of students and teachers. The questions were carefully designed for students to emphasize on environments before and during the lockdown using a linear scale of attitudes and agreement:

1. Basic description of college, course and year of study
2. Number of relevant technological devices owned and family members who use them
3. Pre-lockdown –
 - a. Participation in the classroom
 - b. Quality of teaching methodologies
 - c. Effectiveness of in-person classes
4. Quarantine –
 - a. Efficient curriculum coverage
 - b. Teaching regularity
 - c. Teaching methods
 - d. Participation in the online setting
 - e. Effectiveness of administration grievance counselling
 - f. Perception on online classes as a permanent substitute
 - g. Expectations of a future culture of education
 - h. Overall effectiveness of Online Classes

Other questions of interest included the merits and demerits of using online methods and possible health concerns, both physical and mental. A crucial objective of designing the survey for teachers was to attempt an assessment of personal attitudes towards the online learning culture using qualitative, anecdotal comments. Apart from these comments, other important questions included were the following:

1. Rating personal comfort with regards to using digital platforms
2. Effectiveness of communication received from administration and grievance counseling system
3. Issues faced with using online methods
4. Views on preparedness of students for examinations
5. Expectations of future education culture
6. Overall effectiveness of online classes
7. Comments on a desired course of action to conduct semester examinations

Analysis of collected data includes a descriptive summary along with inferential statistics, and a Multinomial Logistic Regression Model fitted for the student sample using Python and Microsoft Excel. Although outdated, Joanne Peng, et al, (2002) present compelling presence of logistic regression models in higher education research. We use similar methodologies in extant literature with emphasis on reader sensitivity vis-à-vis the sophistication of the methods used.

a. Theoretical Construction

Inferential Analysis of the data involved assessing sample means of Participation in learning before and during the lockdown, under a null hypothesis that there is no change in average participation of students over the course of classroom teaching and online platforms, as stated below:

$$H_0: \mu_1 - \mu_2 = 0$$

(No change in Average Participation)

$$H_A: \mu_1 - \mu_2 \neq 0$$

(Shift in Average Participation over the population), where

μ_1 = Average Participation before the lockdown

μ_2 = Average Participation during the lockdown

Various factors that shall have a hypothesized effect on the sample, such as stratification of respondents with respect to course of study, college, and year of study, personal preferences over the college attended, as well as financial and educational infrastructure of individual institutions concerning the objective of the study were not implicit in analysis owing to constraints of data collection brought on by government regulations of strict quarantine and social distancing, as an offline study of the aforementioned would be more effective. Said constraints also lead to limited reach of the survey among the students of the University, raising questions about the sample chosen being truly representative. Thus, we do not have any assumed or known population variance of the variable for the hypotheses above. A Student's t distribution was used to formulate the test statistic, with respective sample means as unbiased estimators of the variable under study, i.e. Participation.

Regression Analysis as a Multinomial Logistic Model is made using Online Effectiveness as the dependent variable. The ordinal nature of this variable is assumed to have equal placement of the response categories and treated as nominal. Ordinality in our dataset aids our findings as we do not assume cardinality (McCullagh, 1980). Independent variables are summarized below:

1. Curriculum – Efficiency of curriculum coverage during the lockdown
2. Regularity – Regularity of teaching during the lockdown
3. Participation – Student participation using online methods
4. Grievance Counsel - Effectiveness of administration grievance counselling
5. Future Culture - Expectations of a future culture of education, treated
6. F, as a Dummy Variable for Future Culture - 1, if “On campus classes”, and 0 Otherwise

The model used is a generalization of logistic regression in multiclass problems, where the dependent variable is categorically distributed with more than two responses as is applicable in this study. The model predicts the probabilities of these categories, initially using a linear predictor function comprised of regression coefficients (weights) and respective independent variables

$$\text{score}(X_i, k) = \beta_k \cdot X_i, \text{ where}$$

X_i is the vector of explanatory variables describing observation i , and β_k is a vector of weights associated with the variables, and the score is associated with assigning observation i to category k . For all i ranging from 1 to N , there exists a set of M explanatory variables $X_{1,i} \dots X_{M,i}$ and a dependent variable Y_i with k possible responses, assigning each with a number from 1 to K .

To arrive at the multinomial logistic regression equations for K categories, $K-1$ equations are formulated with one response category of Y_i as the pivot, or reference category, and the remaining $K-1$ outcomes are individually regressed against the pivot. Thus, we have the following relative probabilities:

$$\ln \frac{\text{Pr}(Y_i=1)}{\text{Pr}(Y_i=K)} = \beta_1 \cdot X_i$$

$$\ln \frac{\text{Pr}(Y_i=2)}{\text{Pr}(Y_i=K)} = \beta_2 \cdot X_i$$

.....

$$\ln \frac{\text{Pr}(Y_i=K-1)}{\text{Pr}(Y_i=K)} = \beta_{k-1} \cdot X_i$$

Exponentiation of the equations above and solving for individual probabilities yields

$$\text{Pr}(Y_i = K - 1) = \frac{e^{\beta_{k-1} \cdot X_i}}{1 + \sum e^{\beta_k \cdot X_i}}$$

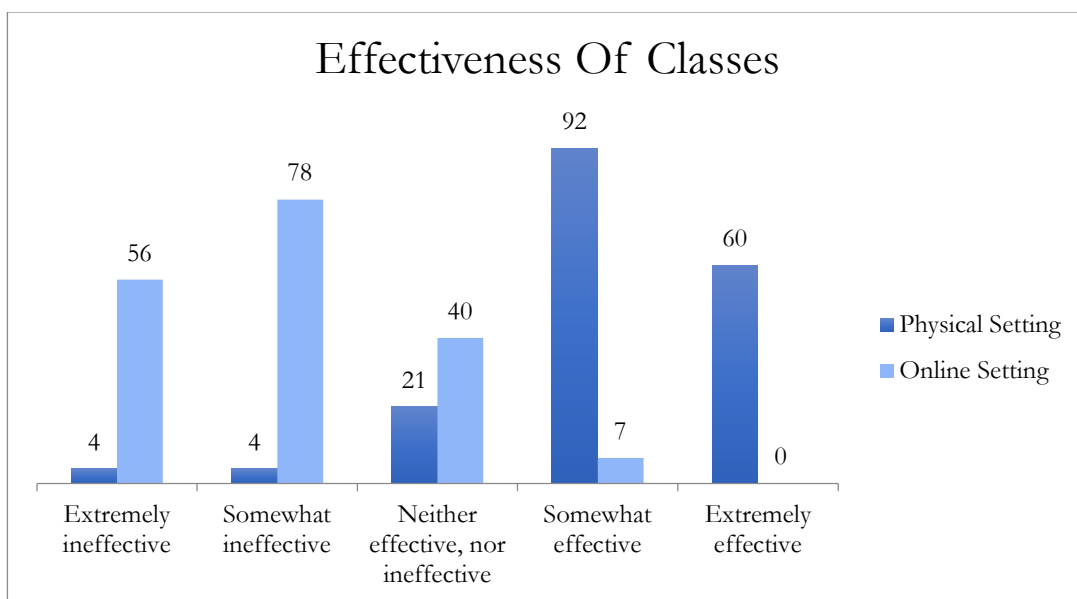
The sample was split into individual training and testing data sets to polish the regression model. A confusion matrix was formulated to obtain parameter counts such as true positives and false negatives. Accuracy, Recall, and Precision of the model were evaluated using the matrix.

3. Results

Descriptive (Annexure 1 for complete set of responses)

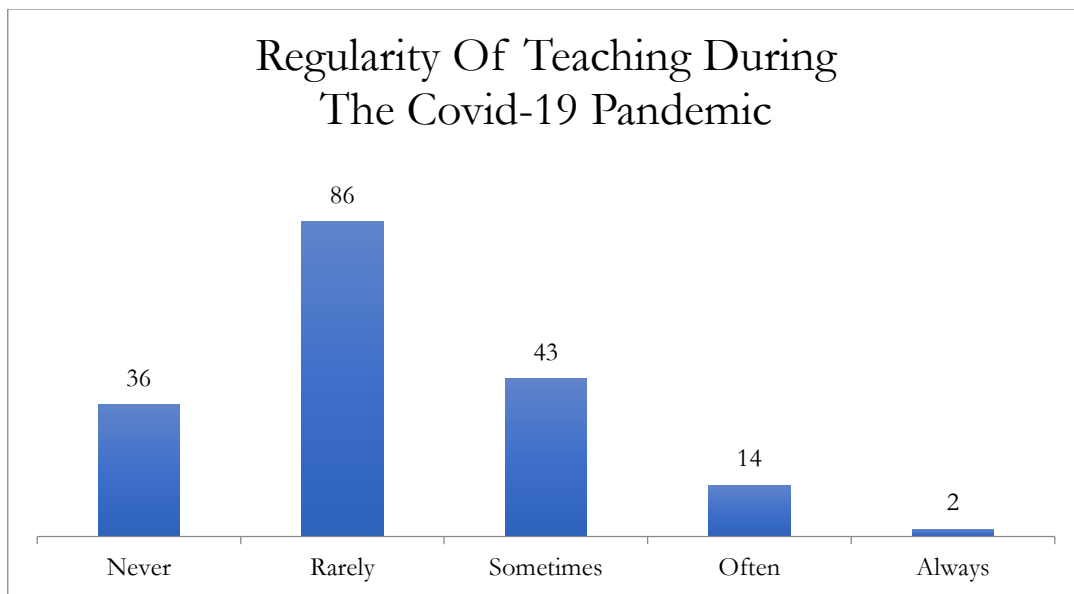
1. **Overall Effectiveness:** Average response of effective learning across the two periods shifts from “Somewhat Effective” (sd = 0.85) to “Somewhat Ineffective” (sd = 0.86). Regression results described below expand on the same.
2. **Participation:** Modal responses from classroom to lockdown conditions changed from “Somewhat Attentive” to “Somewhat Inattentive”, indicating a decline in attention span. Testing the hypothesis of unchanged average participation revealed high significance with reasonably low probability ($t = 8.712$, $p \sim 0$). Participation has significantly reduced due to a shift from pre-lockdown to online learning methods.

Figure 1



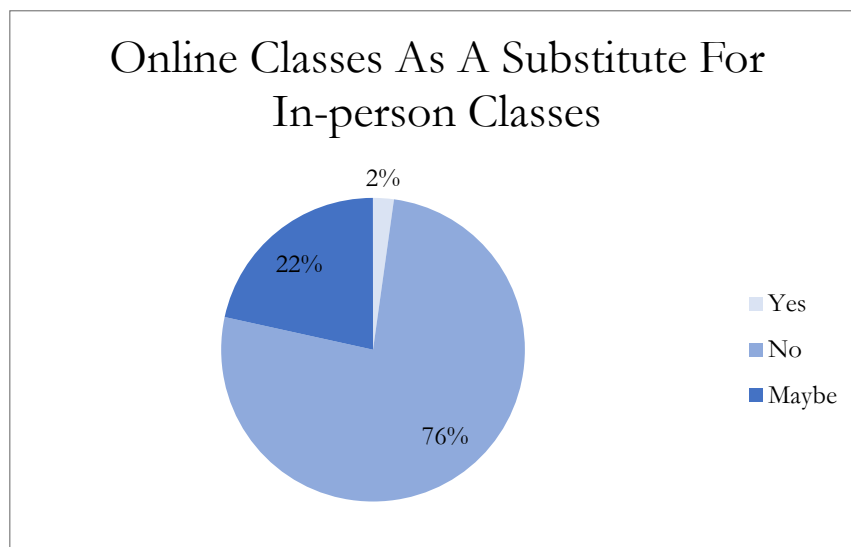
3. **Curriculum Coverage:** A majority of respondents agree with the absolute ineffectiveness of curriculum covered during the lockdown, which also conforms to a low frequency in the regularity of teaching using online methods as opposed to classrooms ($t = 13.25$, $p \sim 0$).
4. **Teaching Methodologies:** A majority of lessons conducted are through assignments and projects, followed by self-compiled notes by the instructor and live lectures on online video conferencing applications.

Figure 2



- 5. Preferences:** 76 percent of respondents do not prefer online learning as a substitute for classrooms, and about 59 percent would like on-campus classes in the future.
- 6. Features of online learning:** Students agree on the characteristics of convenience (42%) and self-paced learning (36%). Respondents find difficulties in online methods with respect to a lack of interaction (70%) and issues with network and connectivity (60%). Responses also conformed to various health concerns, such as strain on eyesight (74%), headaches (53%), and physical inactivity.

Figure 3



Regression (Annexure 2 and 3 for the complete model)

The model predicted log odds coefficients for four regression equations, with the category “Extremely Ineffective” of the dependent variable, i.e. Online Effectiveness as a pivot. The regression equation for the probability of choosing “Extremely Effective” relative to the probability of falling in the pivot category is as follows:

$$\ln \frac{\Pr(Y_i = \text{"Extremely Effective"})}{\Pr(Y_i = \text{"Extremely Ineffective"})} = -0.9236 (\text{Curriculum}) + 2.124^{**} \\ (\text{Regularity}) + 0.8131^*(\text{Participation}) + \\ 1.4717^{**} (\text{Grievance Counsel.}) + 2.8673^{**} (F)$$

*p<0.1

**p<0.05

An increase in participation and regularity increases the relative odds of Extreme Effectiveness by as much as 2 (~2.254) times and 8 (~8.364) times respectively. Effective grievance counselling raises the same odds by 4 (~4.356) times. Falling in the pivot category (Extremely Ineffective) reduces by 25 percent with an improvement in curriculum covered, as indicated by Marginal Effects calculated using the average of effects at each observation. Grievance counselling reduces the same probability by about 11 percent. The confusion matrix to assess the accuracy of the model shows precision as high as 72 percent and recall as much as 64 percent.

Figure 4: Confusion Matrix

Note: The diagonals represent accurate predictions.

0: Extremely Ineffective

4: Extremely Effective



4. Discussion And Conclusion

Primary data collection from teaching staff ($n = 11$) reveals unanimous agreement on the lack of interpersonal connect with students to keep up with the overall progress of lectures imparted. Concerns are raised with respect to the nature and fairness of assignments and internal evaluation conducted, often as a proxy for curriculum coverage. Flaws in the evaluation aforementioned indicates a lack of uniformity to assess skills and preparedness of the student. Teachers report a consistent pattern of using unfair means to submit assignments and classwork, which leads to aggressive free riding. Comments recorded reflect a lack of institutional support as “teachers are left at sea to devise their own”.

A two-way feedback expected to be facilitated by the administration is absent, ignoring crucial stakeholders. Concerning terminal semester examinations of the senior (graduating) Class of 2020, responses are streamlined toward an opposition of online methods, agreeing on past performance/internal assessment evaluation, postponement of examinations, or using conventional offline methods in differed periods with groups of candidates. The results enumerated above do not bear much significance due to a small sample size and lack of representation, but the conclusions drawn upon closely match the response set of students with respect to the agreeability of online learning methods independently employed in a state of haste.

The ever-present dissatisfaction with online learning is multifaceted. Social, pedagogical, and technical issues for the instructor can be solved with a domain of administrative/back-end support, along with facilitating a feedback loop with the learner, who faces issues broadly categorized in the area of knowledge generation and absorption, applied aptitude, and collaboration. A fragmented approach to continue teaching by instructors of the University is independently organized at present, with virtually no platform to assess any measurable outcomes of the preparedness of the student with respect to terminal examinations. The current pandemic shall lead to long term sustained efforts that restrict students to resume back to physical classroom settings. Hence, at this point, we might benefit from further research on the assessment of accessibility and robustness of a digital infrastructural network available to the undergraduate students of the University. It is further recommended to assess the state of gender disparities among institutions, in terms of change in enrollment rates, which might be arising in the lockdown owing to households with limited resources.

The commencement of a portal to conduct Online Open Book Examinations of the graduating class has received a less than lukewarm reception, which also opens a discussion on logistical capacities to manage such a behemoth task of evaluation. However, it must be of utmost importance to initiate the development of a common portal that also digitizes up-to-date learning resources and reading material for the upcoming semester. With a complete veil on measuring the participation and knowledge gained by the student, apart from the adjustment of curriculum according to the viability constraints posed by online methods, instructors must also employ collaborative, group activity oriented, and application-based pedagogies to engage the (virtual) class. There already exists a body of literature on assessment in an online setting that has arisen owing to the gaining popularity of distance learning and online courses emerging across the world. For instance, Kearns (2012) has investigated assessment methods used by

instructors of several online courses alongside challenges associated with it. The effective practices suggested after studying the experience of the instructors and responding to the challenges identified in the study can be a useful starting point to diversify the assessment method in order to provide maximum benefit and transmission of knowledge of the course content.

