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About the Journal

The journal is published by Great Lakes Institute of Management, Gurgaon, India. The aim of the journal is to attract articles that address issues the industry is currently facing. A special focus will be on articles that provide innovative solutions to these issues. The journal articles will not only be of interest to academics, but also, with its focus on relevance, should be of interest to policy makers, think tanks, government, corporate and multilateral institutions, professionals, and industry leaders. Manuscripts will undergo a double-blind peer review process, and the journal will follow all international journal publication norms. The journal is being published with an open-access format so that it reaches the maximum readers. Journal Publishing Services for publication are powered by Sage Spectrum.

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Aims and Scope

GLIMS Journal of Management Review and Transformation aims to publish scientific, empirical research on the theory, practice, and contemporary perspectives of management focusing on the problems, interest, and concerns of managers. It aims to explore interesting questions and phenomena in management, develop and/or test theory, replicate prior studies, and review and synthesize existing research.

Within its scope are all aspects of management related, but not limited, to strategy, entrepreneurship, innovation, information technology, digital business, analytics, artificial intelligence, machine learning, and policy and organizations, as well as all functional areas of business, such as organizational behavior, human resource management, accounting, finance, marketing, operations, data and analytics, and technology transformation.

This journal intends to publish a variety of articles including quantitative and qualitative empirical research articles and conceptual articles that provide novel perspectives on recent business phenomena. To achieve our aim of writing about business transformation, the journal will also include case studies and book review articles. It would also publish abstracts of PhDs that are relevant and in-line with the journal's objectives.

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Editorial

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Dear Readers,

Welcome to the latest issue of the *GLIMS Journal of Management Review and Transformation*. As always, our goal is to bring you cutting-edge insights and perspectives from the world of modern-day management and to inspire you to research and examine critically and creatively the challenges and opportunities facing today's organisations.

In this issue, we have a wide range of articles that cover a broad canvas of topics, from leadership and economics to innovation and organisational culture. The authors who contributed to this issue come from diverse backgrounds, including academia and industry. All the authors bring their unique perspectives and expertise to bear on the issues at hand.

One important theme that emerges in this issue is the importance of adaptability and resilience in the face of uncertainty and change. Whether it is dealing with a global pandemic, navigating shifting market dynamics, or responding to new technologies and business models, organisations that can pivot sharply and evolve dynamically are the ones that will thrive in the long run.

Another recurring theme is the need for leaders to cultivate a growth mindset and foster a culture of continuous learning and development. In an era where skills and knowledge are rapidly becoming obsolete, the ability to learn quickly and adapt to new challenges is more important than ever.

The articles in this issue will hopefully provide valuable insights and inspiration for our readers as they navigate the complex and ever-changing world of management. I hope you find this issue informative and thought-provoking, and I encourage you to share your feedback and ideas with us. As always, we welcome submissions from scholars, practitioners and thought leaders who are passionate about advancing the field of management and driving positive change in organisations.

Thank you for your support, and I look forward to hearing from you.

Akhter Mohiuddin Rather
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Associate Professor, Data Science, and Analytics, Great Lakes Institute of Management, Gurgaon, Haryana, India

Article

Analytical Perspective of Trade Volatility Spillover Analysis During COVID Pandemic Times

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Rohit Malhotra[1]

Abstract

No one in the world, particularly the economic community, could have predicted the manner in which the 2019 COVID pandemic erupted or shook the economies. Developing countries, particularly South Asian economies and the lower middle income (LMI) countries (India, Pakistan, Sri Lanka, Bangladesh, Bhutan, and Nepal), had also experienced similar turmoil. The COVID outbreak and trade-related risks were closely associated with exports, imports, international liquidity, and SDR exchange rates, posing time-varying risks. In this sphere, an analytical approach to generate meaningful trade-related time-varying volatility predictions with respect to India's position is critical while considering the above-listed variables. The Markov-switching (endogenous switching) VAR model using the exponential moving average volatility model (EWMA) of the four macroeconomic variables was used. The author tried to use the EWMA volatility model to witness the impact of spillovers and shock persistence. The present study earmarked the behaviour of time-varying trade-related risks (for Regime 1, i.e., the Early COVID period versus Regime-2 during the COVID period) in terms of the top six economies (as per December 2021 data) when endogenous factors like international liquidity and exchange rate shocks are implemented.