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Annexure

1. Descriptive Statistics

Figure 5

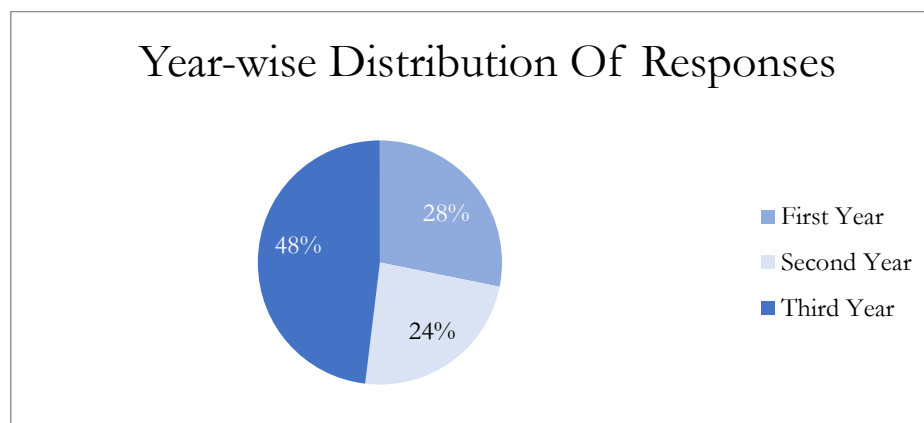


Figure 6

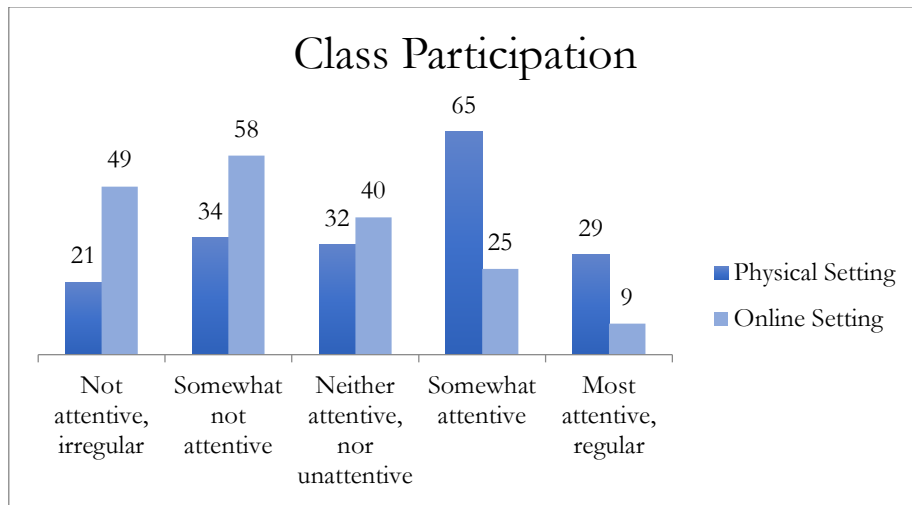


Figure 7

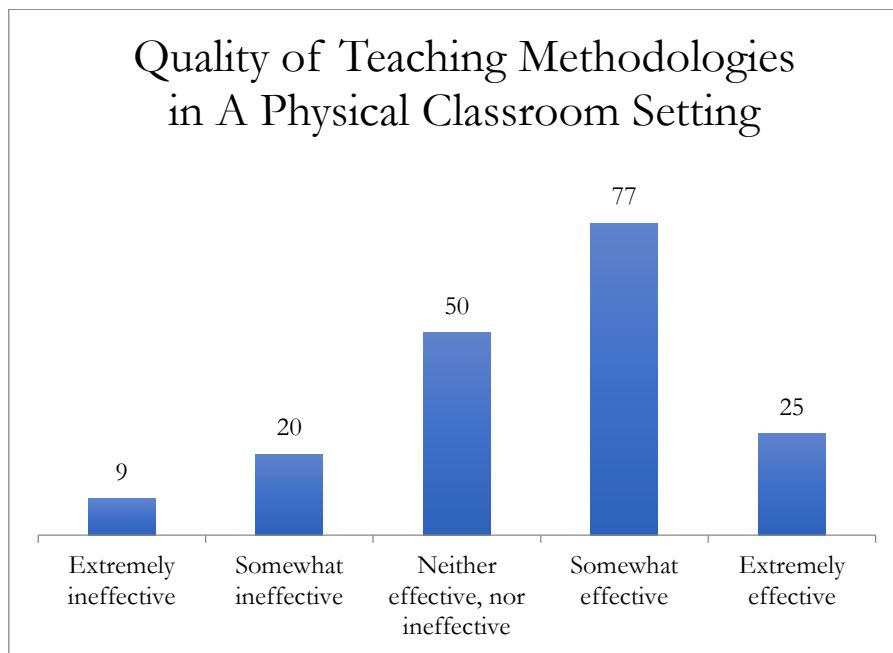


Figure 8

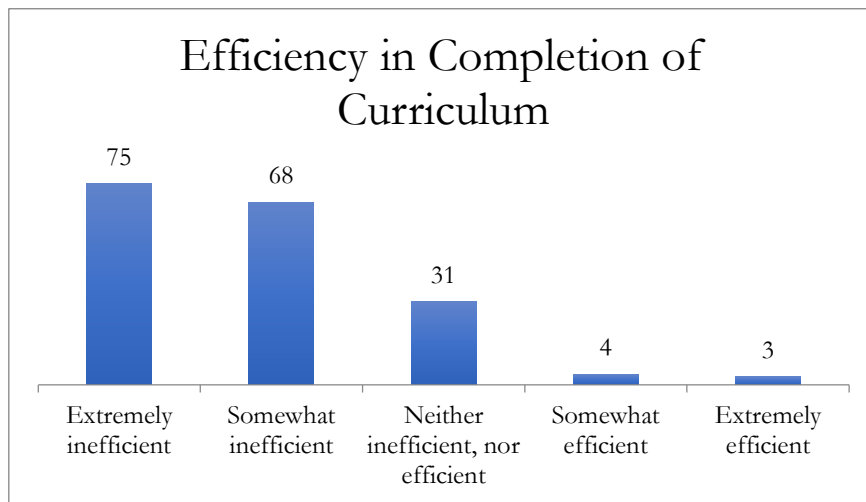


Figure 9

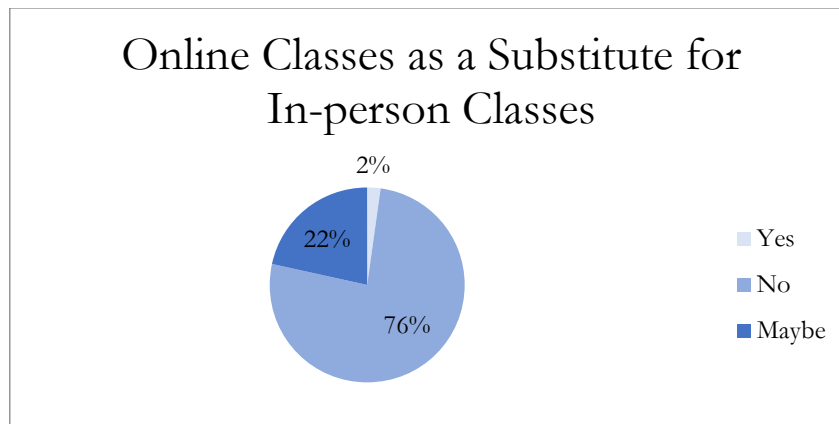


Figure 10

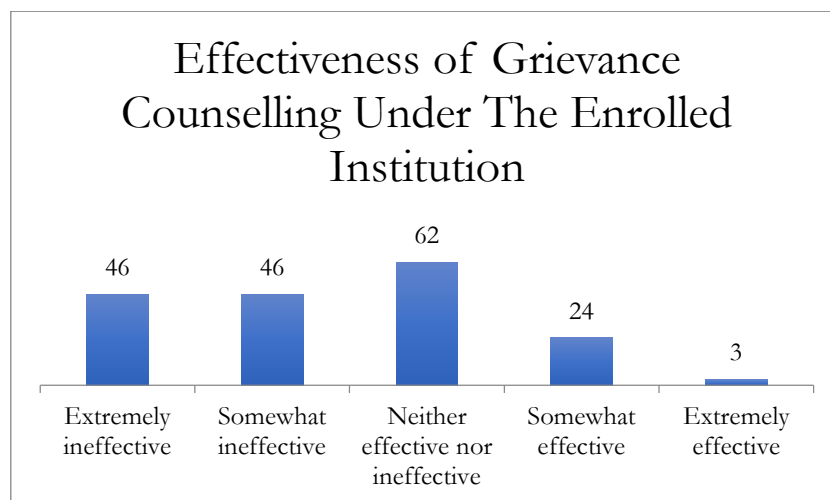


Figure 11

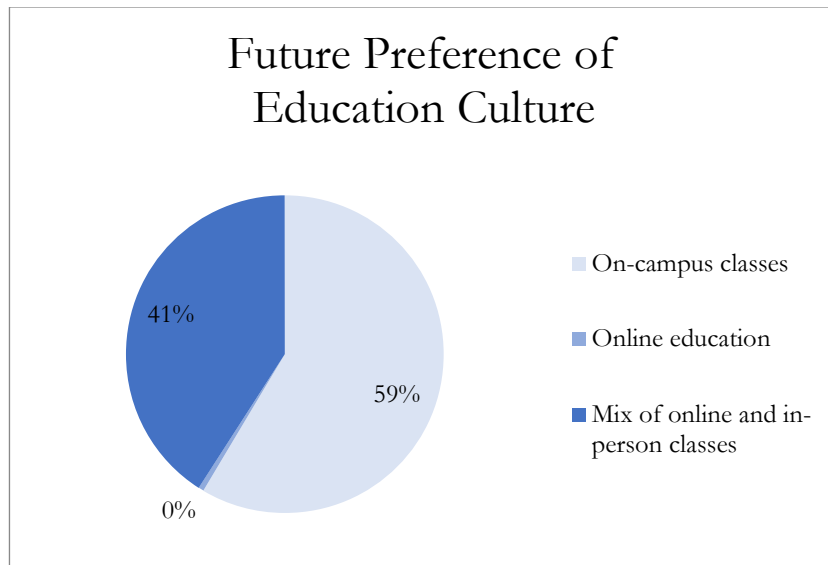


Figure 12

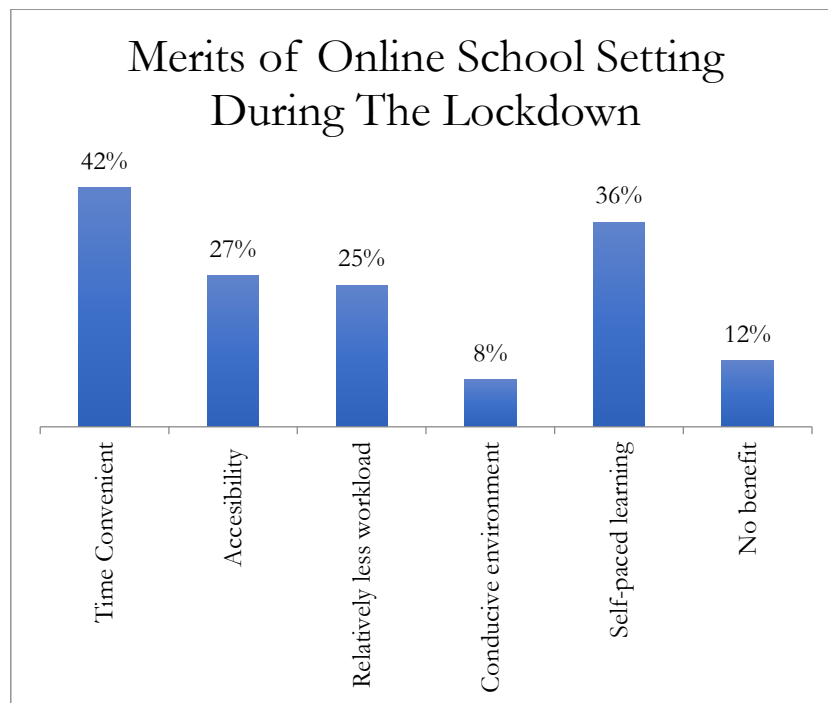


Figure 13

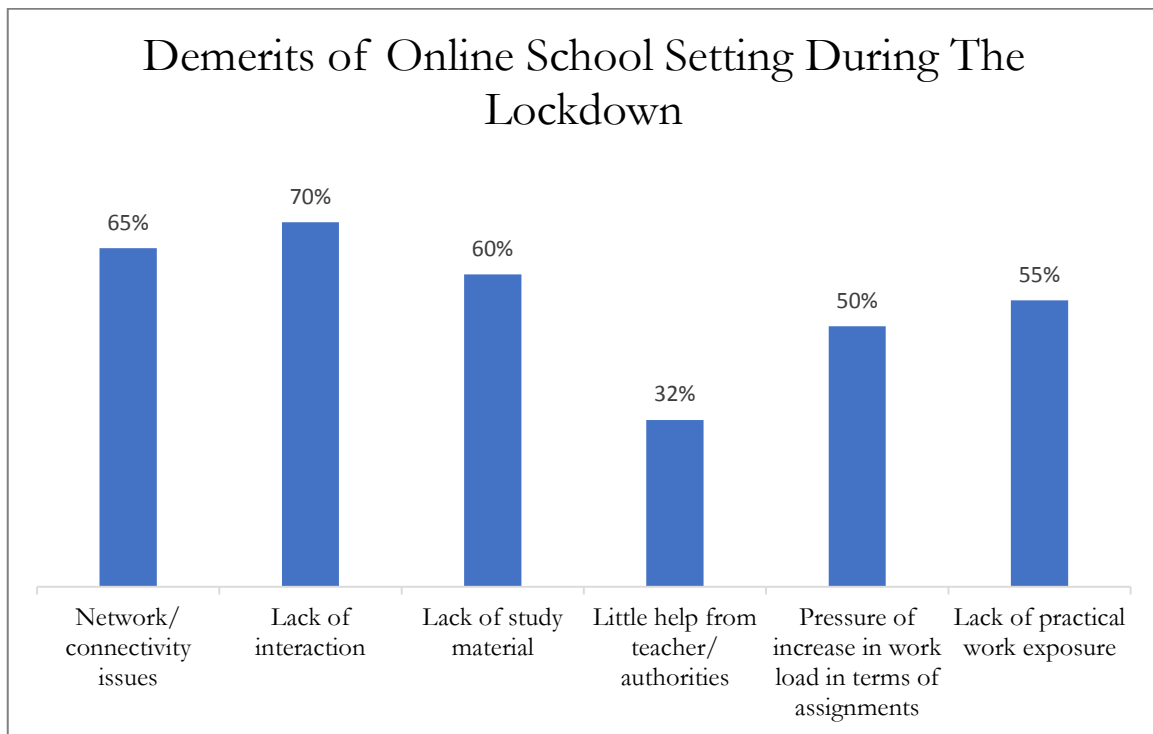
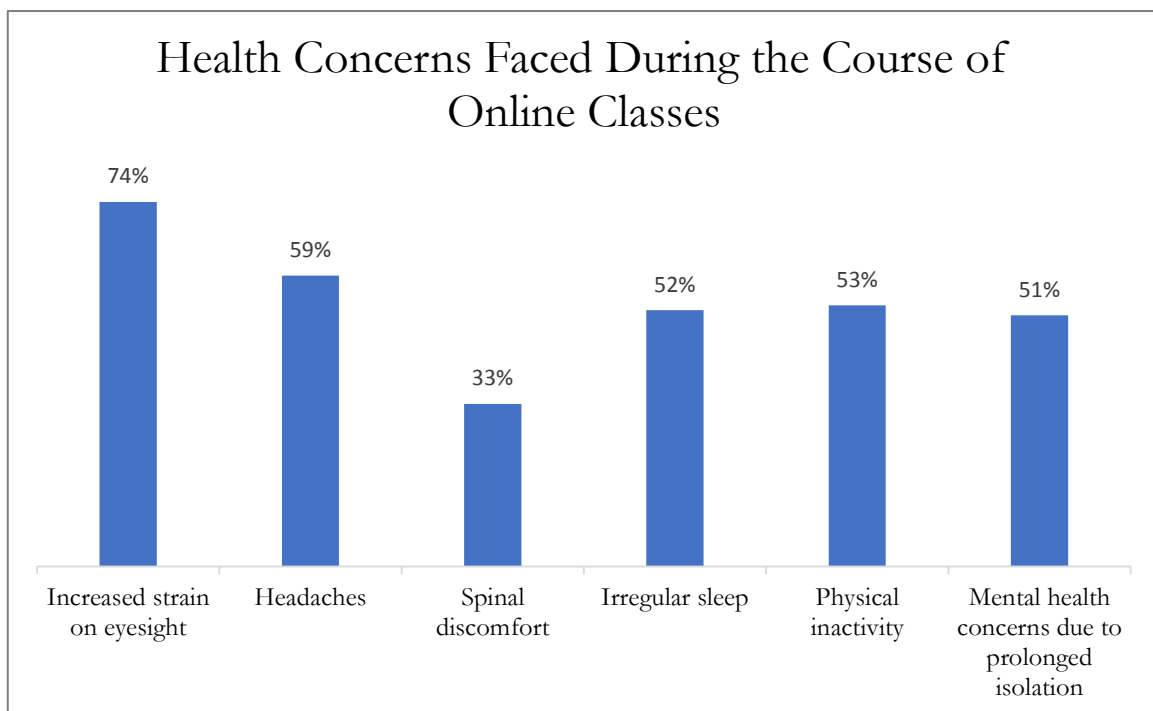


Figure 14



2. Multinomial Logistic Regression Summary, Pivot Category: Extremely Inefficient (1)* (Using Python, JupyterLab)

Figure 15

Online Effectiveness=2	coef	std err	z	P> z	[0.025	0.975]
x1	2.0076	1.001	2.005	0.045	0.045	3.970
x2	0.3501	0.407	0.860	0.390	-0.448	1.148
x3	0.5045	0.296	1.702	0.089	-0.076	1.085
x4	0.1983	0.341	0.581	0.561	-0.470	0.867
x5	-0.0904	0.343	-0.264	0.792	-0.762	0.582
Online Effectiveness=3	coef	std err	z	P> z	[0.025	0.975]
x1	1.8461	1.003	1.841	0.066	-0.119	3.811
x2	1.1772	0.479	2.458	0.014	0.238	2.116
x3	0.8422	0.325	2.588	0.010	0.204	1.480
x4	1.0959	0.386	2.840	0.005	0.340	1.852
x5	-0.1467	0.357	-0.410	0.681	-0.847	0.554
Online Effectiveness=4	coef	std err	z	P> z	[0.025	0.975]
x1	1.4022	1.040	1.349	0.177	-0.635	3.440
x2	1.6422	0.542	3.030	0.002	0.580	2.705
x3	0.7303	0.390	1.873	0.061	-0.034	1.494
x4	1.0882	0.438	2.487	0.013	0.231	1.946
x5	1.2486	0.527	2.368	0.018	0.215	2.282
Online Effectiveness=5	coef	std err	z	P> z	[0.025	0.975]
x1	-0.9236	1.516	-0.609	0.542	-3.894	2.047
x2	2.1240	0.728	2.917	0.004	0.697	3.551
x3	0.8131	0.492	1.652	0.099	-0.152	1.778
x4	1.4717	0.553	2.659	0.008	0.387	2.557
x5	2.8637	1.087	2.636	0.008	0.734	4.993

* X1: Curriculum

X2: Regularity

X3: Participation

X4: Grievance Counsel.

X5: Future Substitution

3. Marginal Effects Summary (Using Python, JupyterLab)

Figure 16a and 16b

```

MNLLogit Marginal Effects
=====
Dep. Variable:    Online Effectiveness
Method:          dydx
At:              overall
=====
Online Effectiveness=1    dy/dx    std err        z    P>|z|    [0.025    0.975]
-----
x1          -0.2582    0.152    -1.694    0.090    -0.557    0.040
x2          -0.1435    0.057    -2.502    0.012    -0.256    -0.031
x3          -0.1023    0.039    -2.612    0.009    -0.179    -0.026
x4          -0.1090    0.047    -2.343    0.019    -0.200    -0.018
x5          -0.0547    0.049    -1.113    0.266    -0.151    0.042
-----
Online Effectiveness=2    dy/dx    std err        z    P>|z|    [0.025    0.975]
-----
x1           0.2247    0.091     2.469    0.014     0.046     0.403
x2          -0.0920    0.063    -1.460    0.144    -0.216     0.032
x3           0.0045    0.042     0.108    0.914    -0.077     0.086
x4          -0.0880    0.051    -1.713    0.087    -0.189     0.013
x5          -0.0868    0.053    -1.642    0.101    -0.190     0.017
-----
Online Effectiveness=3    dy/dx    std err        z    P>|z|    [0.025    0.975]
-----
x1           0.1327    0.063     2.121    0.034     0.010     0.255
x2           0.0709    0.054     1.319    0.187    -0.034     0.176
x3           0.0634    0.040     1.598    0.110    -0.014     0.141
x4           0.1011    0.046     2.180    0.029     0.010     0.192
x5          -0.1136    0.048    -2.382    0.017    -0.207    -0.020
-----
Online Effectiveness=4    dy/dx    std err        z    P>|z|    [0.025    0.975]
-----
x1           0.0306    0.046     0.664    0.507    -0.060     0.121
x2           0.0870    0.039     2.220    0.026     0.010     0.164
x3           0.0175    0.033     0.525    0.599    -0.048     0.083
x4           0.0452    0.035     1.277    0.202    -0.024     0.114
x5           0.1023    0.041     2.499    0.012     0.022     0.183
-----
Online Effectiveness=5    dy/dx    std err        z    P>|z|    [0.025    0.975]
-----
x1          -0.1297    0.058    -2.218    0.027    -0.244    -0.015
x2           0.0776    0.034     2.301    0.021     0.012     0.144
x3           0.0169    0.025     0.672    0.502    -0.032     0.066
x4           0.0507    0.026     1.960    0.050    -7.25e-06    0.101
x5           0.1527    0.049     3.100    0.002     0.056     0.249
=====

```

Challenges In Building Strategic Roadmap For Social Entrepreneurship Journey

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Abstract

Young entrepreneurs have been a vital source for innovation and economic dynamism, providing jobs for eradicating unemployment. To accelerate the nation's goals towards economic growth and unemployment we are now in need of expertise and voices on developing solutions to social as well as economic challenges. COVID-19 has exposed systematic inequalities in the global economic system and increased unemployment. Social entrepreneurship is one of the keys-important factors which helps in overcoming poverty. Social entrepreneurs are working rigorously on contributing ideas for developing sustainable innovations to the exploration of new market fields. This paper deals with different ways of developing social entrepreneurs for creating a better world.

Keywords: Social Entrepreneurship, Challenges for Social Entrepreneurs, Strategic roadmap, Entrepreneurship.

1. Introduction

Social entrepreneurs are those who target the societal problems that are changing the face of urban India. They change the rules of how businesses functioned and scaling the economy to newer heights. Young entrepreneurs nurture their thirst to reconstruct inequities that are gripping our country. India is in much need of these young passionate Sociopreneurs. The economic changes need to come forward with eccentric business roadmaps and strategies to develop sustainable innovative market fields.

Social entrepreneurship works not only as a catalyst in society. But changes perspectives in the social sector. They adopt a mission to create new opportunities, engaging in process maps for continuous innovation, adaptation, and learning. They act boldly without heightened accountability to the constituencies (Desai et al., 2020).

Social entrepreneurship can create new value propositions for society in terms of wealth generation and tackling global issues. New challenges were arising due to the increasing number of social platforms. And it also created an impact on end-to-end traditional business practices. The high-tech end companies were researching the social entrepreneurship aspect to improve corporate industrial relationships to help for boosting up the economy in a short span (Pacut, 2020). The main aim of entrepreneurship is to design bold strategies for eradicating the social problems which will create transparency in health, education, financial and technological areas.

The vision of social entrepreneurship is to create sustainable relationships between non-profit corporations & backward people. Some more factors play a crucial role in social entrepreneurship activities i.e. rules, norms, sanctions, and accreditations. These factors were helpful to analyze the end-to-end activities of non-profit organizations which are affected by social enterprises. And outputs can be studied by concentrating on respective research fields. The practical challenges have arisen between non-profit organizations and the market phenomena to work on the missions to meet the requirements of financial goals. To identify this high-end management has to concentrate on day-to-day activities.

Mair and Marti (2004) has implemented various methodologies in social entrepreneurship for optimizing the process helps to identify the social needs and not dominated by capturing economic benefits. There should be a focus on embedded system modeling for the key selection of parameters in social entrepreneurship. The embedded system model will concentrate on mutual trust relationships between social entrepreneurs and society.

Rawal (2018) concentrates on the framework of social entrepreneurship to create an impact on social enterprises in India. Social entrepreneurship plays a vital role in product development and services in India for the rapid development of backward classes in tribal regions. The social entrepreneurs have contributed their knowledge towards the market research and social services on creating new opportunities by following the guidelines and policies of corporate governance. The main goal of social entrepreneurs is to tie up with the government & society for the resolution of the above complex problems.

The study described well in solving complex challenges in diversification areas. In Maharashtra, multi-utility water resources have been built by Zero miles for bringing up the people towards community development. Kulkarni (2017) a social enterprise working on providing an economic opportunity for the craft workers to sell their products online by using their social platform. Divya Rawat (2018) a social entrepreneur is working on mushroom cultivation to resolve the migration issues for providing sustainable livelihood to the people in Uttarakhand.

Santos (2012) conducted research studies to highlight the trade-off between value creation and value capture of social entrepreneurship. The research briefly explained the situation's impact on chaotic markets plus government failures due to a lack of social entrepreneurship awareness and development. The purpose of social entrepreneurship is to resolve complex problems concerning sustainable solutions.

The output of the research work concentrates on understanding the framework in social entrepreneurship for building a better society for the future.

The journey of social entrepreneurship starts with solving small problems for the redevelopment of society. But it creates a huge impact on global relevance and helps to work on future complex challenges like waste management, mineral water resources, health care, small-scale business integrations.

Kerlin (2006) conducted research studies on American and European social enterprises. The research work concentrates on the framework and conceptions of social enterprise management and legal environments of operations. The output of the research work shows that the relationship and knowledge transfer between American and European social entrepreneurs' researchers for future developments in social entrepreneurship.

The conceptual framework of social entrepreneurship in Western Europe has worked based on thoughts. But low-level collaboration between researchers and academics. The EMES research network had built by scholars and universities for the better contribution of knowledge plus skills towards social entrepreneurship. The ideal characteristics of the EMES network include continuous productivity, high-level autonomy, economic risk analysis and paid work insolvencies, community developments, decision mankind powers towards the capital ownership, profit distribution constraints.

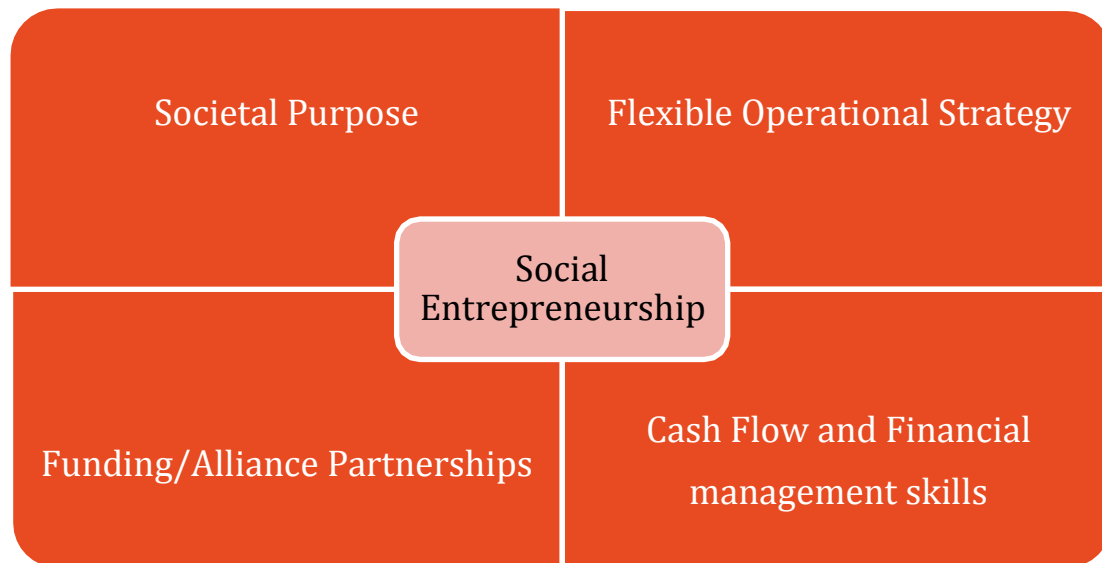
2. Foundation For Social Entrepreneurship

In general, a start-up has two primary characteristics which help to build a strong basement (Koteslav, 2020):

- a. Growth
- b. Innovation

A start-up is an experiment with potential. Not every start-up which started will experience success. They had tested the possibilities of their plans and made every source provide positive energy which leads to success. There will be many reasons why the start failed. but there exists only one way it succeeded, that right moment the right purpose needs every effort and lessons of getting failed. The more innovative the start-up, the riskier the assumptions it's testing. When a start-up plans to put a new kind of risk on the top for their growth (finance/cash flow risks, operational risks, team risks, etc.), it makes no surprise to get failed in any of the sections as shown in Fig 1. This is where there is a need for experts or external support to get through these phases making more on the right path.

Figure 1: Four pillars deciding Social Entrepreneurship Impact



Source: Own Study

Every idea values a million-dollar, but only some can hold up against the wave. There are many reasons for start-ups to get out of the race but converge to basic details like, finding right partnerships, not finding the right societal purpose, poor operational strategy (lack of long-term market focus), poor cash flow and financial management.

3. Major Challenges Facing By Social Entrepreneurs

In the present scenario, start-ups face a wide range of challenges. As a business grows, different problems and opportunities affect the business model and demand different solutions. Recognizing and overcoming the common downsides associated with development is essential. This paper deals with the particular risks and challenges that affect the social entrepreneurship journey.

3.1 Finding Partners / Alliances

The business atmosphere is highly dependent on their customers, which demands changing the strategy rapidly. The start-ups jump with their primary focus on the product which makes it difficult to separate their strategies and objectives from their social responsibilities. And it leads to a rise in collaborations to quash the severe environments for social entrepreneurs.

This quell arises when these collaborations need to force a social modification for these enterprises. Misunderstandings do occur in every start-up, but these with collaborators occur because small founders/entrepreneurs do have a negative feeling that large ones intend to undertake their operations. This makes social entrepreneurs struggle with numerous objectives.

3.2 Not finding the right purpose

The effect of the desired product/service provided on society is one of the prominent phases for social entrepreneurs. It will lead social entrepreneurs to lack knowledge of what to proceed and thus consider

shutting down the enterprise. Many start-ups lack a sustainable road map resulting in stiff competition between social entrepreneurs. Recalling a strong sense of purpose of the start-up needs a clear understanding of the market and good foreseeing nature of how far the product/service can diversify pros and cons of different steps/stages doing so.

3.3 Poor Operational Strategy

Planning and developing a good operational strategy is as important as finding the right cause of start-ups, defining specific goals, and driving the enterprise with sustainable growth. Difficulties for social enterprises often strike when deciding to have multiple social benefits and social goals, which in turn, increases the cost of provision to ensure true value creation. A perfect strategy focuses on the specified value proposition for the desired product/service and eliminates unnecessary costs. Operations should be designed where enterprises should work and have sustainable growth within.

3.4 Cash Flow and Financial Management

Cash flow is a pivot function in any business to run smoothly without any interruptions. Cash flow should be continuous, and good cash flow control helps growing business. Finances are too difficult to get in this world and people will not invest in a business unless and until they know what the start-up would make up. Investors are more complicated when it comes to profits. And they take chances if not making right up to the mark as made in MoU. Making the best use of finances should be a key element in business planning and forecasting new situations. Planning in designing the operations, good stock control, and effective logistics and supplier management led to improved business growth. The Planning helps in anticipating the financial needs and getting arranged by suitable funding or changing the operational way to reduce the working cost. Negative cash flow does not necessarily mean losses, it just directs towards a mismatch of expenditure and income, Unniyal (2020).

4. Strategic Solutions And Opportunities For Social Entrepreneurship

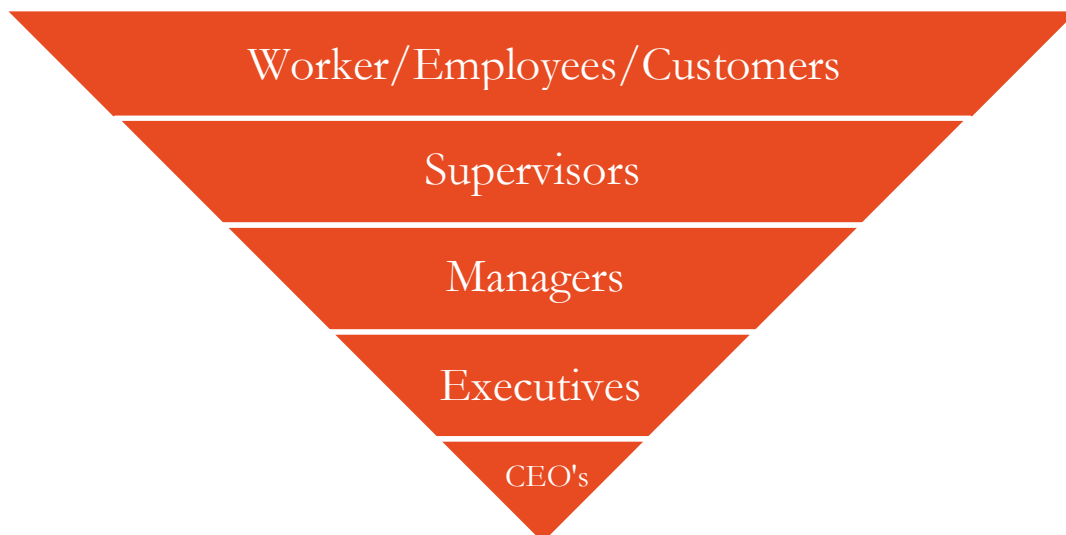
To build a sustainable social entrepreneurship culture in our society, there should be a proper selection of key parameters which create a huge impact on social development plus strengthening the economy, and eradicating unemployment. The below solutions were provided for supporting the vision of social-entrepreneurs.

4.1 Strategic Solutions

4.1.1 Re-Design of the management system

The organizations were losing the grip of vision on corporate policies to protect the workers/employee's emotions. Due to improper leadership and poor analysis on end-to-end management, the organizations were failing to redesign new corporate policies for building a strong vision for the future and organizations were falling into dilemmas of push end management system for the fast executions. It suppresses the thoughts of workers/employees on new innovative solutions. So, to protect the workers/employees' rights there should be a transparent nature between workers/employees and the top management system.

Figure 2: Pull End Management



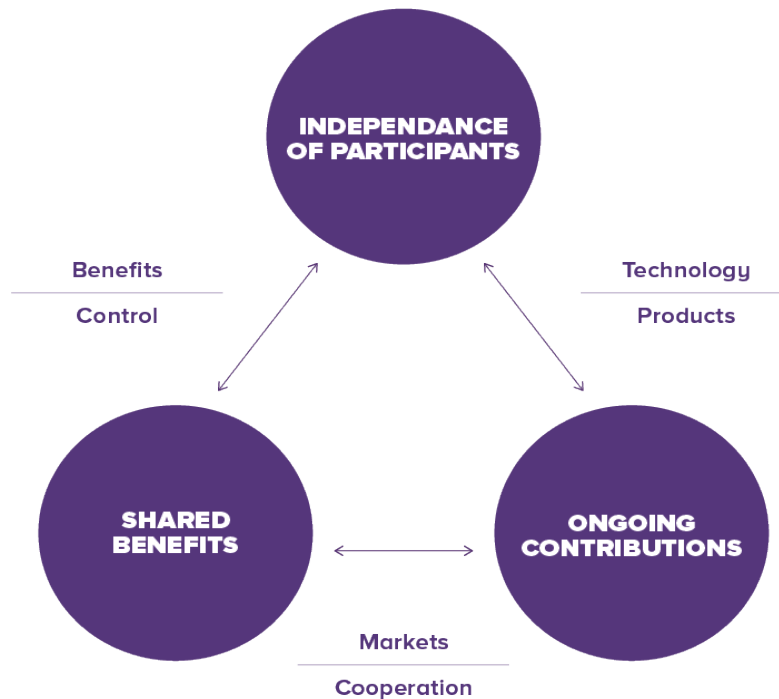
Source: Own Study

Founders, Co-founders, Chief-executives/ Operation officers have to implement pull end management as shown in Fig 2. Re-design is to operate from ground level, which will give a better approach to society/customers. Fig 2 is for the existing managerial system. But for start-up founders, co-founders need to move into customers and gather information (like how our product impacts? How does it need to change?) information to design customer-oriented management systems.

4.1.2 Building a platform

The motive of this is to analyze end-to-end operational developments recurrently as shown in Fig 3. The officials were failing in improving relationships with social entrepreneurs. These social enterprises were suddenly disappearing from the society/ market fields. The social enterprises were looking for sustainable partnerships i.e. alliance partnerships with respective governments for providing quality services to the society as well as strengthening the economy.

Figure 3: Integrated Platform to Analyze end to End Developments



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Source: kbmanage

To overcome the chaotic situation's government has to tie up with social entrepreneurs (alliance partnership) for building a platform to analyze the operations as well as cash flow generation. Fig 3 shows the platform which will help in strengthening the relationships by introducing sustainability in operations, planning, investments, and percentage of ownership holdings.

4.1.3 Resources management

It is all about providing positive sources for entrepreneurs for empathy towards the market situations. Many start-ups are still struggling in capturing their place in the market. And some are failing in lack of knowledge on the market field. The reason why many entrepreneurs are not coming to light is due to the inner feeling that investors will capture everything if the start-up is doomed. To avoid these discrepancies government/non-profit organizations need to provide awareness and online sessions which add value to the entrepreneurs and tools (which helps in growth) for social enterprises/small scale businesses.

The primary focus of resource management is to help the social entrepreneurs for a brief understanding of market fields and complex problem solving for faster development as shown in Fig 4.

Figure 4: Helping hand to Entrepreneurs



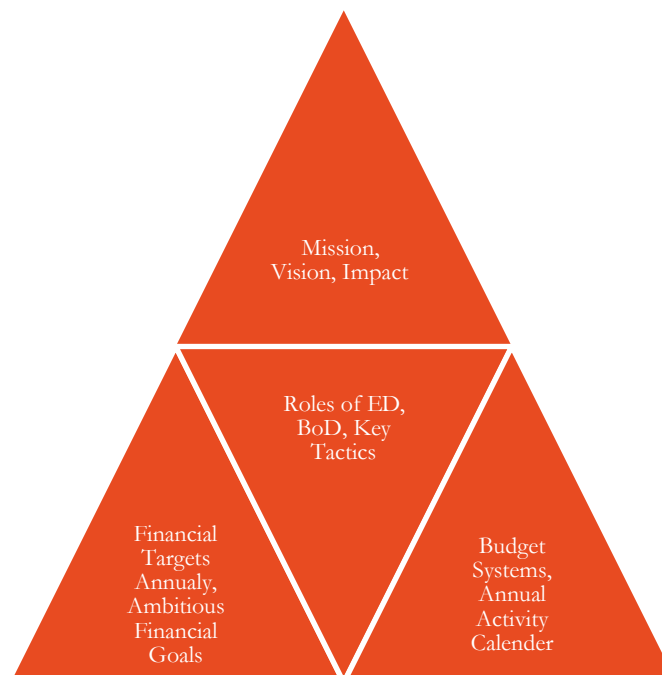
Source: myventurepad

The resources can be classified on stage and backstage. The onstage resources include providing tools for testing the ideas and data. For example, design thinking is a standardized tool for developing a solution from the ideation stage to execution. On coming backstage, the government has to gather the data of researchers/industrial experts relevant to the social entrepreneurship field for better handling of complex problems towards society as shown in Fig 4.

4.1.4 Funding strategy

The social entrepreneurs and government must come up with a new strategy for funds to sustainable economic development without wasting as shown in Fig 5.

Figure 5: Strategic Funding



Source: UWNCA

The implementation of the strategy will decide the future of an organization. And this strategic design has been needed for society to overcome the problems like education, healthcare, business development, and unemployment. Fig 5 shows how the government and social entrepreneurs have to deal with funding for the above areas in providing quality services to society.

Opportunities

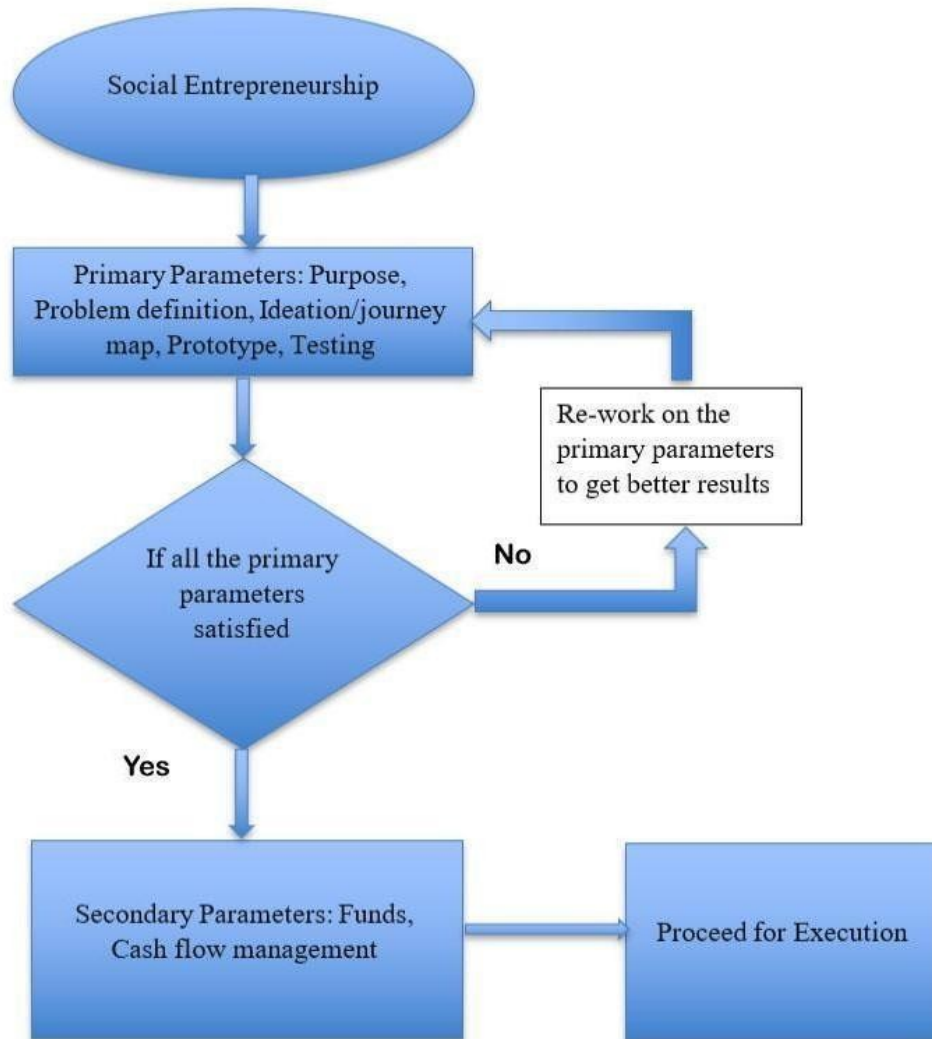
In future social entrepreneurship will help to transform society and strengthen the government by building a strong economy. The government organizations have been to create awareness of social entrepreneurship in society and rigorously work towards building a new strategic way of relationship with entrepreneurs for faster growth and developments. The research work provides future opportunities for social entrepreneurship for building a better society.

1. Waste management
2. Building digital platforms for poor people by offering high-quality education
3. Green infrastructure
4. Creating more jobs
5. Building partnerships with small-scale businesses reshaping the economic growth

5. Strategic Road Map For Social Entrepreneurship Journey

The phases will provide different aspects of the work. This paper provides a journey map for social entrepreneurship which divides into primary parameters and secondary parameters. Many entrepreneurs have failed in satisfying the customer with their product/service due to unexpected variations in reality. This happens when entrepreneurs are not firm with their primary parameters as shown in Fig 6.

Figure 6: Strategic Procedure for Entrepreneurial Journey



Source: Own Study

5.1 Purpose

There should be a strong purpose for starting any project, as it helps in creating a better vision of the project. The selection of tools will play a major role in finding the purpose of the project and the design thinking tool has a high impact in identifying the purpose.

5.2 Problem Identification

Most of the projects were failing due to the poor identification skills and to overcome this problem identification phase, social entrepreneurs had to concentrate on the prospective field of research. The selection of parameters on research will also create an impact on problem identification. For example, conducting market research will help to understand the mindset of a customer and complex problems in that market field. So, likewise, social entrepreneurs have to conduct rigorous research and data collection for better problem identification.

5.3 Research methodology

The research methodology plays a deep role in the understanding of research works and it helps to concentrate on phases of steps for obtaining better outputs.

5.4 Ideations/Journey map

Behind the success of every start-up, there should be a highly social impactful point. The difficulty in this phase is to explain the idea to third parties in amassing funds. The perfect idea gives confidence within the team towards sustainable planning and operation.

5.5 Prototype

The main aim of the prototyping sessions is to design a product/service by concerning ideas and inputs. The prototyping sessions were helpful to identify the mistakes in the development process. The output of the prototype sessions will reflect on the quality of an enterprise/management.

5.6 Testing

Testing is to evaluate the idea. This provides information on whether to continue, change something in the idea or quit. It is to identify the loopholes in the end-to-end actions of primary parameters. This is the decision stage where the idea is about to start or fail. At Aspire, we're trying to do more Plan, Test, Plan, Test, Ludema (2018).” This approach continually brings new information into the process and keeps the work very close to the market said by Kales CEO of Chicago based Aspire.

The data acquired from different sources (interviews or google forms) will give systematic evidence of how impactful when a start-up is executed. There are different testing techniques out of which the below testing provides highly accurate results.

1. A/B Testing
2. Demographics

If primary parameters are not tested or not giving systematic evidence of start-up then it is advisable to re-consider all the primary parameters till best satisfactory results are achieved. In a practical scenario consider the case of Quibi (Quick bite), “The Netflix that never was”. Quibi launched in April 2020 with American short form streaming platform for mobile devices. It acquired \$1.75 billion as an investment. But it has lost all its customers within 6 months and the company winds down its operations in October 2020 (after 6months of launching), Katzenberg (2020). The reasons behind the failure are that they didn't understand their customers (purpose and market requirement), poor content delivery and lastly lack of flexibility in the operations.

After achieving satisfying results in primary parameters, life cycles will move towards the secondary parameters which include funding and cash flow management. The challenges behind the secondary parameters were gathering of sufficient funds for the support of an end-to-end operations of an enterprise. To successfully execute the start-up, the social entrepreneur must maintain a positive generation of cash flow by optimizing the operations concerning the situations in the market/society.

6. Conclusion

The paper concentrates on a journey map for social entrepreneurship. The outputs of social entrepreneurship are based on end-to-end analysis of primary and secondary parameters. Social Entrepreneurship attracts attention from academics and economic analysts. The section provides major pillars which are influencing the emergence of social entrepreneurship, while the third section focuses on the key issues emerging in this rapidly developing sector, including the building of supportive surroundings, training, partnerships, and resources for social entrepreneurial activities. The fourth section provides strategic solutions to deal with the current issues facing by social entrepreneurs and the fifth section gives the best suitable journey map to successfully execute social entrepreneurship. In closing, the paper provided valuable content to avoid the loopholes within social entrepreneurship and the opportunities that will emerge.

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The Impact of Sustainability Reporting On Financial Performance Of Companies: A Study Of Listed Indian FMCG Companies

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Abstract

In the recent era, the importance of non-financial measures along with financial measures has garnered a lot of importance thus considering sustainability as a major corporate issue. Regarded as one of the main forces responsible in building up a corporate image, sustainability reporting helps in focusing on the long-term goals and not only considering the short-term perspective of a company. In order to meet growing expectations for environmental, social and economic performance disclosure, many companies follow more than one guideline to cover all of their sustainability priorities. Potential investors are always on the lookout for Socially Responsible Investment (SRI) as this instills a sense of safety and confidence in them. The main aim of this paper is to see the impact of sustainable practices undertaken by the companies on their financial performance. The four key components of sustainability taken are community, employees, environment and governance and to understand their impact on financial performance, measures such as ROA, ROE and PBT are computed. The data over a period of two financial years from 2017-2018 to 2018-2019 of the top five FMCG companies in Indian market that are also listed on the National Stock Exchange (NSE) have been included. The statistical tools used for the study are standard deviation and multiple regression (to see the relationship between sustainability performance and financial performance). Since the companies are ensuring the compliance of sustainability report with Global Reporting Initiative (GRI) guidelines, it enhances the degree of comparability and quality of information provided by them. The analysis derived from the study concludes that there is an impact of sustainable practices on the profitability and is thus considered to be a major influencer.

Keywords: Corporate Social Responsibility, Sustainability Reporting, Financial Performance, Global Reporting Initiative, Socially Responsible Investment

1. Objectives of the Study

They are as follows:

- To acknowledge whether or not sustainable measures have an impact on the profitability quotient of a company.
- To enhance knowledge about the impact of corporate sustainability on profitability through literature reviews.

2. Introduction

2.1 Meaning of Sustainability

The prime purpose behind practicing sustainability is to meet the needs of the future generations without compromising on the needs of the future generations. Sustainability is regarded as the judicious usage of resources in the present times so as to ensure that the future generations are not deprived of it.

2.2 Definitions of Sustainability

“Sustainability is a vision for the world in which current and future humans are reasonably healthy; communities and nations are secure, peaceful and thriving; there is economic opportunity for all; and the integrity of the life-supporting biosphere is restored and sustained at a level necessary to make these goals possible. All four dimensions of sustainability must be addressed to achieve this mission. (Anthony D. Cortese and Debra Rowe, “Higher Education and Sustainability Overview”)

2.3 Sustainable Development

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Report, 1987)

2.4 Sustainability Reporting

It allows firms to pay attention towards a large variety of sustainability issues, thus allowing them to be more transparent about the risks they face. A report which tells about the environmental, economic and social impacts due the activities carried out by the companies is known as a sustainability report.

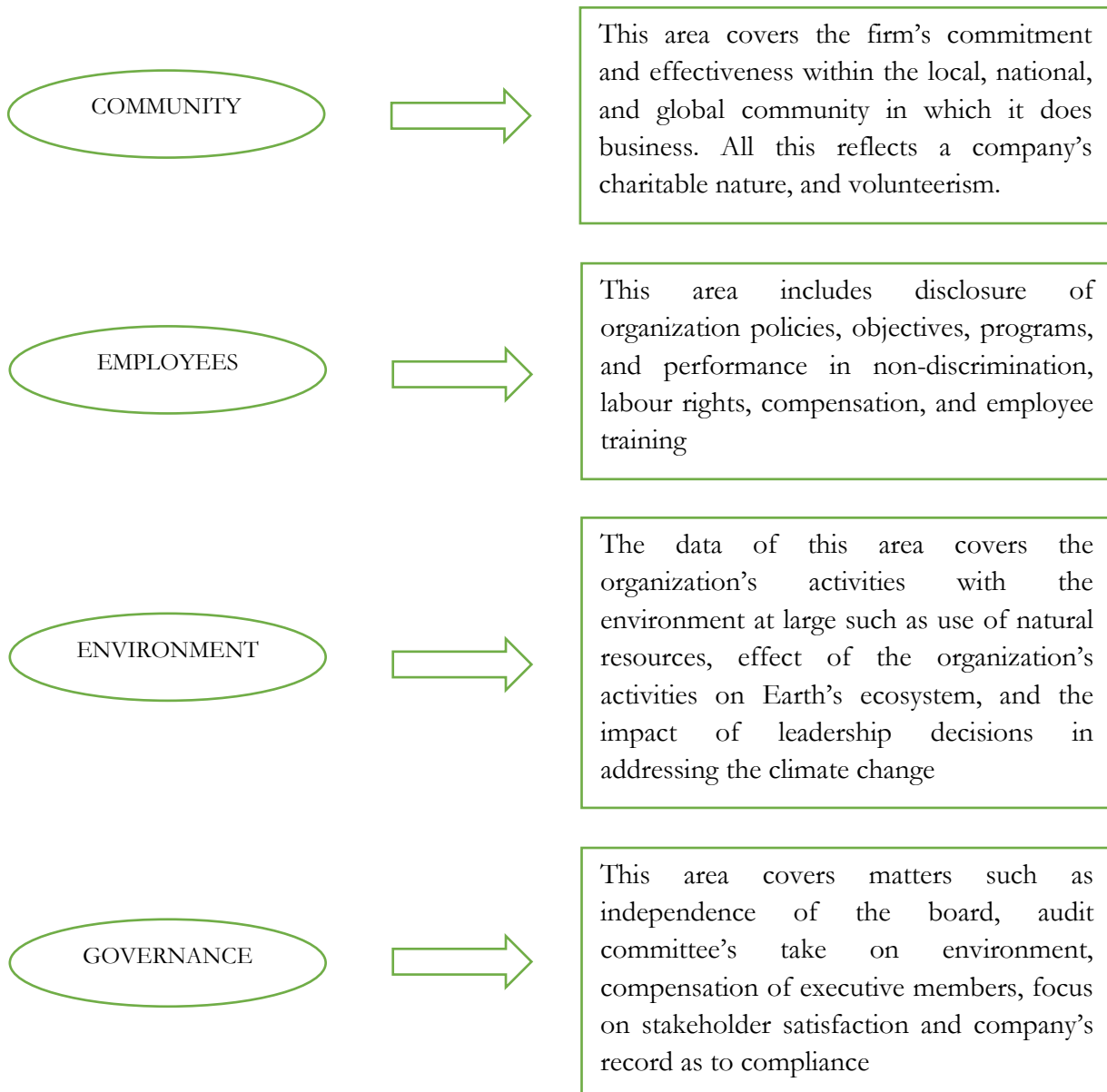
Sustainability reporting can also be called as **triple bottom line reporting, corporate social responsibility (CSR) reporting etc.** It is an important component of **integrated reporting**; a recent development which combines the analysis of financial and non-financial performance (Reddy et al, 2015).