Keywords

Markov-switching VAR, EWMA volatility, volatility spillover convergences, unilateral convergences, bi-lateral convergences

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Introduction

Background and Rationale for this Study

According to Plant, lower middle economies (excluding India, China, and Venezuela) as of end-2019 had SDR allocations to the tune of US$18.73 billion, and the proposed allocations stand roughly at US$58.28 billion. But to achieve SDR allocation targets of up to 10% of GDP, these economies need US$429 billion. The achievement of such SDR allocations will have significant implications for exchange rate volatility. Hence, to overcome such exchange-related risks, a better solution was explained by Plant (n.d.), where high-income countries freely share their part of the SDR with lower-middle-income countries. For all practical purposes, this is better but not an easy solution.

To research this topic, Gagnon (2020) from the Peterson Institute of International Economics suggested that, in the wake of the COVID crisis, developed economies with strong and less volatile currencies must support depreciating and highly volatile currencies. Lower middle-income economies have experienced higher volatility and a significant decline in exchange rates as a result of reduced exports (external supply shocks) and portfolio withdrawals. The article spoke about G20 nations and in particular about the instability in energy exports.

In the same vein, the Trade and Development Update report from UNITAD (Mar 2020) highlighted that developing economies, unlike developed economies (which are facing a high consumer debt burden due to 'easy' and speculative debt availability), have issues with much dependability on exports (for which imports are also required) and the sale of their reserves. At the beginning of the crisis, as mentioned in the report (from late February to March 2020), almost 'double', that is, roughly US$59 billion, in foreign portfolio outflows (debt and equity combined)

Table 1. Unit Root Test* (ADF-GLS test).

Economies	Early COVID (April 2013 till June 2020)	Pre-COVID (April 2013 till November 2019)
India (IND)	5.02e-27	1.197e-20
Bangladesh (B AN)	7.073e-27	2.083e-22
Bhutan (BHU)	6.711e-21	1.049e-21
Nepal (NEP)	1.741e-24	2.158e-23
Sri Lanka (SRL)	1.677e-25	6.442e-22
Pakistan (PAK)	1.809e-30	2.208e-25

Note: *The figures depict the p values and are based on the first differences of logarithmic conditional export volatility (every month). All *p* values are considering the rejection of unit roots (However, as a state of caution, it is advised to restrict the use of excessive differencing since in certain studies unit roots cannot be avoided). As mentioned in the text, here first differences of logarithmic conditional volatility of import, International liquidity and SDR exchange rates also followed the unit root tests and their *p* values also reflected the <0.05 level characteristics. Hence, only export volatility series unit root tests are exhibited as an indication.

were witnessed compared to that in the era of the 2008 crisis. The biggest worry is the increased exposure to foreign capital in the form of debt in these emerging economies. Addison et al. (2020) added that stronger global supply chains had resulted in much higher spillover effects from both internal and external demand shocks. Baldwin (2020) rightly explained the concept of 'shield packages' compared to stimulus packages, since in COVID-19, with or without robust health measures, the recessionary downturn can be averted (although the recovery may be slow but certain).

The Yale Program in Financial Stability (YPFS), investigated lower-middle-income economies in terms of interest rate management and other relevant macroeconomic measures. Further, Purohit (2020) described how India spends nearly 0.8% of its GDP on the COVID crisis, compared to double-digit percentages of GDP as the stimulus in the USA, Europe, and China. Second, the liquidity measures through the monetary route had yet to witness their benefits in terms of boosting the supply crisis. From the Indian context, measures announced by the RBI in August 2020 to reduce systemic risks, including a temporary relaxation on SLR securities or special open market operations, have seen a mixed response.

How was the Emerging Economies Doing in the Pre-COVID Era or After the 2008 Global Meltdown?

How were the emerging economies doing in the pre-COVID era or after the 2008 global meltdown?

It is important for any macroeconomic study to provide relevant facts to justify the need and purpose. Tables 2–5, corresponding to the exchange rates, show the actual average values of exports, imports, international liquidity (in millions of dollars), and SDR reserves (in millions of dollars). These four economic variables were analysed with their respective growth rates across the two phases, that is, the early-COVID phase and the mid-COVID phase.

Between Tables 2 and 3, it is observed that India's trade position worsened compared to other countries during both phases. The growth rate of India's exports fell to negative 18.57%, while imports declined to negative 6.01%. India's international liquidity (as per WTO terminology) saw the biggest jump compared

Table 2. Monthly Export Figures of LMI South Asian Economies (Figures in $M scaled).

LMIE	India	Bangladesh	Bhutan	Nepal	Sri Lanka	Pakistan
AVG (Early-P)*	35271.66	3925.84	45.31	656.02	1686.42	4395.34
AVG (During-P)**	28721.54	4336.56	71.95	646.69	1234.18	3705.80
Change (%)	−18.57	10.46	58.80	−1.42	−26.82	−15.69

Notes: *Average early-COVID period (i.e., April 2013 till November 2019 monthly export data).
**Average during-COVID period (i.e., December 2019 till June 2020 monthly export data).

Table 3. Monthly Import Figures of LMI South Asian Economies (Figures in $M scaled).

LMIE	India	Bangladesh	Bhutan	Nepal	Sri Lanka	Pakistan
AVG (Early-P)*	23824.67	2917.18	22.89	89.11	900.96	2030.020.40%
AVG (During-P)**	22392.28	2904.84	22.03	104.39	791.42	1799.8–4.59%
Change (%)	−6.01	−0.42	−3.76	17.15	−12.16	−11.349.89%

Notes: *Average early-COVID period (i.e., April 2013 till November 2019 monthly import data).
**Average during-COVID period (i.e., December 2019 till June 2020 monthly import data).

Table 4. Monthly International Liquidity Figures of LMI South Asian Economies (Figures in $M).

LMIE	India	Bangladesh	Bhutan	Nepal	Sri Lanka	Pakistan
AVG (Early-P)*	340383.8	26597.49	1093.84	7359.56	12681.72	6393.44 6393.44
AVG (During-P)**	449842.46	33496.41	1293.19	8584.19	13506.98	6751.54 6751.54
Change (%)	32.16	25.94	18.23	16.64	6.51	5.65.60%

Notes: *Average early-COVID period (i.e., April 2013 till November 2019 monthly international liquidity data).
**Average during-COVID period (i.e., December 2019 till June 2020 monthly international liquidity data).

Table 5. Monthly SDR-Exchange Rates Figures of LMI South Asian Economies (Figures in $M).

LMIE	India	Bangladesh	Bhutan	Nepal	Sri Lanka	Pakistan
AVG (Early-P)*	92.81	114.43	92.69	148.01	210.28	159.83 159.83
AVG (During-P)**	101.35	116.56	101.15	161.04	254.11	218.32 218.32
Change (%)	9.20	1.85	9.13	8.80	20.84	36.59 36.59%

Notes: *Average early-COVID period (i.e., April 2013 till November 2019 monthly SDR-Exchange rates data).
**Average during-COVID period (i.e., December 2019 till June 2020 SDR-Exchange rates export data).