Sustainability reporting comprises of three main elements: Environmental, economic and social also known as profits, planet, and people.

2.5 Constituents of Corporate Sustainability

Corporate sustainability refers to the measures taken by companies for the welfare of the community, employees, government, surrounding environment thereby ensuring improved stakeholder relations (Goel et al, 2017). The four important constituents of corporate sustainability reporting are as follows:

Figure 1



Source: CSR Hub (www.CSRHub.com)

2.6 Guidelines followed in Sustainability Reporting

The need to disclose economic, environmental and social performance is growing consistently because of increasing expectations. This shows how companies opt for different guidelines in order to fulfil

sustainability related responsibilities. Such guidelines are prepared in synchronization with other disclosure practices given by CDP, the United Nations Global Compact and GRI.

However there is a slight difference in terms of guidelines due to varying disclosure requirements. The main motive is to provide the companies with proper methodologies for sustainability performance reporting and review (Aggarwal & P,2018).

2.7 GRI

Guidelines advocated by Global Reporting Initiative is used globally by companies to measure and further report their performance in terms of social, economic and environmental aspect. The organization and reporting guidelines is also known as GRI. This independent organization introduced sustainability reporting globally in 1997. It integrates financial as well as non-financial elements while reporting and hence analysis is considered as a part of modern approach (Das & N, 2014).

2.8 Benefits of sustainability reporting as per GRI:

2.8.1 Internal benefits:

- Detailed analysis of risk and return.
- Discovery of opportunities at early stages
- Influencing long term management strategy and policy, and business plans.
- Streamlining processes, reducing costs and improving efficiency.
- Better formulation of business plans and strategies.
- Follows cost benefit approach with improving efficiency.
- Aligning sustainability reporting with legislative requirements.
- Providing basis for comparative analysis within and outside the organization.
- Integration of monetary and non-monetary elements while analyzing business performance

2.8.2 External benefits:

- Reduction or avoidance of negative impact on social, economic or environmental aspects of business environment.
- Increases brand loyalty and builds positive goodwill.
- Spread awareness among external stakeholders regarding business objectives, values, vision and mission.
- Study the impact of sustainability development and expectations regarding its disclosure.

2.9 Trend Observed In India

- **2011**

In India, Voluntary Guidelines on Social, Environmental and Economic responsibilities of Business were released by the Ministry of Corporate Affairs in July 2011, after considerable stakeholder consultation. These are at par with globally accepted guidelines for the corporate sector (Garg & P, 2016).

- **2013 onwards**

As per the requirements of the Companies Act, 2013 every company with net worth of Rs. 500 Cr, turnover of Rs. 1,000 Cr or net profit of Rs. 5 Cr has to include in the corporate social responsibility (CSR) policy the board's report as well. Also, these organisations should spend 2 per cent of their average net profit of the past three years on Corporate social responsibility activities.

- **2020: Business Responsibility Reporting**

Reporting was released by the reporting committee of Ministry of Corporate Affairs (Gupta et al, 2020).

Key recommendations:

- a) 'Business Responsibility and Sustainability Report (BRSR)' is the latest framework which has been recommended to better reflect the intent and scope of reporting on non-financial parameters.
- b) This new framework will be merged with the MCA 21 portal.
- c) Various data is gathered through BRSR filings and is used to develop a BRS Index for organisations.

Business Responsibility Reporting

Business Responsibility Reporting means disclosing the stakeholders about all the practices adopted by listed company in relation to responsible business activities. It is to be considered by all the companies irrespective of its type.

Evolution of BRR in India:

- a) At first Corporate Voluntary Guidelines were issued in 2009
- b) After two years in 2011 India endorsed United Nations Guiding Principles on Business & Human Rights;
- c) In order to encourage reporting on environment, social and governance issues in 2011 Ministry of Corporate Affairs issued 'National Voluntary Guidelines on Social, Environmental and Economical Responsibilities of Business'

- d) In 2012, Securities and Exchange Board of India made it compulsory for top 100 listed companies by market capitalization to file Business Responsibility Reports (BRR) based on National Voluntary Guidelines
- e) In 2015, SEBI extended the rule passed in 2012 to top 500 companies instead of 100
- f) 2019 saw the release of National Guidelines on Responsible Business Conduct (NGRBC).

Need of Business Responsibility Reporting:

- a) In this extremely critical and competitive era where environmental consciousness has become the need of the hour enterprises are no longer accountable to just the shareholders from financial point of view but accountable to the entire society as a whole.
- b) Organizations have mobilized savings of the public and utilized them in their business thus earning huge profits. Thus it is imperative that these companies regularly report and make exhaustive disclosures.

3. Review Of Literature

Fuadah et al (2019) conducted research to know the key factors that have an influence on the financial performance with the help of using sustainability reporting. The results were based on secondary data that claims that practicing sustainability reporting positively and significantly affects financial performance.

Gungor & Dincel (2018) in their paper focused on the publicly traded companies from BIST 100. They used MANOVA method to do the analysis. The result reflects that those companies who incorporate sustainability practices into their business operations are capable of leveraging their resources in a better way and also towards stronger financial performance along with creating value for shareholders,

Santis et al (2016) studied the impact of sustainability reporting by analyzing profitability and liquidity ratios. The research concludes on the note that there is no economic difference prevalent amongst the companies.

Priyanka Garg (2016) examined the financial performance of companies with the help of applying sustainability practices. Data collection for the study was done using annual reports of selected companies and proress database. The result indicates that with the passage of time, companies have improved their sustainability reporting practices.

Motwani & Pandya (2016) asserted in their paper that Indian enterprises have acknowledged the importance of sustainability reporting and many companies are following it. Comparative analysis was done to carry forward the research investigation with the help of GRI based index to study how Indian Companies are disclosing their sustainability practices.

Kumar & Gupta (2020) studied factor analysis by using AMOS to understand the impact of environment sustainability on multiple dimensions of a firm. The findings suggest that there are four vital indicators of functional performance that have a significant and positive impact on the company.

Bhalla & Bansal (2014) investigated various case studies to analyze the underlying relationship. The conclusion of their research state that a large number of Indian companies follow GRI guidelines for the purpose of reporting corporate sustainability practices.

Reddy & Gordonb (2015) identified 68 listed companies of Australia via event study method claiming that corporate sustainability reporting has a significant impact statistically.

Lerskullawat & Prukumpai (2017) examined whether or not sustainable development has any significant relation with firm performance. The results claim that for a company to grow in terms of value, it is significant to adopt sustainability practices.

4. Hypotheses

Based on objectives of the study and literature review, the following hypotheses have been formulated :

Table 1: Description of Hypothesis

No.	Hypothesis
1	H ₀ : Sustainability performance of company has no impact on its financial performance H ₁ : Sustainability performance of company has an impact on its financial performance

5. Research Methodology

Present study has been conducted with the help of the secondary data for a time span ranging from FY 2017-18 and FY 2018-19 in order to ensure a proper analysis. Various statistical tools have been used such as standard deviation and regression. These tools have further assisted in accurately assessing the impact of sustainability reporting on financial performance of companies.

5.1 Sample Description:

The sample consists of India's top 5 companies functioning in the FMCG sector who regularly contribute towards sustainability and follow sustainable reporting guidelines. All of the five FMCG companies are listed on the NIFTY 50 Index. The financial data used has been taken from the annual reports of the companies and data regarding sustainability has been taken from CSR hub and also qualify for ESG rankings. The 5 sample FMCG companies are given below:

Table 2: Sample Description

No.	Sample Company
1	Hindustan Unilever Limited
2	ITC Limited
3	Britannia Biscuits
4	Nestle
5	Godrej Consumer Products Ltd

5.2 Variable Description:

The accounting-based measures (ratios) taken for the study are Profit before Tax (PBT), Return on Assets (ROA), Return on Equity (ROE) and are used to examine the financial performance of the companies. Inclusion of accounting-based measures has primarily been taken for the reason that these have a high degree of authenticity and credibility and are not influenced by any market forces. ESG rankings on corporate hub have been used as an indicator to measure sustainability performance of the company.

6. Data Analysis and Result

The table below shows the descriptive statistical values for the various variables used:

Table 3: Descriptive Statistics

Variables	N	Mean	Median	Std Deviation
ROA (%)	5	31.6	30.09	10.08
ROE (%)	5	56.05	46.40	31.99
PBT (Rs in Cr)	5	14117.81	12556	12427.73
ESG (%)	5	78.80	85	20.07

From Table 3, it is observed that the mean value of ESG Rating is 78.80%. This indicates that strong steps are being taken by the Indian companies towards sustainability to improve their sustainability performance ratings. However improvement can still be done to some extent.

Table 4 below summarizes the results of the first model which shows the impact of overall sustainability rating on financial performance of companies:

Table 4: Summarized Results of First Model

Particulars	R	R Square	Adjusted R Square	F	Beta Coefficient for OSR	P-value
ROA	0.177	0.031	-0.292	0.097	0.089	0.776
ROE	0.259	0.067	-0.244	0.216	0.413	0.674
PBT	0.535	0.286	0.048	1.204	331.393	0.353

From Table 4, it is observed that all the p-values are more than 0.05, while all of the Beta values are positive. Thus, Overall Sustainability Rating (OSR) has a positive but insignificant impact on financial

performance of companies. Thus it leads to **acceptance of the null hypothesis H_0 and rejection of the alternate hypothesis H_1 .**

7. Conclusion

In this research, evidence has been brought out that sustainability practices undertaken by corporate businesses is actively encouraged in India and are being reported according to the GRI guidelines. With the new regulations wanting corporates to go for business responsibility reporting that too will have a greater and significant impact on corporate social responsibility practices of the companies. The current impact of sustainability reporting however is positive yet constitutes an insignificant part of the total firm performance. An attempt was made by this study to establish the impact of sustainability activities and programs carried out by corporate houses on their profitability.

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Maggi: The Brand With One Of The Most Loyal Customers In India

(An analysis with reference to the Engel, Kollat and Blackwell Model)

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Abstract

This paper will examine the ways and provide evidences that how Maggi is one of the brands which has the most loyal followers in India. The analysis will be done on the basis of the EKB model of consumption. The paper will examine and provide evidences as to how Maggi fulfilled all the stages of the EKB consumption model and earned loyal customers in the long run. Evidences will be provided in this paper as to how Maggi used creative advertisements to fulfil all the requirements of the different stages in the EKB consumption model, which increased the customer loyalty for the product. The paper will provide data as to how the sales of Maggi dwindled after the scandal it was involved in and how after a period of time, it regained its customers and the brand recovered its lost names and improved its sales. Further, it will conclude as to how the advertising messages and campaigns used by Maggi was a crucial step for it to fulfil all the stages of the EKB model. This helped Maggi earn extremely loyal customers, who even chose to continue consuming the brand after its name was tarnished in the scandal.

Keywords: EKB model, consumer behaviour, consumption, marketing strategies

1. Introduction

Various factors influence the consumer's decisions to purchase and consume a particular product. The consumer is exposed to advertising and non-advertising factors. The comprehension and retention of these factors influence a consumer's decision regarding consumption. The consumer may remember experiences of the purchase of the product he had made in the past or may compare the product of a particular brand to the product of alternative brands. The consumer may have a well-defined taste and

preference for a certain kind of product. Various factors such as the income of the consumer and advice of a product from family and friends may also influence the consumer's consumption pattern. The consumer may either be satisfied or dissatisfied from the purchase of the product.

The brand Maggi under Nestle was first introduced in India in the year 1983. The slogan used by Maggi that it was a food that could be prepared in two minutes created a sense of curiosity and awe in the minds of the customers and diverted their focus from slow cooked food to fast food. The advertisements used by Maggi were seen as a tool to empower women which had a great sense of pathos for the audience. This helped Maggi grow stronger during the initial days of its business in India. On its 25th birth anniversary Maggi launched the campaign of 'Me aur Meri Maggi' where the customers were asked to send in their good experiences with Maggi. This advertising campaign created a profound impact on consumers and improved the sales of Maggi.

Maggi eventually became the largest selling snack brand in India. However, in 2015, overwhelming amounts of lead was found in the product which was toxic for human consumption. The shelves of many stores were cleared from Maggi products and the company was not operational for five months. A large sense of betrayal and hate raged in the minds of the consumers. The brand suffered several losses but after five months the brand became operational again after receiving permission from the Supreme Court that it was safe for consumption. Even after the major tarnish to its reputation, Maggi regained its lost customers and became the highest selling snack brand in India once again.

Maggi, which is a brand under NESTLE India accounts for is used by approximately 70 percent of the population in urban India. The sales of Maggi contributed to 22-25 percent of the total profits of Nestle in 2014. Maggi is the leading brand in the sales of noodles in India. This has primarily been achieved by the brand through the process of brand association. (Sahoo, 2015) Maggi has made extensive use of advertisements and all forms of communication to engage with its customers. A close coherence can be seen in the functioning of Maggi noodles with the EKB model because consumers are greatly exposed to marketing forces which have helped them relate to the benefits of the brand and develop loyalty for it in the long run. However, in 2015 overwhelming amounts of MSG was found in the product which was harmful for health. Maggi lost the faith of its customers and the products were removed from the shelves of many shops but after several months it was tested that Maggi did not contain anything harmful for health and it was fit for consumption. Social media is an effective tool for any brand to build engagement with its customers and regain their customers' lost faith. Any brand with a poor social media influence would have difficulty in regaining its lost customers. Maggi used its strong influence of social media to curb its lost reputation by engaging with its customers. (Din, 2015) The net effect resulted that the customers with a negative attitude towards the brand were mitigated by the existing loyal customers who had a positive effect towards the brand. Here it can be noticed again that Maggi fulfilled the first stage of the EKB model to regain its lost customers.

The Engel, Kollat and Blackwell model or the EKB model was proposed to comprehend consumer behaviorism in a better way. Consumer behavior is broken down into four different stages and in each of the four stages the factors which affect the consumption decision making of the consumers are analyzed. There is a rise in the want of a consumer which makes him purchase a particular product from a brand to facilitate consumption.

The Engel Kollat Blackwell (EKB) model is a comprehensive model which has undergone many rectifications and has divided consumption behavior into several stages based on the theory of the increase in the amount of knowledge and research available to a consumer. Consumption attitude has been closely related to consumers' belief in a product. There are four distinct stages in the EKB Model namely:

- **Information Input Stage:** The consumer gets exposed to various marketing and non-marketing sources to gain information about a particular product. If these sources are not enough the consumer may do external research and may consider buying a product or switching to its alternatives.
- **Information Processing Stage:** The consumer's perception, interpretation of information and retention about the memory of the product would influence the consumer's decision of consuming the product. The consumer may want to utilize the information about the product in long time memory.
- **Decision Processing Stage:** The consumer may develop an attitude towards a product after considering the alternate options and then finally make decisions about consuming a product.
- **Variables Influencing Decision process:** External factors such as lifestyle, family influence, personality and culture of the consumer may alter the consumer's decision-making process.

2. Methodology

Secondary data from various newspaper articles and existing research papers was collected to understand the sales structure of Maggi. The impact of the scandal Maggi was involved in on the Indian population and primarily to understand the unique sales proposition of Maggi.

A survey was conducted among a group of fifteen children between the ages 9 to 14 and five working mothers between the age of 35 to 40. Their responses were used to analyze and prove the impact of the advertisements portrayed by Maggi to fulfil all the stages of the EKB model of consumption. The responses noted in this survey have also been used as evidences to prove the strong faith of the customers in the brand even after the scandal which causes them to be loyal customers of the brand.

3. Results

3.1 Evidences of fulfilment of Stage 1 of EKB model

Advertisements are an efficient tool for any brand to gain recognition and success. Maggi Noodles under Nestle was no exception. The brand used all forms of communication with the audience such as Public Relations, Advertisements, interactive marketing and sales promotions. As a general trait of consumers, it can be noticed that consumers form a strong sense of loyalty with the product of those brands which can connect with their psychological and physical needs. Nestle has always propagated its products as the representatives of delivering customers maintenance of good health as well as consumption of tasty food products. The primary target audience for the product were children and mothers who wished to

provide their children with healthy meals which were less time consuming so that they could manage other affairs in their lives as well. (Jaggi and Bahl, 2015) The brand primarily focused on using television advertisements accompanied with creative jingles as a marketing tool but paid less attention to advertisements through print media. (D, 2016) As a result Maggi sponsored Hum Log on 'Doordarshan' 'Hum Log' was the most famous soap opera in those days and 'Doordarshan' was the sole channel available on television. (Gupta, 2015) Any brand performs heavy investment on celebrity endorsement because people can relate to these celebrities and the love for the celebrities induces love for the brand at large. Maggi was endorsed by veteran and popular Bollywood celebrities such as Amitabh Bachchan, Madhuri Dixit and Preity Zinta. (D, 2016) The brand sponsored kids programmes and introduced a drive where empty packets of Maggi were exchanged for gifts for the children. Packets of Maggi were distributed for free to school children.

On its 25th anniversary Maggi introduced the 'Me aur Meri Maggi' campaign. In this campaign the consumers were supposed to send their picture with the Maggi packet. They were supposed to narrate a memorable tale they had with Maggi. These stories were broadcasted on the Maggi television advertisements. (Iqbal and Khan, 2016) Through this campaign Maggi was seen as a tool which universally united modern India as different people from different stretches of the country had a personal experience to share about Maggi. The campaign triggered sweet and sentimental emotions among the consumers as it showed moving tales of a bride eating Maggi in her wedding dress or a man drenched to his bone delivering Maggi packets to the people stranded in the 2005 Mumbai floods. (D, 2016) This campaign enhanced the sales of the product as the campaign was a pinnacle symbol of the consumers relating emotionally to the brand.

The first stage of fulfilment of the EKB model where the consumers are influenced by the deliberate exposure to marketing and non-marketing segments by the brand, can clearly be seen in the marketing and advertising initiatives by Maggi. This brand had unique and effective marketing strategies different from many of its competitors and products not closely related to it. This aspect has significantly contributed to the robust boost of sales in the product by allowing the consumers to relate closely to the product in accordance with their needs and build lasting loyalty for it.

3.2 Fulfilment of stage 2 of EKB model

The strong messages and slogans used by Maggi in its advertising campaigns left a lasting impact on the consumers. The Maggi packet is in yellow and red colours which are scientifically meant to induce hunger. The logo of the brand was something all masses from different age groups could relate to and it created a nostalgia effect in the minds of the consumers. (Maggi — The name which showed the power of branding., 2021) Through its advertisements, Maggi has always tried to portray that it is a healthy food. In 2000, Maggi undertook the slogan 'Taste Bhi Health Bhi', which brought in a unique promise of providing the consumers with taste and health together. The brand identified the health consciousness of the consumers and changed its slogan accordingly. This developed a confidence of the consumers in the product that it was healthy to consume. (Gupta, 2015). Maggi had a unique selling proposition and brand image. The brand used the slogans 'Fast to cook, Good to Eat' and '2 minute mein khushiyan' which was perceived uniquely by the consumers. The idea that a food could be cooked in two minutes unlike traditional Indian curries created a sense of awe in the minds of the consumers and shifted the emphasis from slow cooked food to fast food. (Gupta, 2015) The sense of curiosity enraged in the minds of the consumers and they purchased the product only for the wish to quench their curiosity.

This boosted the initial sales of the brand. In some advertisement campaigns heart-warming slogans were used which deeply intrigued the consumers such as, 'School se aate jab chillate mummy bhook lagi, Bas do minute, inhe chaiye Maggi, Maggi Maggi' The primary target audience for the brand were children and their mothers. The brand created the image of a MAGGI MOM where the versatility of women was shown. (Jaggi and Bahl, 2015) Through the advertisement drives Maggi portrayed how Indian women managed their children and professional life simultaneously. This instantly won the hearts of many Indian mothers as Maggi portrayed itself to be a form of security where the mothers could prepare a healthy meal for their children in a short time. In the 'Me aur Meri Maggi' campaign, the tagline used was 'Me aur meri Maggi- Bas 2-minute mein khushiyan'. In this slogan a further emotional appeal has been made to the consumers as they are urged that Maggi is a personalized product for them and they have moments of joy associated with it. (D, 2016) According to the second stage of the EKB model, the advertisements used by Maggi to influence its consumers created an overall perception about the product in the minds of the consumers which can be called as Maggi's brand personality. Maggi was identified as a fun-filled product and vibrant product which culturally resonated with the young people in the country. Its advertising campaigns allowed a vast range of people to relate to it and understand its benefits. The advertising slogans of the product helped it to be primarily deemed as a leisure food which could be used as an alternate to normal meals because of the convenience it could be prepared with.

3.3 Fulfilment of Stage 3 of EKB Model

Maggi is one of India's most favourite fast foods and it has a universal existence in the country starting from people's homes, to canteens in educational institutes, restaurants and street food stalls. Maggi faced tough contest from other fast-food products as well such as potato chips but it was preferred over the former because it filled the stomach better, was tastier and could be eaten hot. Maggi faced competition from Indian homemade snacks such as pakoras and samosas. However, these snacks could not replace the taste of Maggi. Besides Indian mothers found it convincing to feed their children something they would cook on their own. (Gupta, 2015) However, in 1990 Top Ramen came up as a fierce competitor for Maggi as it was a new instant noodles brand like Maggi and a close substitute for it as well. By 1997, many companies had started to create instant noodles and offer a close substitute for Maggi and the sales of Maggi started to dwindle considerably. In 2006, the brand created 'Maggi Vegetable Atta Noodles' which was a health product containing protein supplement. Maggi created various indigenous flavours with coherence to Indian spices. It also created Chicken, Tomato and various Asian flavours. (D, 2016) This catered to all the different flavour profile wants of the consumers in one instant noodle brand. Maggi's competitors could not adapt to changes as quick as Maggi and consumers quickly forgot about the alternates and continued to purchase Maggi noodles. According to the third principle of the EKB model, the consumers had strong alternates for Maggi which they considered but still preferred to continue consuming Maggi noodles because of its flavour profiles and advantages offered in the preparation procedure.