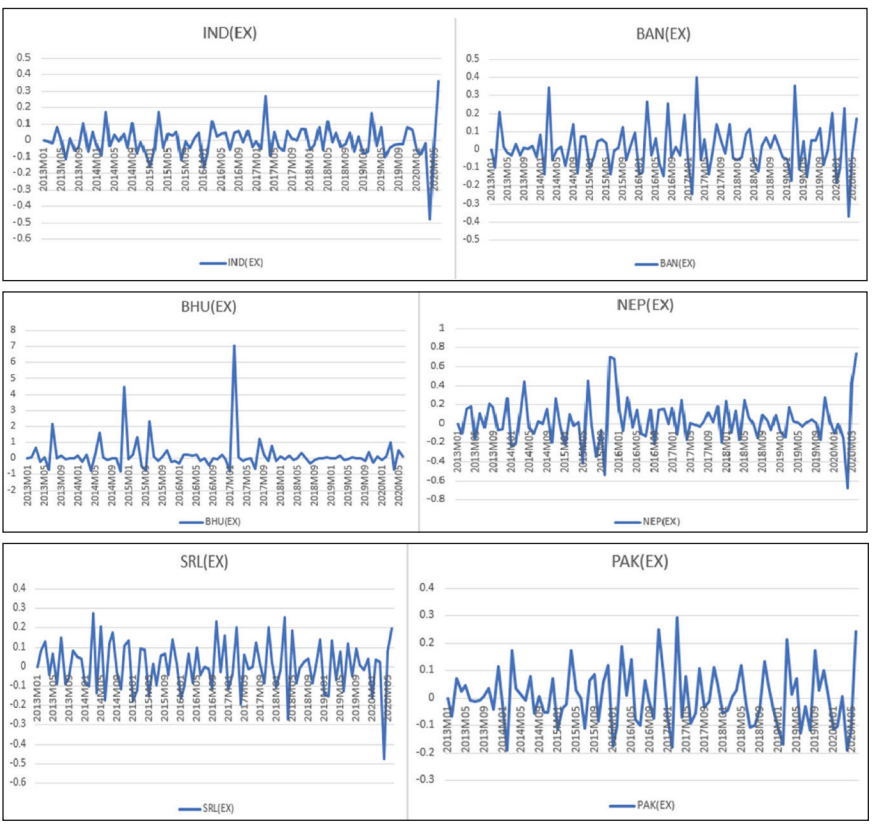
to all the other countries (see Table 4) with a growth of 32.16% as against Sri Lanka's and Pakistan's 6.51% and 5.6%, respectively. So, technically, India maintained its liquidity position in a conservative but controlled manner in the early part of the COVID outbreak. Finally, in terms of exchange rates with reference to SDR reserves, India's position was very close to Sri Lanka in terms of growth rates.

Overall, besides the Indian context, Bangladesh managed their trade positions more aggressively, maintained growth in liquidity positions, and had comparatively less inflated SDR reserves at the same time period undertaken for this study.

Graphic Analysis

Figures 1–6 presented the export growth rates, and it is evident from seeing them that except for Bhutan, the rest of the nations in the present study witnessed a distinctive downturn in export growth in the early COVID phases.

It is also visible that there were a lot of upper spikes witnessed within several countries. Nepal's and India's export monthly growth, however, remained 'range-bound.' While India has seen export growth of less than 10% nearly four times between 2013 and 2019, Bangladesh has seen it 10 times, Nepal 14 times, Sri Lanka 14 times, and Pakistan nine times.