3.4 Fulfilment of Stage 4 of EKB model

As portrayed by the slogans and the advertisement campaigns, Maggi was convenient to be cooked and ensured health as well. This primarily appealed to the working women. The newly formed middle class was evolving in India and women were starting to be employed. This new concept that women Maggi was an easily makeable healthy food was a convenience factor to women as they could rely on Maggi to feed their children properly and simultaneously spend time in their workplace. The image of the Maggi Mom as shown by Maggi in its advertisements empowered women by spreading the message that women were versatile as they could take care of their household and career, with Maggi just being a tool to achieve this endeavour. The stereotypical stigma that women were supposed to engage in household chores was broken by Maggi. Maggi was used in India by students and workers living far from home, as it was a convenient and filling meal to consume. (Iqbal and Khan, 2016) This product did not drastically change its price or keep it overwhelmingly high at any point of time. Noodles are perceived to be a part of Chinese cuisine in India which is solely available in restaurants. This could not be afforded by all sections of the Indian population. (Gupta, 2015) In 2009, Maggi launched the Rasile Gravy Chow which was four rupees for one packet. This was primarily aimed for the slum dwellers in Dharavi and the malnourished sections of population in India. Eventually Maggi gained a universal presence in India starting from household to restaurants and even street side stalls. Thus, Maggi could influence a large section of the society to buy and consume it. According to the fourth stage of the EKB model, the personal income of the consumers and the lifestyle of citizens in India attracted Maggi to be bought as a commodity due to its low cost and convenience in preparation.

3.5 The Account of the Scandal ‘Maggi’ was involved in

In 2014, a citizen in Uttar Pradesh noticed the word ‘No MSG’ on the Maggi packets. However, upon an informal testing, overwhelming amounts of MSG was found in the product. Frantic emails were sent to Nestle to get the product tested for lead but no proper response was provided by the brand. After that the Food Safety Standards Authority of India (FSSAI) conducted tests where overwhelming quantities of MSG was found in the product which could cause brain damage and paralysis.

Overwhelming amounts of lead was found in the product and the product was deemed to be unfit for consumption, especially for children. The product was banned in many states but nestle voluntarily decided to pull off the product from the shelves. An approximate of 2500 crore revenue was lost by Nestle, 1500 workers were unemployed, the grand ambassadors of Maggi were penalized and suppliers were hit in their activities after the ban. The product stayed non-operational for five months till Nestle provided reports of testing in the Supreme Court that the product was free from MSG. The FSSAI re-tested the samples of the product once again and this time traces of MSG were negligible and the product was fit for consumption again. Since then, Maggi has removed the words ‘No MSG’ from the packet. (*Financial Express, 2021*)

After the ban, the re-launch of the product suffered from trust issues from the consumers. In order to solve this issue, the chairman of Maggi ordered the brand to engage in extreme social media marketing to build personalised contact with the consumers. Maggi adopted a new tagline which was ‘Your Maggi has been safe and has always been.’ The image of concerned mothers was used in the advertisements to show that Maggi is safe for consumption. The brand used ethical marketing to help various non-profit organizations in their endeavours.

Maggi eventually regained its shares and became the most consumed noodle brand in India. Patanjali and Yippee were its close competitors but consumers chose to stick to Maggi and not move to its alternatives. (*Financial Express, 2021*)

Here it can be seen that in accordance with the first principle of the EKB Model, consumers were exposed to marketing and non-marketing aspects by the brand. The consumers derived safety from the slogan and the image of mothers assuring the safety of the product according to the second stage of the EKB Model. Thus, consumers made the decision to choose consuming Maggi over its alternatives according to the third stage of the EKB Model

4. Results

The given survey was conducted in Aparna Cyber Commune (Nallagandla) in Hyderabad. It was conducted to understand the implementation of the EKB model to gain loyal customers for the brand 'MAGGI' using primary data.

The Respondents in our survey consisted of:

Table 1: Working mothers between the ages 35 – 40

Age of the Respondents	Occupation
35	ENGINEER
35	ENGINEER
38	ENGINEER
36	DATA ANALYST
40	PROFESSOR

Table 2: Children between the ages 9 – 14

Age	Number of Children Surveyed
9	4
10	3
11	2
12	2
13	2
14	1

Below we discuss the questions that were asked to the respondents and their responses.

- **Are you aware of the scandal Maggi was involved in?**

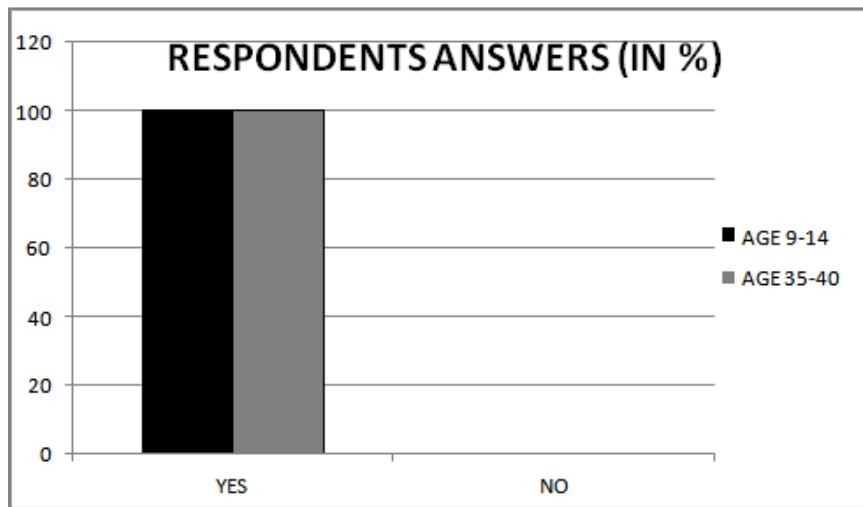


Figure 1

As per 'Figure I' all the respondents in the age groups of '9-14' and '35-40' agree that they are aware of the scandal Maggi was involved in. Here, the intensity of the scandal and bad reputation brought about by the media is portrayed.

- **Are you still consuming the product?**

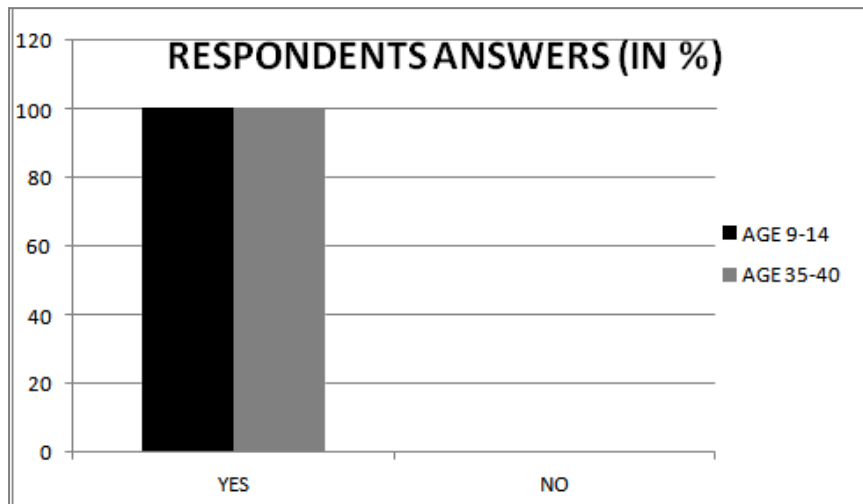


Figure 2

As per 'Figure II' of the survey, all the respondents are aware of the scandal the product was involved in. Despite of that, they continue to consume the product after it was launched again after the scandal. The tarnished brand name of the product does not make a difference to the consumers.

- Is it because of the convenience Maggi can be made with?

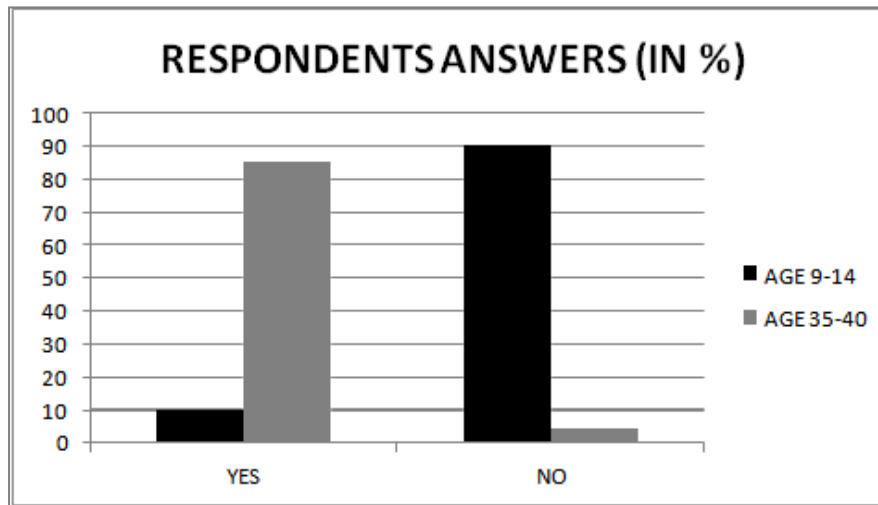


Figure 3

As per 'Figure III' it can be said that a majority of respondents in the age group of 35-40 prefer to consume the product due to the convenience with which it can be made, in contrast to the reason of those respondents between the age group of 9-14. Here the fulfilment of the second and fourth stage of the EKB Model comes into play. The consumers are exposed to the slogan and they develop a theory about the product that it is easy to prepare. Due to their hectic schedule as working mothers, the respondents continue to consume the product. According to the fourth stage of the EKB Model the lifestyle of the consumers influence a consumer to consume a particular product. In this case, the hectic schedule of the working mothers paired with the ease of cooking causes the respondents to be loyal to the product.

- Did you come to know about the convenience with which Maggi can be made with from the slogan 'Bass 2 minutes'?

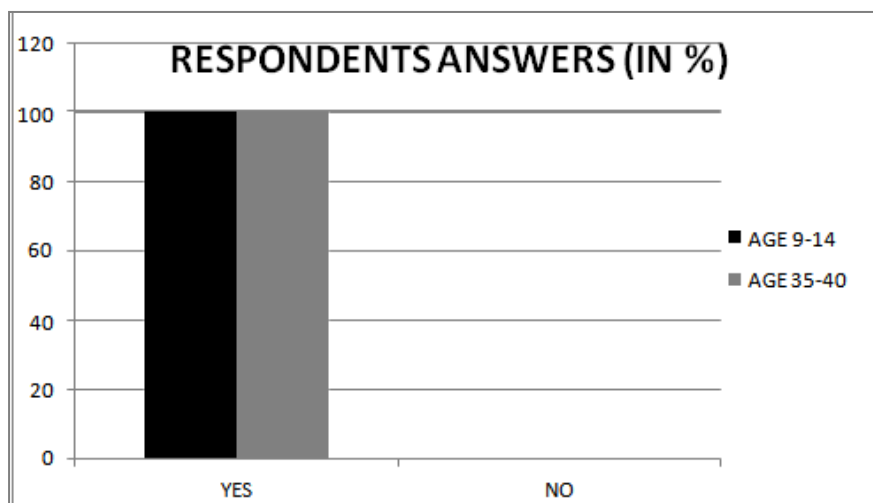


Figure 4

From 'Figure IV' all the respondents say that they are aware of the slogan the brand MAGGI used for its advertising and promotions. From here the robust effect of marketing strategies and

advertising campaigns of MAGGI can be seen, since its slogans are known to such a widespread population in India.

- **Do you think Maggi is healthy?**

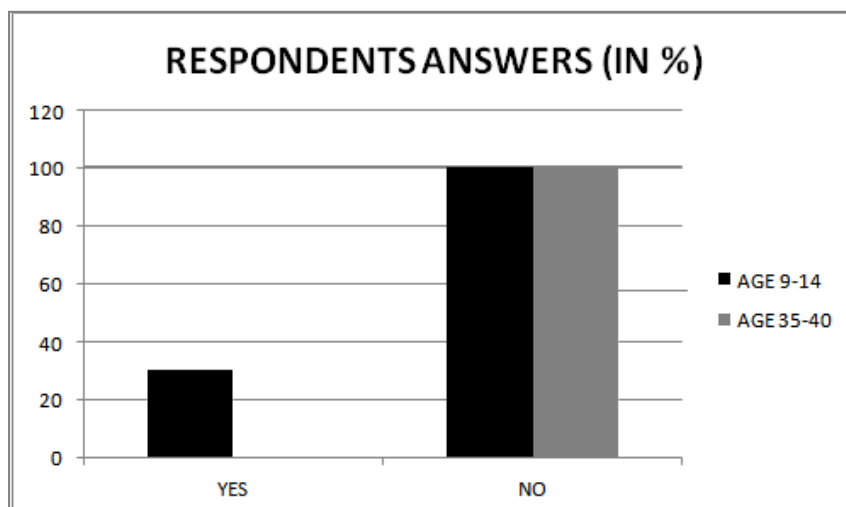


Figure 5

In 'Figure V', it can be seen that all respondents from the age group of '35-40' feel that Maggi is unhealthy, whereas some respondents from the age group of '9-14' feel MAGGI is healthy. However, previously it has been seen that all respondents consume MAGG at present. However, the scandal the brand was involved in had an aftermath that people, especially mothers consider it to be an unhealthy product.

- **Would you give up consuming Maggi for its substitutes?**

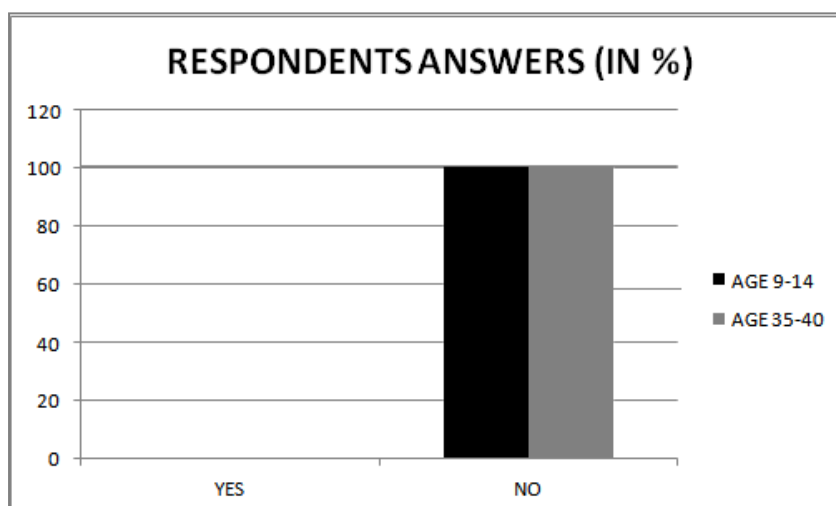


Figure 6

From 'Figure VI' it is seen that all the respondents have an extreme loyalty towards the brand. In accordance with the third stage of the EKB Model, a consumer may consider the alternates of a product before consuming it or switching to its alternates. In this case, a small number of respondents both from the age group of 9-14 and 35-40 do not wish to switch to Maggi for its alternate and competing products and wish to continue to consume Maggi.

- Are you aware of the 'Me aur Meri Maggi' campaign?

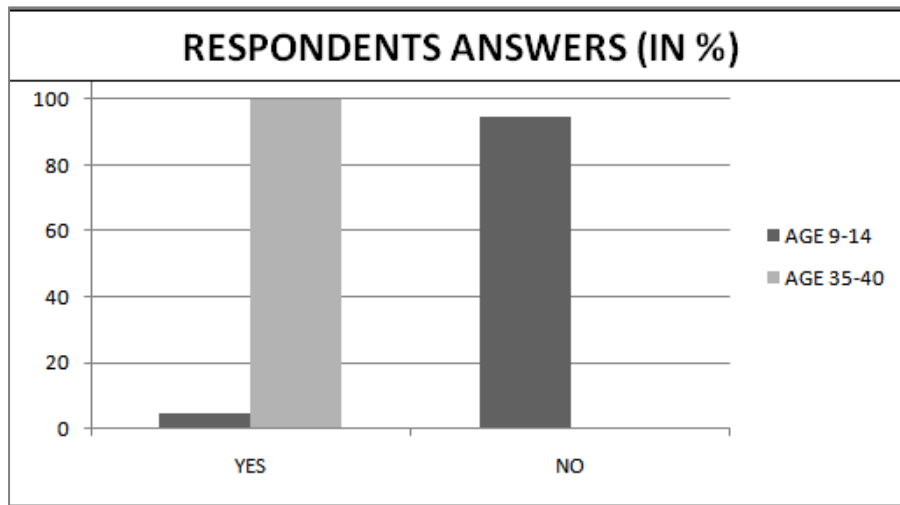


Figure 7

From 'Figure VII' it can be seen that all respondents from the age group of 35-40 are aware of the campaign. In accordance with the first stage of the EKB Model, the consumers were exposed to marketing segments by the brand. However, some respondents from the age group of 9-14 are not aware of the campaign as the campaign was launched in 2008 and many of these respondents were either too young or not born at that time. Given the fact that all the respondents from the other age group are aware of the campaign, the strong marketing impact of the brand on the Indian population can be seen.

- If yes then did you take part in it?

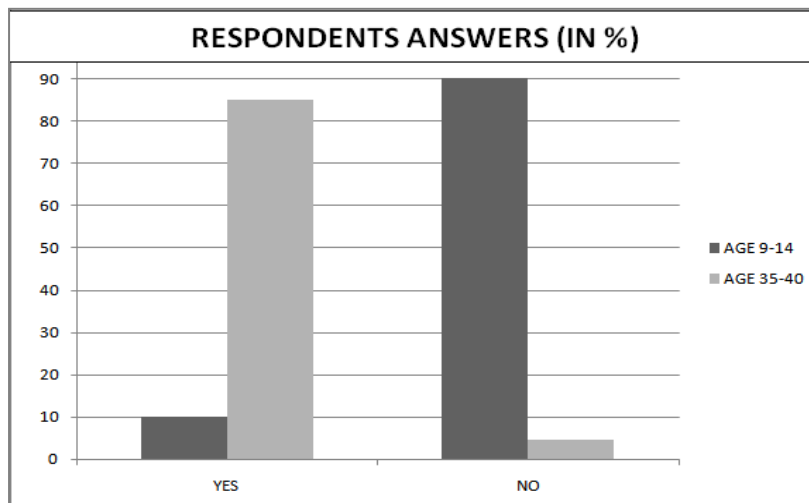


Figure 8

From Figure VIII, it is seen that a large part of the respondents between the age group of 35-40 had taken part in the campaign. Here again, the robust impact of the marketing strategy of the brand through campaigning can be seen.

- Do you think that you can relate more and better to the advertisements shown by Maggi?

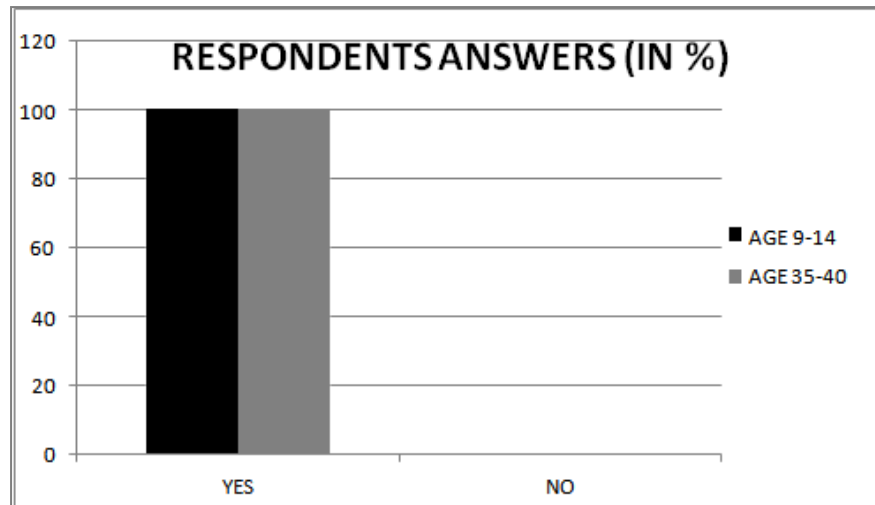


Figure 9

From 'Figure IX' the highest amount of the marketing impact of the brand MAGGI on its consumers can be seen since all the respondents feel that the advertisements offered by the brand are unique and easier to relate to.

- Above all, do you think that it is only because of the nostalgia effect that you continue to consume Maggi after the scandal?

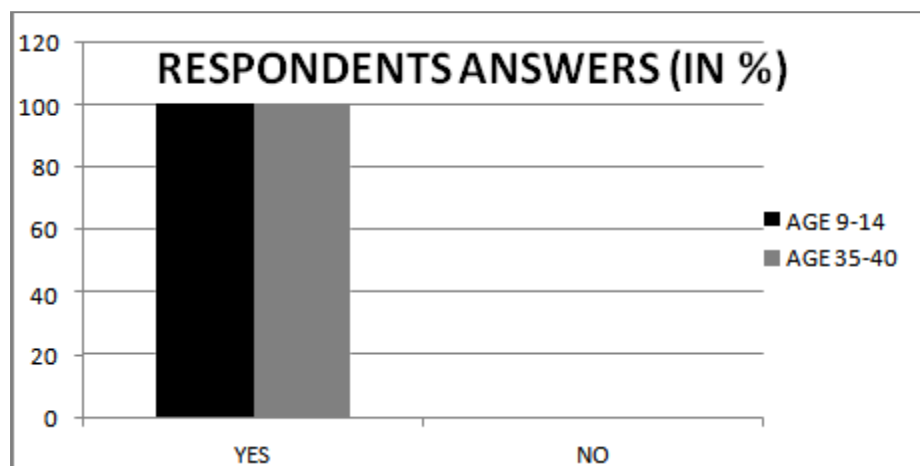


Figure 10

From 'Figure X' all the respondents agree that despite of the scandal they agreed to continue to consume the product because of the nostalgia effect they have with the brand. However, in order for this loyalty to build up as a result of the nostalgia effect, the Maggi has fulfilled all the stage of the EKB Model for the consumer.

5. Conclusion

Maggi has fulfilled all stages of the EKB Model and the primary impact of it has been through its creative and relatable advertisement campaigns. The product brought a new revolution in India by providing affordable, healthy and convenient meals to women in India fostering their empowerment and helped busy people find an easy form of meal. Although Maggi received tough competition, its competitors could not adapt to changes so quick like it and so, Maggi saved its consumers from switching to the alternates. The low price, easy preparation method and taste caused Maggi to become a universal food item in India. The fulfilment of the stages of the EKB Model has helped Maggi gain loyal customers for itself who chose to continue to consume the brand even after the scandal it was involved in. Even after the scandal the consumers of Maggi fulfilled all stages of the EKB Model.

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Employee Awareness on Green Human Resource Management (GHRM) Concept to Create Green Corporate Culture in South-Asian Countries

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Abstract

The importance of the “Go Green” concept is now not only limited to the welfare of our natural environment, nowadays it has already expanded in business organizations too. Green Human Resource Management (GHRM) concept is a novel concept and is becoming popular gradually all over the world. For developing South-Asian countries like- India and Bangladesh, it is comparatively a rare and unfamiliar concept to align with the existing HR policies. The main HRM practices generally include- Recruitment & Selection, Training & Development, Performance Management, Compensation & Benefits, and Talent Management and so on. However, the Green HRM concept refers to environmentally friendly HR policies and practices towards the pursuit of green corporate sustainability.

The main objective of this paper is to increase employee awareness and commitments to create, promote and develop a new green corporate culture through Green HRM concept. The study used primary data collected through a specially designed questionnaire. Specifically, data was collected from 50 employees from both the countries India and Bangladesh and was analyzed by using descriptive statistics. This particular study also helps to create a better eco- friendly corporate culture to improve competitiveness and to accelerate the overall performance of any organization.