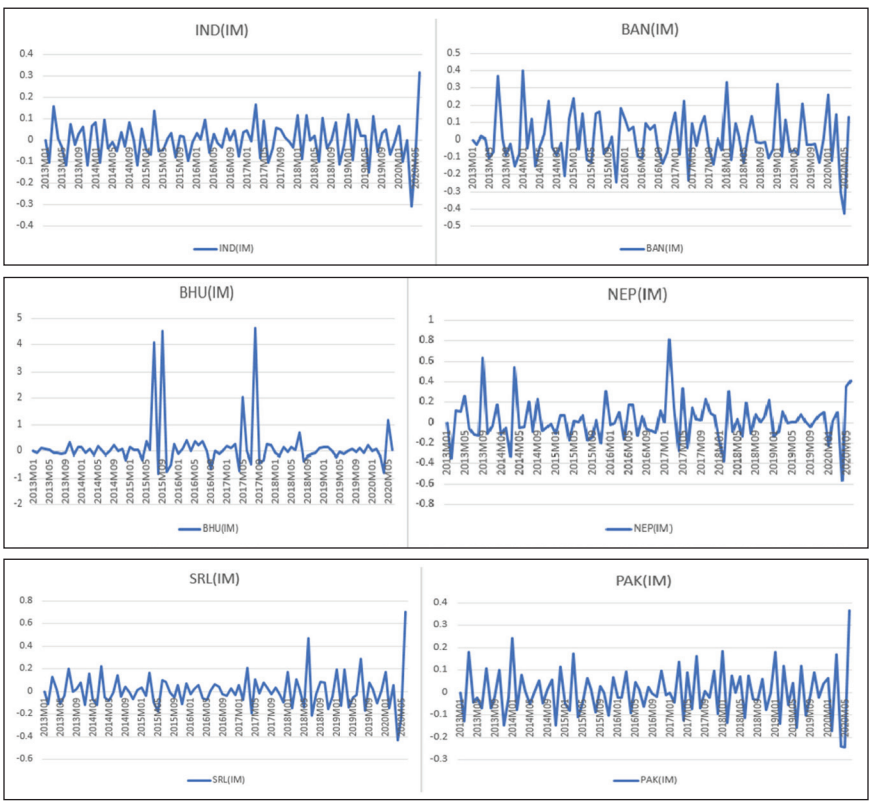


Figures 1–6. The Monthly Export Growth Rates of LMI South Asian Economies (April 2013 till June 2020).

Source: From extreme left to right on-wards, Figure 1 is India, Figure 2 is Bangladesh, Figure 3 is Bhutan, Figure 4 is Nepal, Figure 5 is Sri Lanka and Figure 6 in Pakistan. Please note that from Figure 1 to 28, the X series denotes the time period in months, and Y denotes the scale on which the values are measured.

Moving the emphasis towards Figures 7–12 (see page 41), comparing line charts for historical monthly growth rates of imports As can be witnessed, most economies shared a common trait (some sort of consistency or clustering of volatility). Almost all countries experienced a 'major spike' in early COVID pandemic episodes. However, some differences can be seen when closely examined. Like India, Bangladesh saw its import growth dip to at least nine times below 10% in comparison to its export growth, and surprisingly, Bhutan, like the export growth figures, shared no sign of a downturn below 10% (within 90 months of study). Nepal experienced it 10–11 times, Sri Lanka experienced a negative drop in imports in the latter half of the period to nearly 9–10 times, and Pakistan experienced it 10 times as its import growth rates fell to negative 10%.

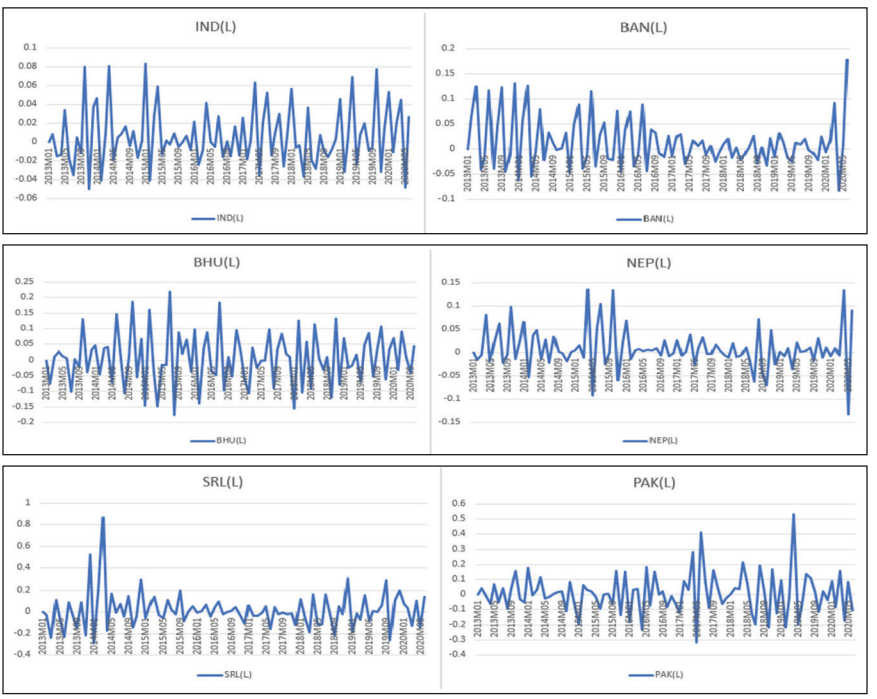
As a result, on the time spectrum of monthly growth rates of imports, Bhutan was on one end with no major downturns, while Bangladesh was on the other end with nearly 12–13 downturns in the same time period. India's position was also very distinctive since, unlike other nations, the drop in import growth rates was 10 times greater than the drop in export growth rates (only 4 times).