Keywords: Environmental Sustainability, Green Human Resource Management, Green Human Resource Practices Green Corporate Culture, Green Environment.

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1. Introduction

Green Human Resource Management is a relatively new concept in Management and HRM literature. The concept of Green HRM typically includes using less possible paperwork at all HR functions like- Recruitment & Selection, Training & Development, Performance Review etc. to create a sustainable environment friendly and green corporate culture. Industries can achieve sustainability through Green HRM. Employees have to be conscious about preserving environment along with the job responsibilities. It makes aware about them environmental sustainability and Green HRM. Therefore, organizations should put more effort into the research on new technology to minimize the impacts of environmental destruction by creating products that are harmless and less pollution to environment (Liu, 2010; Ozen and Kusku, 2008).

1.1 Objective of the Research

Broad Objective:

The main objective of this research is to increase awareness among employees to create, promote and develop a new green corporate culture through green HRM concepts.

Specific Objective:

Some of the specific objectives of this research are:

- a. To educate, train and motivate employees to conduct their activities in an environmentally responsible manner.
- b. To increase or improve corporate environmental performance by certain HR functions such as- Training and development,
- c. Employee Empowerment and Motivation, Rewards etc.
- d. To ensure sustainable environmental performance on a long-term basis.

1.2 Research Hypothesis

The hypothesis of this research is:

H1: Employees are not aware of Green HR practices.

H2: Employees are aware of Green HR Practices.

2. Literature Review

The purpose of going green is to use products and methods that would not negatively impact the environment through pollution or depleting natural resources (*Robinson, 2008*). If the use of natural resources is reduced by using alternative sources, it will have positive outcomes such as keeping the environmental footprint small, reducing waste and re-using materials as much as possible (*Dallas, 2008*). In addition, it will result in using scarce natural resources efficiently and effectively, while keeping

the environment free from detrimental products. Researchers in this area argued that environmental management system could only be effectively implemented if the companies have the right people with the right skills and competencies (*Daily and Huang, 2001*).

Strategic HRM researchers argued that to achieve HR effectiveness, HR should be practiced as a whole and must be aligned with the business strategic goals, the primary means by which firms can influence and shape the skills, attitudes, and behavior of individuals to do their work and thus achieve organizational goals (*Collins and Clark, 2003*). Previously, businesses assumed that incorporating 'green' into their business strategy would cost money, but they now realize that ignoring negative impacts on the environment will be costly in the future (*Fernandez, Junquera and Ordiz (2003)*). There are few studies that show the effectiveness of Green HRM practices in South-Asian developing countries, like Bangladesh and India. This study helps to initiate knowledge on Green HRM concept and based on this knowledge, researcher's aim is to find out the awareness level of Green HRM among the employees from different industries in India and Bangladesh.

3. Research Methodology

3.1 Chapter Overview

This chapter will describe the research design, data collection process used, the population targeted, sampling process and the instrument development for data collection. Last section will determine a data analysis approach.

3.2 Research Type

This research aims to increase employee awareness and commitments to create a new better corporate culture through Green HRM Concept. Particularly, *Descriptive Statistics Method* applied in this study respectively to know the awareness about Green HRM among the managers and to identify the significant factors that influenced on employee's awareness about Green HRM.

3.3 Sources of Data

To conduct this research primary sources of data are used. A structured questionnaire has been developed based on the literature study and survey has been constructed to various levels of HR managers in different kinds of organization.

3.4 Sampling Design

Researchers have adopted the survey type of research in which a sample from the targeted population is used for the study. The sample covers Top level, Mid-Level and Junior Level HR personnel from Telecommunications, Financial Institutions, Pharmaceuticals, Readymade Garments, IT, FMCG as we know majority of the companies from these industries contributing more to the national economy of both Bangladesh and India.

3.5 Technique of Data Analysis

Collected data is coded and verified. Moreover, data is processed by making consistency checks with the help of computers and relevant knowledge on the subject as well as knowledge and applications of satisfied tools. Some manual techniques are also applied during the collection of opinion through questionnaires.

4. Data Analysis, Findings & Discussion

4.1 Chapter Overview

This chapter Analyzes and explores the results of the quantitative Data. This data was collected by preparing specially designed questionnaires and getting it filled with the help of Google Form.

This chapter explores India and Bangladeshi Employees awareness on Green HRM Practices, Policies, and Employees Contributions towards practicing Green HRM Practices.

4.2 Questionnaire Analysis

Questionnaire was specially designed by using Google Forms to collect Quantitative data and distributed by E-Mail to the appropriate personnel from different sectors from India and Bangladesh. All Respondents' replies are stored securely in Google Sheets and used for this Research analysis only.

4.3 Country and Gender of Respondents

Here, Figure 1.1 represents the country of Respondents. 54.2% respondents are from Bangladesh and 45.8% Respondents are from India

Figure 1.1: Respondents from Bangladesh and India

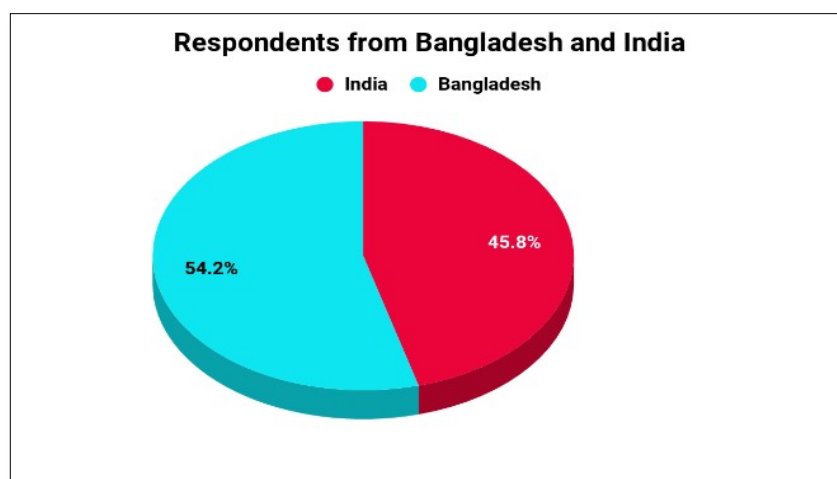


Figure 1.2: Gender Distribution

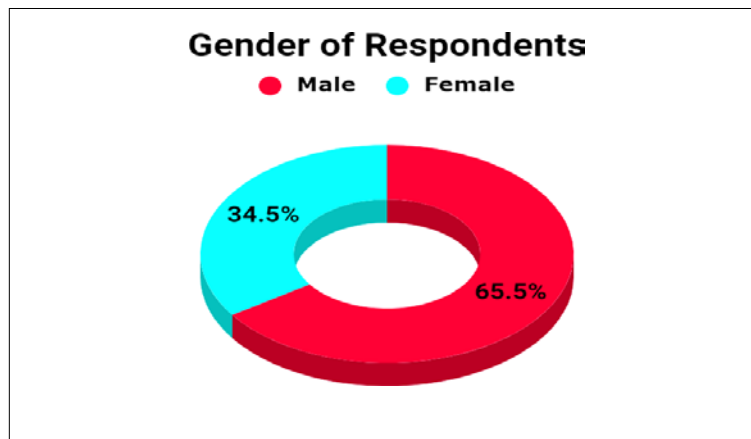


Figure 1.2 represents Gender of the Respondents, 65.5% of the targeted personnel are male while 34.5% are female.

4.4 Respondents' Organization Sector and Expertise

Figure 1.3: Respondents Organization Sector

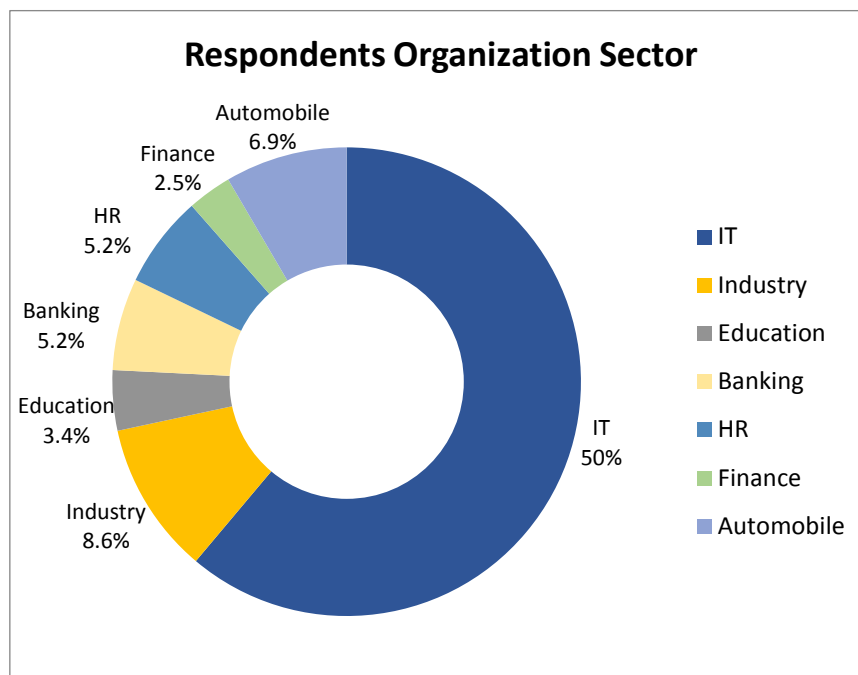


Figure 1.3 clarifies the distribution of Sample participants by organization sector. About 50% of participants work in IT sector. About 8% participants' works in Industry, 6.9% in Automobile Sector, 5.2% in Finance, 5.2% HR Department and Banking, 3.4% in Education sector, 1.7% in Media and Pharmacy.

Figure 1.4: Respondents Expertise

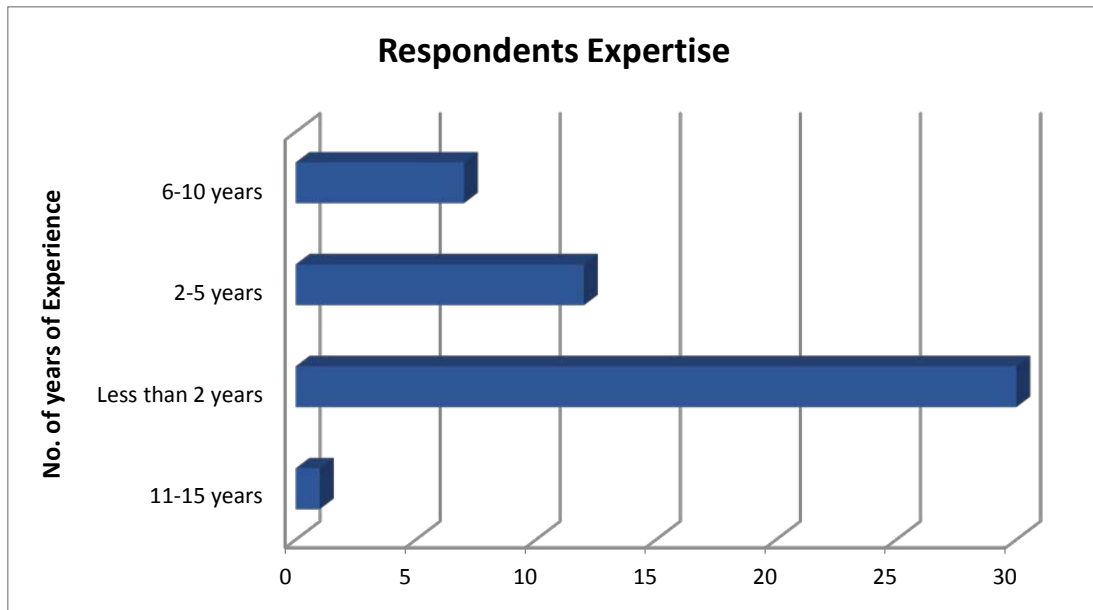
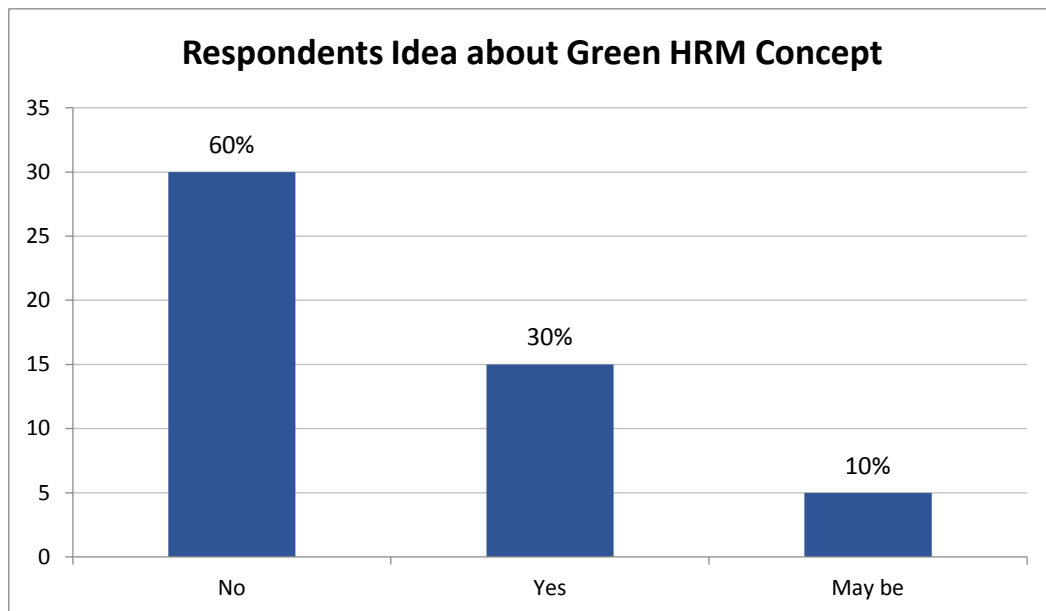


Figure 1.4 represents that 30 out of 50 participants have less than 2 years of Experience, 12 out of 50 participants have 2-5 years of Experience, 7 out of 50 participants have 6 to 10 years of Experience and 1 out of 50 participants have 11 to 15 years of Experience.

Figure 1.5: Respondents' Idea about Green HRM Concept



To know how many employees have Idea about Green HRM Concept and its practices Researcher asked Respondents whether they know about Green HRM Concepts and Practices. Figure 1.5 shows that **60% of the Respondents** do not know about Green HRM Concept, while **30%** know about Green HRM Concept. **10%** of the Respondents chose MAY BE. It shows that most of the Employees do not have much Idea about Green concepts and policies.

Figure 1.6: Business Organizations' Incorporation of Environmental Management in Business Operations

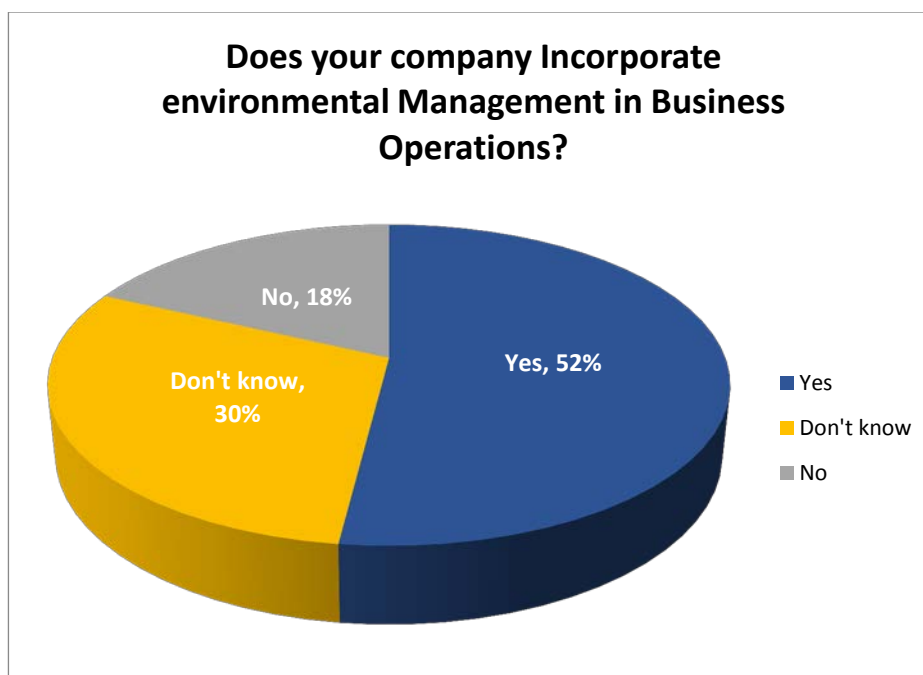


Figure 1.6 depicts that **52% of the Respondent's** companies are incorporating Environmental Management in Business Operations. **30% Respondents** do not know whether their companies are incorporating Environmental Management in Business Operations. Rest of the **18% Respondents** clearly mention their companies are not incorporating environmental policies and concepts in Business Operations

Table 1.1

Questions	Yes	No	Don't know
Does your Organization's vision or mission statements include environmental concern?	60%	30%	10%
Does Top Management actively support	59%	31%	10%
Did you ever get any sort of Environmental Training from your organization?	42%	68%	----
Did your organization ever organize any social event or provide any opportunities to take part in "Go Green Activities"?	56%	20%	24%

To know more about Employee Awareness on Green HRM Practices and Policies a set of questions have been asked.

To the Question “**Does your Organization’s Vision or Mission statements include environmental concerns?**” 60% of the Respondents answered “YES” as their Organization’s vision or Mission statements include Environmental policies and practices. While 30% Respondent’s Organizations do not include Environmental policies and practices in their vision and mission statements. 10 percentage of the Respondents answered “MAY BE”, they do not have an idea about their Organizations’ vision and mission statements.

To the Question, “**Does Top Management actively support green environmental practices in your organization?**” 59% of the Respondents answered “YES” as their organizations’ top management actively support Green Environmental Practices in their Organization. While 31% Respondents Organization is top management do not support environmental practices and 10% of the Respondents do not know whether top management actively supports green environmental practices.

Table 1.1 depicts that only 42% of the Respondents got Environment related Training from their Organization and remaining 68% of the respondents don't get any kind of environment related Training from their Organization.

Table 1.1 shows that only 56% of the Respondents Organizations organize social events and allow them to participate in Go Green Activities. While 20% Participants Organizations do not organize, any social events and remaining 24% participants do not know about organizing social events and Go Green Activities of their Organizations.

Figure 1.7: Green HRM Barriers

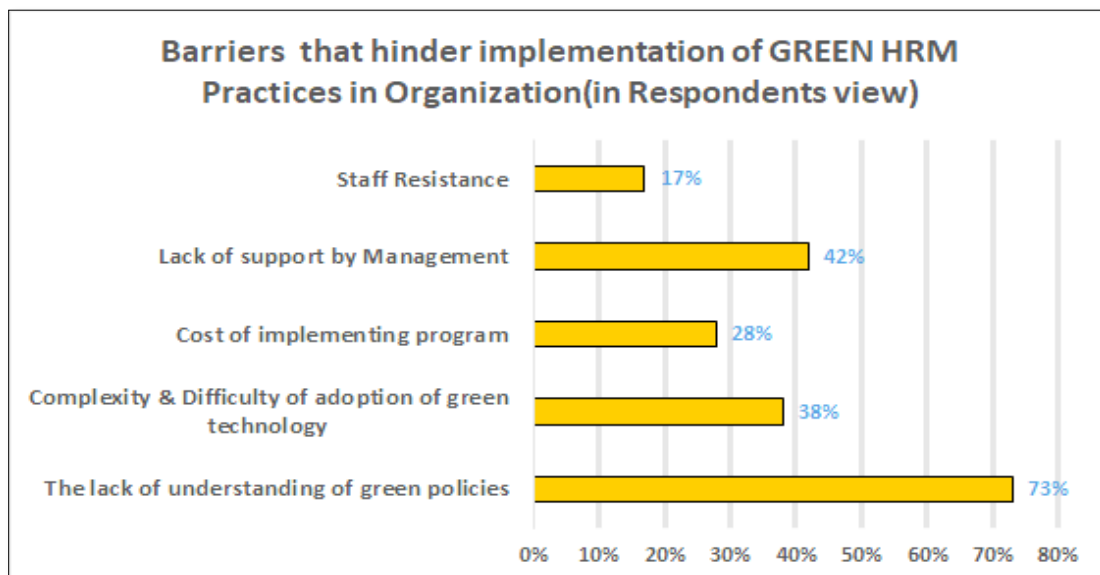
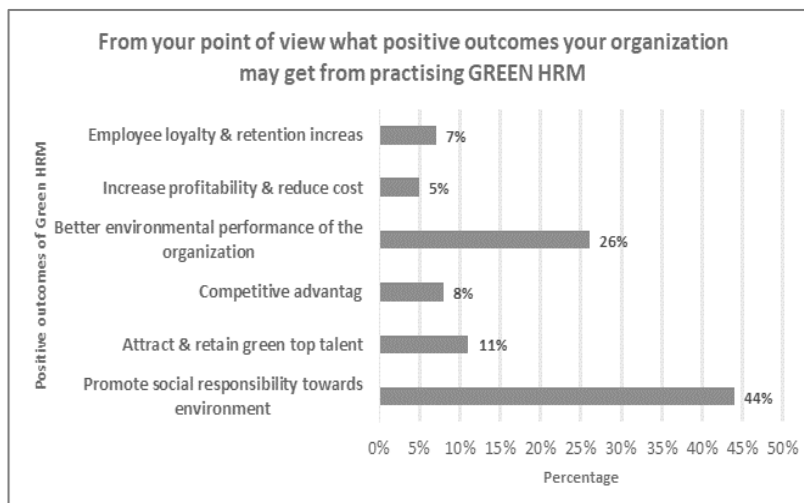


Figure 1.7 depicts that 73 % of the total Respondents of the opinion that the lack of understanding of green policies is the main barrier that hinder implementation of Green HRM policies and Practices. 42% of total participants saying lack of support by management is the barrier, 38% of total participants saying complexities and difficulty of adoption of green technology is the barrier, 28% of total respondents view

is cost of implementing programs is the reason, and 17% saying staff resistance is the cause of not implementing Green policies successfully.

Figure 1.8: Positive Outcomes by Green HRM



Respondents were asked to select positive outcomes of their organizations from practicing GREEN HRM in their point of view. The major positive outcome from practicing GREEN HRM concepts is “Promote social responsibility towards the environment”. 44% of the Respondents are of this opinion. 26% participants say it results in Better environmental performance of the organization. 11% say “Attract and retain green top talent”, 8% say “Competitive advantage”, 7% say “Employee loyalty and retention increases”, and 5 % respondents’ say “Increase profitability and reduce cost.”

Figure 1.9: Green HRM Support Rate



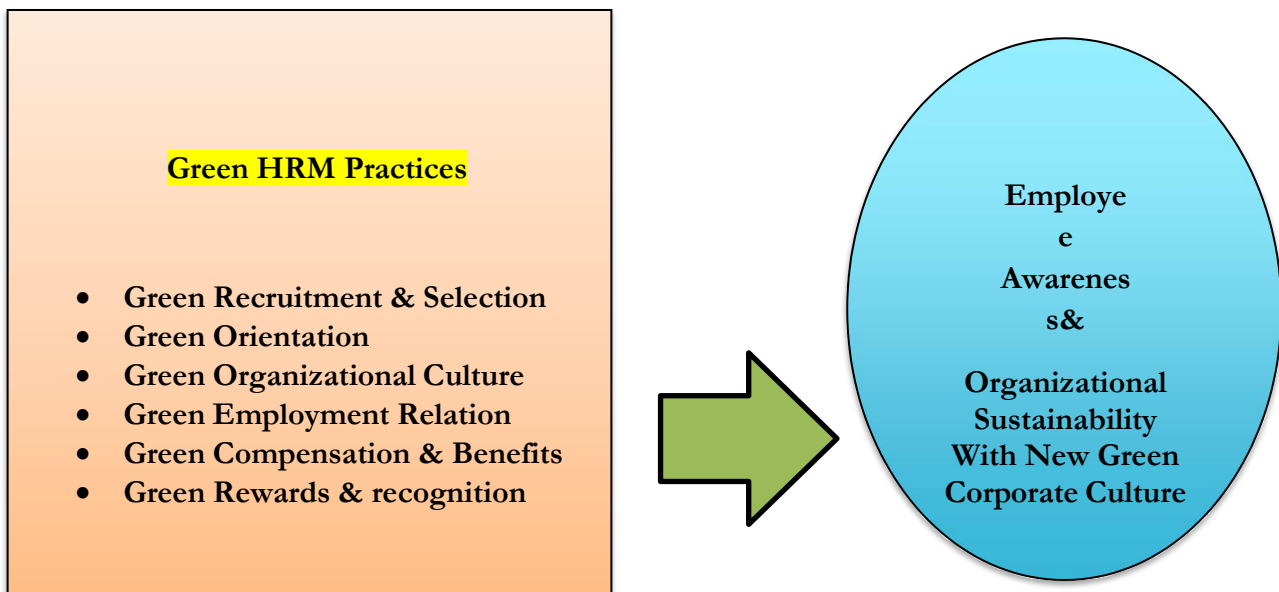
All the Respondents are supporting Green HRM Practices. All are of the opinion that practicing Green HRM practices and Policies gives positive outcomes in various ways.

5. Discussion & Implementation

5.1 Green thinking in the organization:

HR plays an important role in People Management, which is considered as a resource of an organization. The people in the organizations must understand the importance and significance of Green HRM practices. The accountability of the current generation HR managers is to incorporate Green HR philosophy in Corporate Mission Statement, HR policies. It should also spread it with the help of training programs, in recruitments etc.

Figure 1.10: Conceptual Framework of Green HRM



5.2 Strategic Implementation of Green HRM on General HRM Functions:

As a new expansion of general HRM, Green HRM can be aligned with usual HRM functions. Several functions involving regular HRM practices in which green HRM can be implemented could be the following in general:

- **Green recruitment and selection:** The companies can choose the resumes/CVs of suitable candidates and download them. Later, they can print whenever needed. The selection tests can also be as paperless as possible like behavioral observation, interview, presentation in which less paper is needed.
- **Green orientation:** Orientation programs should uphold the organization's attitude for green issues like health and safety, green workplace, healthy and clean local area etc.
- **Green Training and Development:** The green training and development educate employees about environmental training and development and also educate employees about energy awareness in the organization and reduce wastage, and solve environmental problems in the organization.

- **Green performance management and evaluation:** Employers must retain key competent & talented employees who are continuously taking care of environmental issues of the organization & employer must ensure that they must be financially rewarded too for their contributions. Green reward schemes should be present for motivating all levels of staff towards sustainability.
- **Green Compensation and Reward System:** Compensation and reward is the major Green HRM practices through which employees are rewarded for their performance. Variable pay system could be added in compensation system by linking it to eco performance.
- **Employee Relation:** Employees should be motivated for involvement and participation in social and ecological initiatives to create a general healthy and workable office space that results in sustainable, competent, efficient, and socially responsible employer-employee relationship.

6. Conclusion

Based on the above literature and reviews, it is obvious to conclude that Green HRM is an emerging field. This study shows that the majority of the employees from both Bangladesh and India are aware of Green Human Resource Management. However, proper Green HR activities are not yet practiced in the organization. Therefore, organizations want to execute the Green HR policy in near future. Being greener needs integration of environmental management in Human Resources practices. This strategy must reflect and inspire the aspirations of the HR team and other employees, aligning with the company's strategy, values to create Green Corporate Culture.

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The Environmental Kuznets Curve: The Hypothesis And Its Validity

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Abstract

The Environmental Kuznets Curve (EKC) graphs the relation between environmental quality and income. Similar to the Kuznets curve for income inequality, the EKC is also an inverted U-shape, suggesting an initial worsening and ultimate improvement of environmental quality with increases in income. This review article discusses the reasons behind the inverted-U shape of the EKC, and evaluates the empirical literature testing the curve's shape. The paper concludes with policy implications of the EKC's shape.

Keywords: Environmental Kuznets Curve, Policy, Sustainability, Environmental quality

1. Introduction

One of the Millennium Development Goals, as specified by the UN, is to ensure environmental sustainability in the world. The environment quality of a region (or nation), although difficult to "measure", can be considered a function of population, income, technology, urbanization, among other factors. Out of this (indicative, but not exhaustive) list of variables, the **Environmental Kuznets Curve** (EKC) graphs the **relation between income and environment quality** (or pollution levels)-using an environmental indicator (level of smoke, water pollution) as a proxy for the latter. The shape of the EKC is an **inverted-U** (just like the Kuznet's curve), thereby implying that environment quality deteriorates and later improves with an increase in income.

This fairly new concept has been a subject of great debate over the past decade, due to an increase in awareness and concern about environmental issues. Since the hypothesized shape of the curve has various policy implications, it is important to understand the relevance and the validity of the proposition.

This paper attempts a literature review of the existing work done on the EKC. Section 1 throws light on the background and genesis of the EKC. Section 2 elucidates upon the various explanations regarding the shape of the curve, while Section 3 explains whether the EKC predictions are borne out by empirical evidence. The next section explains the policy implications of the EKC hypothesis. Section 5 highlights the criticisms regarding the EKC hypothesis, while in the last section I present the conclusions along with some of my personal beliefs about the concept.

2. Background

During early 1970s, Malenbaum (1978) found that the ratio of consumption of some metals to income was declining in developed countries in 1970s. Motivated by this result, later studies (Auty, 1985 and de Bruyn & Heintz, 1998) demonstrated that the **relation between the intensity of metal use and income is an inverted-U**, i.e., the consumption of metals declines with the development of a country. This implied that the intensity of resource use decreases beyond a threshold level of income. Although not exactly a relation between environment quality and income, these studies were probably a **foundation** stone for future work in the field.

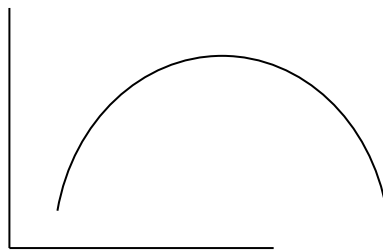


Figure 1: The EKC: an inverted-U

One of the earliest works on the EKC was undertaken by **Grossman and Krueger** in 1991, to study the environmental impacts of NAFTA¹. They estimated EKC's for SO₂, SPM², and fine smoke using the GEMS³ dataset and found an inverted-U relation (see figure). It is believed that they were the ones to recognize the similarity of the EKC's shape to that of the Kuznet's curve (which claims an inverted-U relation between income and inequality). However, the term "environmental Kuznet's curve" was **coined by Panayotou**, who conducted a similar study for ILO in 1993. Another famous work is by **Shafiq and Bandopadhyay** (1992).

The implication of the EKC's shape is that environmental quality deteriorates in early stages of development and improves in the later stages. The **intuition** behind this is quite plausible: at **low levels of income, basic needs** are more important, hence environment is sacrificed at the altar of growth; but later, with **improvements in standards of living, environment quality** also becomes **valuable**, resulting in the betterment of the environment.

1 North American Free Trade Agreement

2 Suspended Particulate Matter

3 Global Environmental Monitoring System

Essentially, the EKC can be understood as a **development trajectory** for a country. It describes a stage-based link between environment quality and growth: at early stages, there is low awareness (and possibly, insensitivity) about ecological issues and environment friendly technology is not available; at later stages, economic agents become concerned about the environment, there are advances in technology and greater regulation due to community pressure leads to improvements in the environmental quality, as measured by its indicators. **The supporters of the EKC hypothesis thus claim that economic growth is the only path to eventual environmental improvement.**

3. Understanding the Shape of the EKC

Various explanations have been proposed by researchers, as to why an inverted-U could be obtained, when environment degradation is regressed on income.

3.1 Structural Changes Due To Economic Growth

The first set of explanations stem from the fact that as economic development accelerates with intensification of agriculture and other resource extraction (the **take-off stage**), the rate of resource depletion starts exceeding the rate of resource renewal. At higher levels of development, **structural change** towards information-intensive industries and services, coupled with increased environment awareness, enforcement of environment regulations, better technology and higher environment expenditures, results in gradual decline of environment degradation (Dinda (2004) p 434). Thus, the inverted-U depicts the **natural transitional process** of economic development: from a clean agrarian economy to a polluting industrial economy, and finally, to a clean service economy (Arrow et al, 1995). This basic premise has been extended in many directions, as discussed below.

3.1.1 Income Elasticity Of Environment Quality Demand

As income grows, people achieve a higher standard of living and care more for the quality of environment. This **demand for better environment** translates into improved **regulations and structural changes** in the economy, which reduce environment pollution. With an improvement in standards of living, the value of environment quality increases, that is, income elasticity of environment quality demand exceeds one; and **clean environment is considered a “luxury good”**. At low levels of income, subsistence is the most important concern, and most **economic activities** undertaken to raise the standard of living inevitably **cause pollution** and exert pressure on resources. **Richer people** can afford to spend more on **“green products”** and moreover, have the resources to invest in **“greener technologies”** to find new production processes, inputs and resource use pattern that can help improve environment quality. Thus, **preferences, income and technology interact** with each other to determine the course of the environment in a region.

3.1.2 Scale, Technological, Composition Effects

Increases in output will undeniably lead to extensive use of resources and inputs, hence leading to higher emissions, waste generation and pollution. Thus, **income (output) and pollution “scale up”**. This is the scale effect of economic growth. The traditional view that economic development and environment quality are conflicting goals reflects the scale effect alone.

However, economic growth can also have a **positive effect** on environment through the **composition and technology effects**: as income grows, structural changes take place, resulting in **innovations** and discovery of **cleaner activities** that produce less pollution. **Productivity and efficiency increase** with the use of less environmentally damaging inputs (e.g. substituting natural gas for coal). As the economy shifts from energy-intensive industry to services and knowledge-based clean economy, pollution falls.

The **scale effect dominates in the initial stages** of development, and is **outweighed by the composition and technological effects** later, resulting in an inverted-U relation between income and environment degradation.

3.1.3 Income Inequality

In an interesting study, Torris and Boyce (1998) include power **inequality** (which is a **function of income inequality and income** (Kuznets, 1963)) as a determinant of the EKC. They find that the **estimated effects of per capita income on pollution weaken once inequality effects are taken into account**. They hypothesize that when the beneficiaries of pollution-generating activities are more powerful than those who bear the costs, there will be inefficiently high levels of pollution in the society. Their hypothesis is more or less borne out by their econometric study, as the coefficients of inequality variables were found to be statistically significant. These findings imply that in developing countries, economic growth can be accompanied by improvements in environment quality, if they promote more equitable power (or income) distribution.

3.2 Globalization

3.2.1 Comparative Advantage And The Pollution Haven Hypothesis

International trade is an important factor that explains EKC. Trade leads to an **increase in income** of the country, hence **increasing pollution** (through the scale effect), *ceteris paribus*. However, trading partners may also define **terms of trade** according to environmental considerations (e.g. a country with pollution-intensive exports may face restrictions from the importing nations).

On the other hand, it's also possible that a developed country, facing tough environmental regulations at home, is induced to "export" its pollution to a developing country which sets less stringent norms to attract foreign investment. For instance, multinational firms dealing in pollution-intensive goods could relocate to countries with lower environmental standards. Thus, **relaxed environmental regulation can act as a source of "comparative advantage"**. In the jargon of environmental economics, this is known as the **pollution haven hypothesis**.

3.2.2 International assistance

With strong global **dialogue on environmental issues** like climate change and global warming taking place, developing countries can get assistance from international communities to invest in R&D⁴, policy reforms, information collection and public environmental education. International assistance can help in **lowering and flattening of the EKC**, thereby enabling the "turning point" to be reached faster and at a lower level of pollution.

⁴ Research and development

3.3 Market Mechanism

Since markets allow resources to be “priced correctly”, encouraging efficiency and lowering wastage and environmental damage, endogenous ‘**self-regulatory market mechanism**’ for tradable natural resources can prevent environment degradation to grow without bounds.

3.3.1 Price Mechanism

If market prices reflect the true value of natural resources, over-exploitation and environment degradation can reduce. For instance, **Pigouvian taxes** induce firms to internalize the social cost of pollution, hence resulting in lesser pollution. Since **economic development often helps in strengthening the market information system**, this can explain the falling portion of the EKC.

3.3.2 Economic Agents

The role of economic agents is important in tracing the environmental trajectory of a nation. Market agents can create **pressure for environment protection**. For instance, consumers may avoid pollution-intensive products, an “environment-friendly” reputation of a company can positively influence its stock prices, investors can encourage cleaner production etc.

3.4 Regulation

3.4.1 Formal Regulation

As explained above, with an increase in demand for higher environment quality, strengthening of environment regulation takes place. **Formal environment regulatory institutions** are often weak or regulations are not implemented strictly in LDCs⁵, which could be a reason for the rising portion of the EKC. Moreover, **pollution damage gets high priority after society has completed basic investments** in health and education (Dasgupta (2002), pg152). Hence, developed countries are induced to regulate pollution more strictly.

3.4.2 Informal Regulation

Apart from formal regulations, an **aware and informed civil society** can play an important role in implementing “informal regulation”. NGOs, communities, religious institutions can pursue informal regulation. Dasgupta et al (2002) assert that the relationship between income and environment quality is determined by the extent to which parties are ‘bothered’ by environment damage and its side effects. Hence, although it may be believed that only “well-educated, aware” citizens of a developed country can create pressures for environment improvement, with growing public concern and education about environment quality, even developing countries can develop from low levels of per capita income with little or no degradation. Thus, countries may be able to experience an EKC that is lower and flatter than the conventional measures suggest (Dasgupta et al (2002) p 152).

⁵ Less developed countries

3.5 Government Role

3.5.1 Subsidies

Elimination of subsidies often has an **environmentally beneficial effect**. For instance, Deininger and Minten (1999) find a negative correlation between removal of subsidies and price support on maize and deforestation in Mexico. More generally, the heaviest polluters often receive huge subsidies, as they operate in the basic industries of steel and petrochemicals. Elimination of energy subsidies increases energy efficiency, shifts industry away from energy-intensive sectors and reduces demand for pollution-intensive power generation methods (Vukina et al, 1999).

4. Empirical Evidence

The **empirical support** for the EKC can be termed **inconclusive**. Empirical researchers are far from agreement that the EKC provides a good fit to the available data, even for conventional pollutants. Although the EKC hypothesis is mainly a within-country phenomenon, very few studies have sought evidence of the EKC by analysing within country data. As a result, most of the **empirical “support”** for the inverted-U has come **from cross country data**, possibly leading to misconceptions.

Many **air-quality indicators** (SO₂, SPM, CO⁶, oxides of nitrogen etc.) have revealed an inverted-U relationship. Grossman and Krueger (1991) and Shafiq and Bandopadhyay (1992) had estimated EKC's for SO₂ and SPM and found an inverted-U. Interestingly, these are the air pollutants which have a **direct impact on health** and show a strong relation (inverted U) with income; while global pollutants (like CO₂) either monotonically increase or decrease as income grows. However, one of the few time series studies, conducted by de Bruyn et al (1998) shows that growth has had a positive effect on emissions of carbon dioxide, nitrogen oxides and sulphur dioxide in countries such as Netherlands, Germany, UK and US.

Water quality indicators provide **inconclusive** results. Various indicators like concentration of pathogens in water, concentration of heavy metals (lead, mercury, nickel) and toxins and measure of deterioration of the water oxygen regime throw up **conflicting results**. For instance, in a study conducted by Shafiq and Bandopadhyay (1992), access to clean water was found to improve with increases in income, while river quality tended to worsen in the higher income range. This possibly implies that while the water sources get dirtier at high income levels, richer countries are able to treat water and make clean water accessible to the populace.

Other indicators like **solid wastes, urban sanitation, access to safe water, energy use and traffic volumes do not support** EKC.

One may note here that **environment problems that have direct impacts on human health improve steadily with economic growth**, while for the problems which can be externalized (for instance, solid wastes), the relationship is monotonically increasing. In essence, the **EKC hypothesis is not borne out by** empirical evidence for most environment indicators.

⁶ Carbon Monoxide

5. Policy Implications

Not just the shape and name, even the policy **implications** drawn **from the EKC** are (unfortunately) **similar** to the ones drawn from the **original Kuznets curve**. The most obvious policy implication of the EKC is that **promoting economic growth is sufficient to safeguard the environment**. Since the shape of the EKC suggests that pollution declines when income rises beyond a certain level, policymakers in some developing countries have construed it to be a green signal to follow a **“business as usual”** policy. The EKC apparently conveys a “clear” message about priorities: **“Grow first, clean up later”** (Dasgupta *et al* (2002) p147). One of the advocates of such a policy regime, Beckerman (1992) forcefully claims, “there is clear evidence that, although economic growth usually leads to environment degradation in the early stages of the process, in the end the best-and probably the only-way to attain a decent environment in most countries is to become rich”(p491). However, such a **simplistic policy implication** can often be taken as an **excuse to exploit natural resources** to achieve faster growth, hence is not justifiable, unless few **caveats** are appended to it.

The interpretation that economic growth can automatically lead to higher environment quality by bringing about structural changes in the economy was in fact precluded by Grossman and Krueger themselves (1995). They write (p 371-372), “Even for those dimensions of environment quality where growth seems to have been associated with improving conditions, there is no reason to believe the process is an automatic one...*there is nothing at all inevitable about the relationships that have been observed in the past.*” (Emphasis added.) They suggest that **more stringent and strictly enforced environment standards**, driven by citizen demand, have provided the strongest link between income and pollution (Torriss and Boyce (1998), p 148).

In an exhaustive study, Dinda (2004) rightly asserts that **restructuring the environment at a later stage may prove to be unnecessarily expensive**, and it may be less costly to prevent it today than in future (pg 447). Thus, a **“prevention is better than cure”** may be a wiser policy to follow than “grow first, clean up later”. The environment policy of a country has to be designed so as to meet the **twin goals** of economic growth and environment protection simultaneously. Here, the **socio-political regime** of a country plays an important role: **corruption** and **rent seeking** behaviour may influence the income-environment relationship (Lopez and Mitra, 2000) while **democratic rights** can create synergies, leading to increased levels and efficacy of environment policy (Magnani, 2002). In addition, since policies are often formulated at the national level and implemented at the local level, the policy authority needs to necessarily encourage assimilation of **information and feedback** from the grassroots level to take the local effects into consideration.

The importance of **market-based incentives** is highlighted by Dasgupta et al (2002): they cite examples of countries where notable inroads have been against pollution due to a movement away from traditional command-and control policies toward **market-oriented forms of regulation**: Pollution charges have been successfully implemented in China (Wang and Wheeler, 1996) and countries like Malaysia, Columbia and Philippines (World Bank, 1999). For instance, in Columbia, implementation of **water pollution charges** in the Rio Negro Basin reduced organic discharges from factories by 52 % (Dasgupta et al (2002) pg 157).

As discussed above, findings by Torriss and Boyce (1998) imply that if developing countries focus on achieving greater equity along with higher income levels, the negative impact on environment can be mitigated. Hence, developing countries need not “suffer” deteriorating environment quality in the short

or medium run, and can view **growth and environment as complementary** rather than conflicting goals.

6. Critique

Various researchers have attacked the EKC hypothesis on **theoretical and econometric grounds**. Among the first of the critiques were by Stern et al (1994), Arrow et al (1995) and Pearson (1994). Some of the main arguments given by them and other researchers are discussed in brief below.

- a. Stern et al (1994) point out that the EKC hypothesis is based on the assumption that there is **no feedback from the state of the environment to economic growth**. Deteriorating environment quality is seen as a threat to human life, but not to production possibilities. However, if such a feedback is acknowledged, it is clear that excessive focus on growth in the early stages of development when environment degradation is rising simultaneously will prove to be detrimental in the long run, i.e., growth will be **unsustainable**. Thus it is inappropriate to estimate a single equation model assuming **unidirectional causality** from the economy to environment.
- b. Among the most commonly discussed **econometric critique** regarding the EKC is that most studies use a **cross-section of data**, which can suffer from problems of **heteroscedasticity** (often found in cross-sectional studies). Moreover, cross section evidence is just a **snapshot of a dynamic process** and can result in spurious estimates.
- c. Stern (2004) gives a ruthless critique of the EKC literature, calling it “econometrically weak”. He writes, “little or no attention has been paid to the statistical properties of the data used and little consideration has been paid to issues of model adequacy such as the possibility of omitted variable bias” (p1420). Perman and Stern (2003) also claim that if one uses appropriate techniques, the EKC is found not to exist. There also exist doubts regarding the **accuracy of the GEMS dataset**, which was the cornerstone of much EKC empirical work done in the initial years (Harbaugh et al, 2002).
- d. A convincing argument put forth by Stern et al (1994) is in terms of **mean and median income**. The “turning points” in most EKC studies, i.e. the income levels where the EKC peaks, are estimated around the world mean per capita income. This may lead one to believe that given likely future levels of mean income, environment degradation should decline in the future. However, income is not normally distributed but highly skewed. Hence it is the median rather than mean income that is the relevant variable. Now, the world median income is much lower than world mean income: this implies that **environment degradation is set to rise** in the coming years, since many countries have not yet achieved the “mean” income levels. In addition, studies that use **market exchange rates instead of purchasing power parity (PPP)** to compare incomes across countries find lower turning points, thus giving inaccurate results.

Briefly, there cannot but be **reservations** regarding the conventional EKC hypothesis and findings. As the empirical findings also don't lend support to the EKC, it is clear that further fine-tuning of the concept is needed and more robust econometric studies should be carried out to test the validity of the EKC and its predictions.

7. Conclusions

The above discussion regarding the EKC might be considered “pessimistic” by some. However, I believe that this pessimistic view about the EKC is in fact an optimistic view to find practical solutions to the economics-environment debate. If the EKC does not hold, i.e. there is no automatic relationship between income levels and environment quality; it means that all countries, irrespective of their level of development can work towards the betterment of the environment. It is time that the policymakers stop considering environmental degradation as an inevitable by-product of economic growth and instead take proactive measures to minimize the negative impact of growth on environment. For long-run benefits, investments have to be made towards environment protection, because a productive labour force can only exist in a healthy environment. Development and environment cannot but be complementary to each other. “Exchanging” the environment for “income” is surely a risky prospect and unsustainable in the long run. Thus, any country should aim to put itself on a trajectory where its EKC would either be flat or fall throughout!

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The Curious Case of Schooling vs Education

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“I never let my schooling interfere with my education”, Mark Twain.