Figures 7–12. The Monthly Import Growth Rates of LMI South Asian Economies (April 2013 till June 2020).

Now, in terms of the upswing in the import growth rates, India saw almost 'none' of the values move above 20%, Bangladesh's import growth exceeded 20% nine times, and Bhutan saw significant increases in 2015 and 2017—a total of five times it breached the 20% mark. Nepal also saw a jump in import growth, rising overall 10 times above 20%, followed by Sri Lanka three times, and finally Pakistan only once.

Referring to Figures 13–18 on growth rates and position in terms of international liquidity, almost all countries were found to have significant volatility patterns. However, in terms of 'range-boundness,' Sri Lanka and Pakistan appeared to have the highest ranges. Except at the tail end (the early pandemic phase), India experienced downturns of less than 6% throughout the period, as did Bangladesh. Nepal also only dipped below 6% in monthly international liquidity growth once during the pre-pandemic phase, and Sri Lanka around 13–14 times. Maximum downturns occurred 19 times in Pakistan. In the Indian context, India saw its international liquidity growth improve by more than 6% six times; Bangladesh saw a similar jump range until mid-2016; and nearly 11 times during the early pandemic phase. Bhutan witnessed nine instances of international liquidity growth moving up above 6%; Nepal saw it 10 times; Sri Lanka, 20 times; and finally, Pakistan, almost 26 times. Hence, considering the above figures, Pakistan and

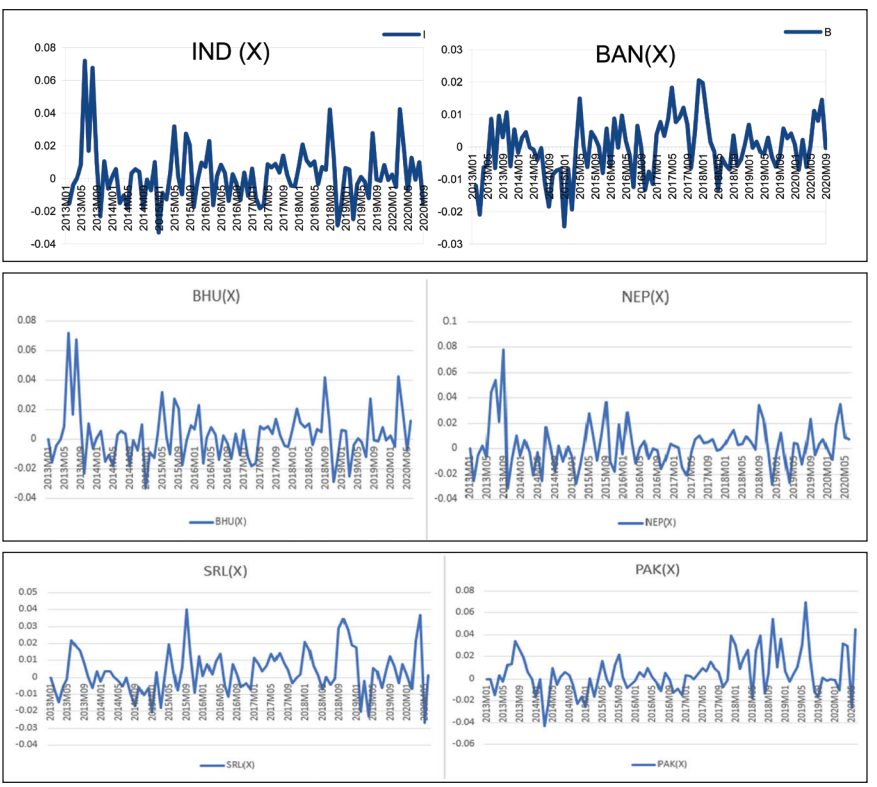


Figures 13–18. The Monthly International Liquidity Growth Rates of LMI South Asian Economies (April 2013 till June 2020).

Sri Lanka appeared to have been most advantageous (or, in other words, poured more than 6% of the previous month's liquid funds more than 26 times and 20 times, respectively).

Considering this, India played a safer bet on the international liquidity position, while Pakistan saw the other extreme (with upswings 26 times and downswings 20 times).

Figures 18–24 (see below page 43) are the last component in the graphical analysis. In the case of India, SDR exchange rate growth remained within the lowest bounds until mid-2020. Bangladesh experienced a much lower barrier of 2% on both the upside and downside; the country's growth rate fell below 2% only twice during the 90-month period. Bhutan saw growth trends above 5% till 2013–14. However, it crossed the upper bound; it crossed eight times the 2% mark. and a 2% drop six times in a row. In comparison, Sri Lanka saw eight times above but only two times below, for a 2% range. Pakistan, particularly beginning in 2017, saw higher upper-growth trends in the SDR exchange rate, breaching the 2% bound 13 times and falling four times. Hence, SDR exchange growth rates appeared to be more stable in comparison to the other variable used in the study.



Figures 19–24. The Monthly SDR Exchange Growth Rates of LMI South Asian Economies (April 2013 till June 2020).

Objectives of the Study

After some preliminary investigation of facts, it is important to define the objective of this two-regime, two-phase study:

1. Analysing the change in the direction of regime shift covariates corresponding to specific macroeconomic time-varying risk between the early and mid-COVID phases.
2. Examining the impact of post-regime shocks on the specific macroeconomic time-varying risk in the early and during COVID phases.

Literature Review

The literature review was studied concerning the institution's role in managing macroeconomic shocks, followed by more specific positive uncertainty shocks, volatility shocks, COVID-19, conditional trade volatility shocks, and Markov-switching VAR. However, some articles were specifically studied for lower–middle economies in order to meet the requirements of the current study.

Institutions Role

According to Fielding et al. (2012), developing economies face macroeconomic shocks whose impact should be felt by all the member states. In the event of any external policy shocks that have different impacts on different states at the same time, such results may depict 'welfare losses.' To ascertain this, a structural vector auto-regression (SVAR) model was implemented. Due to some heterogeneity expected in the SVAR model, further use of the VECM model with a generalised impulse response of exogenous interest rates was explained. The use of a generalised impulse response is invariant to the order of a shock. Bordo (2020) stressed the rule-based monetary approach and extended swap lines to overcome the monetary burden for emerging economies in the early phases of the COVID crisis. Some member states also advocated for an emphasis on a rule-based approach to the free use of the floating rate regime. Bordo (2020) also stressed managing the balance between the exchange rate regime and the early crisis since it does not adjust seamlessly with inflationary pressures borne by the few weak economies. Hence, from a policy perspective, a cooperative move by central banks together with the active release of SDRs by the IMF can be the best way to maintain international liquidity under control, but in both the above articles, such discussions were not made.

Similarly, in terms of central banks' cooperative role during the early COVID crisis, Bahaj and Reis (2020) established that any Fed cut on extended swap lines will have a direct impact on domestic financial institutions' international liquidity position. García-Herrero and Ribakova (2020) explained that the floating rate

regime can be of support to foreign investors in emerging economies only in 'normal times.' MÜhlich et al. (2020) commented on the extent of the use of the Global Financial Safety Net (GSFN) as the distribution is slightly uneven across the world economies.