Vidya's parents are thrilled that she has been admitted into one of the most prestigious schools in the country. “She will now get the best education”, says her mother beaming with pride. The purpose of education is to encourage children to think creatively and critically, introduce them to the joy of learning and spark a thirst for knowledge and exploration. Schools were once looked upon as sacred institutions that delivered all this and more. Sadly, today schools have morphed into rote learning factories that produce automated robots skilled at memorizing and regurgitating tons of meaningless information. Did someone say we send ‘children’ to school? Think again. By the time, students complete 12 years of schooling, they become experts at verbatim reproduction of voluminous content in the fastest possible way within three hours. Any semblance of original and critical thinking is annihilated and replaced with a lifelong hatred for learning and education. Are schooling and education dichotomous in today's world?

1. Ancient and Medieval India: Schooling and Education

The Indian education system known as the *Gurukul* is a very ancient one dating back to the Vedic period. It was a residential system where the students (shishya) lived with their teacher (Guru) getting an education from him and helping him with day-to-day chores. The students were almost like an extended family of the Guru, hence the name *Gurukul*. Though the students did not pay a fee to the Guru, they had to offer a *Gurudakshina* on completing their education. The Guru had complete freedom in designing the syllabus, deciding the method of instruction and the period of education. There were no formal exams and the Guru was the absolute authority in deciding whether a student had completed his education. Teaching was largely oral and debate and discussion were imperative to the learning process. The focus was not just on getting a good education but also on inculcating good cultural and moral values, discipline and hard work. Experiential learning and group work were vital cogs in the learning process. Getting their entire education from one person might have had possible shortcomings. The students were heavily dependent on the expertise of the Guru and their knowledge is likely to have been limited to that extent. They might have also ended up with a lopsided view of the world due to the overbearing influence of the Guru in their formative years. The individual bias of the guru might have

also been a problem. Despite these shortcomings, the system largely worked well and gurukuls were real centres of education. Advanced education could be pursued at Universities like Nalanda or Takshashila. Education in medieval India was imparted through *maktabs*, *madrasas* and through informal schools of instruction like *tols*, *pathshalas* and *pyol* schools. Children from wealthy families also had the choice of getting educated through home tuitions.

The Indian education system was completely overhauled by Lord Macaulay in the 1830s and further modified by Woods Despatch. A Western system of education was adopted and English became the medium of instruction. Education in an English medium school became the ticket to white-collar jobs and a possible Indian Civil Service (ICS) qualification. The focus had shifted from holistic development and experiential learning of the Gurukul system to an education geared solely towards employment. Exams became a common mode of assessment. Merely graduating from high school was a monumental task partly because the system was alien to Indians and partly because the bar was set very high. The merits and demerits of Lord Macaulay's policy are beyond the scope of this article. However, it must be emphasized that despite its drawbacks, conceptual clarity and critical thinking continued to remain the cornerstones of schooling and education.

2. Independent India: Schooling and Education

The structure of the schooling system in Independent India continued to be similar to the system followed in the pre-independence period. However, a few years after independence India had several school boards including CBSE (Central Board of Secondary Education), ICSE (Indian School Certificate Examinations) and various boards of each state. The Indian education system focused on education for all. Primary schooling started at the age of five. Schools could either use English or vernacular languages as the medium of instruction. The syllabus was defined by the government(s) but there were no prescribed textbooks. Hence schools had complete autonomy to choose their own textbooks and decide the method of instruction. Textbooks were often prohibitively expensive and out of reach of the common man's budget. As a result, the role of the teacher was paramount. Listening in class was the best and often the only way to learn. School graduation exams were mostly based on a three-year syllabus (9th, 10th and 11th) and admission to colleges were based on these marks. An exam based on a three-year syllabus is a daunting thought. Surprisingly students rarely complained of stress and student suicides were almost unheard of. This was probably because exam performance was largely determined by a strong understanding of core concepts and critical thinking. In the absence of prescribed textbooks, rote learning was yet to worm its way into the education system. There were no prescribed paper patterns requiring hours of mindless training and students were blissfully unaware of the horrors of the 'multiple choice question'. The relationship between schooling and education still remained reasonably high.

By the late 1960s, prescribed textbooks printed and published by the government(s) had become commonplace and were often the only books used by schools. The prescription of textbooks was driven by a noble motive. Textbooks were often extremely expensive which made learning an uphill task for students. Students who missed classes were often completely at sea and had no way of catching up. Prescribed textbooks were expected to ease this burden and bring in a standardized method of education. Unfortunately, some paths have more puddles than the eye can see. As the use of prescribed textbooks increased, students started using them as a one-stop-shop for all answers. This reduced their

need to refer to other books and narrowed down the learning and critical thinking abilities of students. The introduction of prescribed books gradually led to defined paper patterns and a standardized method of questioning. Though this was done to ensure uniformity in evaluation, it also led to exam questions being restricted to the content from the prescribed textbooks. This encouraged students to reproduce answers verbatim from the textbook. The cycle of rote learning had started. However, verbatim reproduction of answers led to a rapid escalation in marks. Since the differentiation offered by original thinking had been obliterated by rote learning, alternate methods of differentiation were sought. The breadth of the syllabus was increased and MCQ methods of questioning were introduced. A decision was made to allot 20% marks based on 'internal assessment' in Board exams for all subjects. However, all this only dug a deeper grave for an already dying education system. The increase in breadth of the syllabus was compensated by a reduction in depth. The introduction of MCQs (Multiple Choice Questions) meant that students had to commit to memory the most insignificant bits of information. Today, an entire generation of students has been taught bits of everything and the whole of nothing. Schooling and education could no longer go hand in hand.

The staggering rise in marks was followed by an alarming rise in college cut-offs. In the 1970s, a 70% average assured a student of admission into an Honours course in any of the top colleges in Delhi University. By the early 1990s, this number had risen to 82%. By the turn of the century, cut-offs reached 90%. In the next 20 years, the unthinkable would happen and cut-offs for certain courses would touch an impossible 100%. If marks are really an indication of knowledge and intelligence, should we infer that the knowledge and intelligence of Indian students has shown a staggering rise of 30% in the last 50 years and 10% rise in the last 20 years? Ironically, while the marks are the only criteria for admissions in most government universities, private universities have a completely different story to tell. Most private universities and some extremely reputed government aided institutes like the IIT (Indian Institute of Technology) and IIM (Indian Institute of Management), grant admissions to their undergraduate programmes solely based on MCQ entrance tests while completely ignoring school graduation marks. When the school graduation marks of a student are not taken at face value in the very country which awarded these marks to him, it reveals a very deep-rooted malaise. The problem has been further compounded by the exponential increase in MCQ tests in the last few years. Almost all central level examinations are based on MCQs irrespective of the nature of the subject. This has led to a proliferation of coaching centres which 'train' students to 'crack' entrance exams. The MCQ has especially proved to be the bane of subjects where perspective is king and it is often impossible to choose one correct option. Of course, the real casualty of this system, as always, are the students. It is interesting to note that the MCQ system was devised by Fredrick. J. Kelly in 1914 in the USA to reduce the risks from subjective testing. A few years later, Kelly understood that he had inadvertently created a monster and tried to undo his initiative. Unfortunately, the world had already become too comfortable wearing the blinders of MCQs and Kelly's attempt led to his dismissal from his position at the University of Idaho.

The entire story of the Indian education system begs a bigger question. How are other countries faring with respect to schooling and education? This article looks at two countries that are globally renowned for the quality of their education-South Korea and Finland.

3. South Korea: Schooling and Education

South Korea is one of the most educated countries in the world. You don't have to take my word for it. According to the OECD (Organization for Economic Cooperation and Development), 70% of the population of South Korea in the age group of 24-35 receive a tertiary education. The PISA (Program for International Student Assessment) rankings by OECD shows that South Korea has consistently been among the top 10 countries with respect to learning outcomes on Mathematics, Science and Reading. Surely, they must have one of the best education systems in the world. The foundation of the Korean education system in its current form was laid after the Korean War. Education was centralized and the Ministry of Education was made responsible for all major schooling decisions including administration of schools, curriculum development, issuing guidelines for textbooks and allocation of resources. A major factor in strengthening the Korean education system is their investment in education; South Korea spends around 5% of its GDP on education which is above the OECD average. The education structure follows a 6+3+3 split between primary, middle and high school. A severe shortage of secondary school teachers in the 1960s and 1970s led to the establishment of a dedicated system of creating a strong and highly qualified teaching force. Teachers were given guaranteed job protection and extremely competitive salaries making teaching one of the most coveted and respected jobs in South Korea.

The Korean education system draws its fundamental principles from the Confucian values of loyalty, diligence, respect, hard work, merit and learning. It is also heavily influenced by the competitive exam system introduced during the Joseon period (1392-1910). During this period, the extremely competitive national civil services exam was seen as the ticket to high-paying government jobs and enhanced socio-economic status. To date, the Korean education system is heavily test-driven and with a relative grading process. The national civil services exams of the Joseon period have now been replaced by the fiendishly difficult Suneung, the College Scholastic Ability Test (CSAT) of Korea. The Suneung is an eight-hour back-to-back exam marathon culminating in near life or death decisions for Korean students. Family prestige, honour, a good job and a student's entire future are dependent on the university he goes to. Less than 1% of the students make it through to the top three 'SKY' universities (Seoul National University, Korea University and Yonsei University) in Korea; the remaining 99% repeat the cycle or go to an 'average' South Korean University. Teachers have a near God-like status in South Korea as they are considered the magicians who can teach, train and help a student get into the 'SKY' universities. With so much at stake, it is no wonder that Korean children are hyper-competitive with a colossal capacity for hard work. The average Korean high schooler attends school from 8 am to 5:00 pm and then rushes to a hagwon (private educational institute) for extra practice and tutoring where she spends another six hours. It is a common sight to see Korean children trudging home from hagwons around midnight. Students follow this punishing study schedule of 16 hours a day, six days a week, 42 weeks a year for three years. Sundays and school breaks are often spent in self-study or at hagwons and extracurricular activities are not even a distant dream. Naturally, Korean high schoolers are dreadfully sleep deprived. They average less than five hours of sleep a day for three consecutive years and try to make up for lost sleep by taking two-minute naps in the breaks between classes.

So does the rigour and drudgery lead to a good education? The South Korean education system has been heavily criticized for its excessive focus on rote learning. Korean students rarely question their teachers if they don't understand something. This is partly due to the high premium placed on values of subordination and partly because it is considered rude to question a teacher in class. Students believe

that by questioning a teacher, they are eating into the time of the teacher and other students. After all, the teacher could have delivered a lot of information in the time she might have spent answering a student query! Evidently, active learning, discussion and debate find no place in a Korean classroom. The seeds of curiosity and critical thinking are never allowed to take root in the minds of Korean children and any signs of natural curiosity are quickly and permanently extinguished. A Korean friend of mine told me that she found it impossible to learn in an Indian classroom because of the incessant questions! The final nail in the coffin of the Korean education system is the disturbingly high rate of depression and suicide among Korean students. South Korea not only consistently outperforms on PISA scores; it is also among the world leaders in teenage suicide and depression rates. Despite the PISA scores, schooling and education do not seem very strongly aligned in South Korea and students are paying with their lives for this.

4. Finland: Schooling and Education

After World War II (WW2), Finland was faced with the challenge of a growing population and a rapidly evolving economy which led to an increase in demand for quality education. The system was competitive and the huge rural-urban divide led to huge inequalities in access to education. To ensure that the entire population had equal access to quality education, Finland revamped its education system first in the 1940s and then in the 1970s. The reforms in 1970 mandated that the education system be centralized in all aspects including curriculum design, inspections and regulations. Students were separated into different tracks based on their test scores and final learning outcomes were determined by external testing. The government realized that teachers were the pillars of education and equal access to quality education would be impossible without investing in a highly skilled and knowledgeable teaching force. A Master's degree was made mandatory for all teachers and a specialized teachers' training program was instituted.

By the mid-1990s, the education system was overhauled once again. The centralized education system was done away with and decision-making powers were vested at local levels. It was believed that the best learning outcomes could be reached by recruiting high-quality teaching staff and giving them autonomy to make decisions. Finland had already set the bar for teachers so high that only the best could qualify. Teachers were also paid very competitive salaries to ensure that teaching only attracted the best talent. Confident that they had created a superlative system, Finland trusted their teachers to do the rest of the job. Fundamental curriculum guidelines were given and teachers were entrusted with the freedom to choose the method of instruction and their textbooks. By the turn of the century, Finnish children began to perform exceedingly well in PISA tests. Over the next twenty years, Finland would consistently be ranked among the top few countries in PISA assessments of Mathematics, Science and Reading. All this was achieved with the Finnish student spending a mere five hours a day in school with about 30 minutes of homework. Soon the rest of the world was sitting up and trying to find out how Finland had achieved the seemingly impossible.

The Finnish education system mandates nine years of schooling starting from the age of seven. The none year schooling includes an upper secondary school where education is divided into two parts-the general and the vocational. A fair number of students opt for the vocational track since such jobs are well paid and respected. Students choosing the general track write the National Matriculation Exam which is the criteria for university admissions. The National Matriculation Exam is optional and is

probably the only test the Finnish students write in their lifetime! Finland abolished standardized testing systems in the mid-1990s and embarked on a system of grading students based on individual progress and teacher feedback. Finnish teachers rightfully believe that they know their students better than what their marks might reveal about them. Overall student progress is tracked by the Ministry of Education based on sample groups.

So how does Finland manage without exams? Finnish education is based on the fundamental principles of collaboration, not competitiveness. The system advocates a cooperative learning method encouraging students with different learning abilities to help each other. This ensures that no student is left behind. In the very initial classes, students are encouraged to share their interests, hobbies and what they wish to learn or achieve. Based on this, they are divided into heterogeneous groups. Students are then allotted a variety of group tasks ranging from case study discussions to developing a marketing strategy or producing a research project. This method of learning inculcates team spirit in students, shifts the focus from individual shortcomings to group strength, encourages students to stand by each other during difficult times, enhances the quality of learning and provides a more meaningful approach to the whole process. The teacher-pupil relationship is nurtured from the start with teachers often doubling up as mentors. Naturally, teachers are held in the highest esteem in Finland.

Finland also has one of the lowest student-teacher ratios in the world. Working hours for teachers are among the lowest in the world and they are required to do very little non-value-added work like administrative tasks. They also aren't burdened by an overdose of accountability. Says Pasi Sahlberg, a Finnish educator "There is no word for accountability in Finnish. Accountability is what is left when responsibility is subtracted." Another Finnish teacher, Louhivori, says "We love our work and our incentives come from inside".

Finland certainly seems to have perfected the symbiotic relationship between schooling and learning. Their students learn by discussion, debate and project work. They are allowed to learn at their own pace without the guillotine of exams on their heads. They consistently outperform students from other countries in PISA scores and have a stress-free learning environment. Finnish children also spend a lot of their time in extracurricular activities and socializing. A 2019 study by Horn and Veermans found that the Finnish curricula facilitated critical thinking skills in students. The study further revealed that Finnish students outperformed their Stanford counterparts in the USA to a statistically significant degree.

5. Suggestions for the Improvement of the Indian Education System

Sceptics argue that the Finnish system cannot be emulated elsewhere because Finland has a small and relatively homogenous population. However, one can certainly adopt some of the best practices of Finland and our very own ancient Indian Education System.

- Primary schooling should begin at the age of six. The results from Finland and the education system adopted in India till the first few decades after independence support this theory. Psychologists argue that young children benefit from play rather than from a structured learning environment. Playschools could be optional before the age of six. However, it should be mandated that playschools focus only on play and do not work on making the children 'alphabet experts'.

- Teachers should be paid competitive salaries making it one of the most coveted jobs. The process of teacher selection should be rigorous and selective such that it attracts only the best talent. Both South Korea and Finland follow this process. Teachers could be tested for intrinsic motivation and a passion for teaching before recruitment.
- The government should mandate a curriculum and allow schools and teachers the freedom to approach the curriculum in the manner they deem fit. This was the system followed in India till the early 1960s. Schools should be allowed to choose their textbooks although prescribed textbooks could still be made available. Rather than focusing on completing the curriculum teachers should be encouraged to focus on the learning process.
- Tests and exams should be done away with till standard 12. Students should be allowed to focus on learning and understanding subjects through practical work, projects and case studies rather than memorizing information.
- In case a teacher feels that it is necessary to evaluate learning outcomes through a test, it should be done only through surprise tests. The test performance should only be used for measuring student improvement on an individual basis without undue emphasis on marks. The excessive focus on competition and ranks should be abolished.
- Board exams should only be conducted in standard 12 to help decide college admissions. The exams should focus on testing critical thinking skills, creativity, perspective and conceptual understanding.
- 10th boards could be made optional. The sole objective of optional 10th Board exams are that in case economically weaker students are forced to drop out after the 10th, a Board exam certificate would help them secure employment. 10th Board exam results should not be required for college admissions or job applications. Schools should not be allowed to advertise their 10th Board exam results if their students opt to write the Board exam. If the undue weightage given to these exams are reduced, schools and students will automatically drop out of the rat race.
- Admission to 11th and 12th standards should be based on internal school performance. If a student joins a new school, admission tests could be conducted for the student.
- Vocational courses should be offered as a career option and colleges for vocational learning should be established.

6. Conclusion

Most education systems around the world are currently on the verge of decimation and India is no exception. The absurdly long school hours and training at coaching centres, the excessive importance given to test results and the induction of students into a competitive rat race at an age where they can barely pronounce their names has robbed children of their childhood. The schooling system is akin to a trial by fire leading to an intense hatred towards learning. We must reintroduce the joy of learning so that our students get a real education; their school certificates should not be mere pieces of paper to be displayed or produced on demand. I would like to end with an incident from my school life that had a lasting impact on me. I was in the sixth grade and my English teacher was reading out a story, the title of

which I cannot recall. “And Hari left the room in the blink of an eye”, she read. She put the book away and proceeded to explain the meaning of the idiom “in the blink of an eye”. She then said, “Can you think of alternate idioms that convey the same meaning?” I was baffled as was the rest of the class. I had no idea that the English language had multiple idioms that convey the same meaning. She gently nudged us to think giving us subtle hints. By the end of the class, the blackboard had ten idioms all of which conveyed the same meaning - “very quickly”. I looked on, fascinated. She had managed to extract answers from us that we didn’t realize we knew. Suddenly the bell rang and the class was over before we could say Jack Robinson. We had not covered the designated syllabus for the class. But she had made an entire class fall in love with learning.

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Technology Overdrive

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Ratna Mehra is a 94-year-old frail lady living next door to us. She was widowed ages ago it seems; she has no kids and lives by herself. She struggles to move around and for most part is dependent on us for her external needs. One of those being getting her utility bills paid on time.

In this digitized world one is forced to adopt technology if not for convenience, then certainly for the sake of essential processes linked to it. We certainly have come a long way from the time, not too long ago when landline phones were considered a luxury in India. They were an item of awe and admiration and were prominently displayed in homes of the elite. In a very short period of time, we have come to witness a society where even the panhandlers can be seen with a cell phone in their possession, right in the heart of New Delhi.

Then there are those like Ratna Mehra at the other end of the spectrum who could not keep up with the change that happened around her. She never had an email ID and never will. She never had a cell phone and never will. Although for a college professor like myself it is unimaginable to go through life handicapped without either of the two, however the reality is that there exists an endangered species among us that cannot and will not be tamed - thank God for that. After all that's what makes us different and somewhere in the back of my mind, I am jealous of the tension free and serene life these people lead. Neither any messages to respond nor any updates to install, wow!

Whether we realize it or not, whether we accept it or not, there is a subtle discrimination on the rise. During the hullabaloo of the digitized world there exists discrimination that has, behind the scenes, quite ruthlessly widened the gap between the haves and the have-nots. Our systems, our processes, our way of living have steam rolled over the technologically challenged ones.

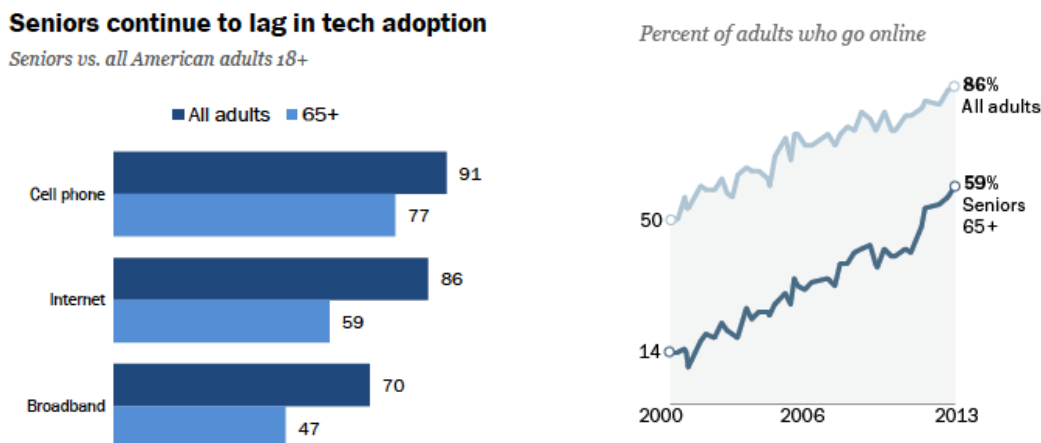
Ratna Mehra's only link to the outside world is her landline connection which is also her lifeline in case of a need or emergency. Unfortunately, the paperless drive has put the 'paper yes' ones on the chopping block. Despite opting for paper billing, Ratna Mehra receives no bills, instead she gets warning phone calls that her phone would be disconnected if her bill is unpaid. Since the past 3 years we have been calling and emailing her telephone company to ensure that Ratna gets her paper bills, however over the past 36 months she may have received no more than 5 paper bills at most and that too after some nasty

emails from my side. The practical problem is that she does not know how much to pay month to month and as a meticulous habit she wants to keep a paper record of her bills. Every month, on her behalf as a routine we call customer care to find out what her due amount is. She then writes out a check and has it deposited in the telephone company's account.

Brains seem to have been programmed. Every time I ask Customer Care for a paper bill, they respond back by asking for her email ID so they may initiate her online billing. Such are the times we live in, where customer support does not support. They spit out memorized texts or read pre-drafted scripts without engaging their minds. As for us, we got so frustrated and harassed for not paying our own bills on time that, unlike Ratna, we simply gave in and had our bills emailed to us instead of our preferred mode of paper billing.

Research conducted by the Pew Research Center found that two groups of senior citizens emerged. One group comprising of affluent seniors who could identify with youngsters and were technology savvy, while the other group tended to be older and less affluent. This second group had a hard time with technology and may be considered as both physically as well as psychologically challenged with it comes to using digital tools or services.

Figure 1



Higher education and financial status is shown to play a role in a senior adapting technology. The survey illustrated that 77% of elders needed help in using technology. Internet use and broadband adoption each drop off dramatically around age 75.

The big question staring us in the face is the kind of customer care and handholding with this significant group of seniors requires, are we providing that? The answers may vary but certainly as a society we know that the vast majority of seniors are not only deprived, they are also disadvantaged when it comes to basic technological services which we may be taken from granted while at the same time a neighbor of ours is grappling with even finding names in their list of contacts on a mobile, what to speak of performing online banking transactions or checking their paper bills.

Corporations like the one in focus here may tout their trumpet of cutting down on paper bills, however I believe companies like these have really lost out. They have lost their respect and ethical and moral standards to stoop so low as to harass 94-year-olds whom they mistreat and agonize month after month.

Salute to all the Ratna Mehras out there, who provide the real customer support to the mega corporations out there.

References

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