Diercks et al. (2020) mentioned that any serial uncertainty shocks (positive shocks) across economies in the early crisis phase have serious implications. The empirical argument was that serial uncertainty shocks have similar intensities when they appear consecutively. Bretscher et al. (2019) show how the 'risk premium channel,' that is, the impact of higher uncertainty risks, leads to a higher risk premium and a reduction in a firm's output and production. Ludvigson et al. (2020) explain COVID-19 as a multi-period natural disaster and therefore used multiple shock windows for analysing its impact. Primiceri and Tambalotti (2020) referred to the US economy and considered that post-COVID-19 employment and consumption will remain major concerns. In COVID-19, crisis-based economic forecasts have made careful assumptions, one of which is to ensure that they match the possibility of early recovery in terms of economic numbers through the use of timely policy interventions called 'diffusion tilting' in the article. Baqaee et al. (2020) explained the use of non-pharmaceutical interventions, bringing concepts of smart 'reopening' of the economy.

Positive Uncertainty Shocks

Mecikovsky and Meier (2014) discussed the positive uncertainty shocks caused by the COVID pandemic, particularly under flexible labour policies and protective (labour frictions) regimes. Baker et al. (2020) used mainly three approaches for uncertainty shocks in terms of the COVID-19 pandemic. For stock market volatility, a VIX index was used. Newspaper-based volatility was employed to historically check the presence of texts containing the COVID-19 pandemic and related news, and finally, surveys were conducted to take first-hand evidence of the business uncertainties surrounding the current pandemic. Their empirical claim was that this pandemic would cause more than half of the contraction in the US economy in the coming years. Bordo and Siklos (2019) deploy Panel VAR on measures like central bank transparency and central bank independence. Early and after the financial crisis across emerging and advanced economies Chong (2011) explained, with the help of stock market data, the use of conditional volatility shocks using leverage and clustering generalisations with GARCH-type volatility estimates. Benigno et al. (2020) examined endogenous macroeconomic models under leverage constraints leading to crisis (where a sudden stop of capital flow acts as binding friction).

However, several papers on the stock market impact of the COVID-19 crisis concerning conditional volatility and related shocks have emerged since 2019, so it is important to discuss some of them. Borkowska and Hau (2020) described the various forms of conditional volatility models and the standard battery of tests for checking the normality of residuals and stationarity in the various stock prices of designated companies. Liu et al. (2020) explained the volatility spillover and

shock effects of the switching GARCH model in their work. Castillo et al. (2020) applied the EGARCH volatility model to various international stock exchanges and stock prices and back-tested the value-at-risk.

Markov Switching VAR

The exogenetic assumption associated with Markov switching was relaxed by Kim et al. (2008). They considered that in the case of 'early regime shifts,' there is a parameter instability due to which any serially dependent (like I took the conditional volatility function) or auto-correlated function can assist in an endogenous switching approach. Mishra et al. (n.d.) compared the GST and demonetisation eras with the recent COVID-19 using the Markov-switching VAR method. Bluwstein (2017) showed, through the use of the Bayesian MS-VAR methodology, that financial shocks have asymmetric effects. Çifter (2017) used three regimes, that is, recessionary, moderate, and expansionary phases while dealing with the Fisher equation (inflation affecting the nominal interest rates) and stock markets. According to the paper by Hamilton (1989) and as further corroborated by Çifter (2017), a typical Markov process is a first-order auto-regressive process. Essentially, the probability of a transition or switch happening at any 'differentiable time component' in between two time periods is not known in advance. And, second, where there have been strong or weak transition effects across the multiple regimes is also difficult to ascertain.

Overall, after a detailed review of past work in terms of institutions' roles during crises, the extent of positive shocks and their impact, and the application of Markov-switching vector autoregressive models, It was observed that the studies on the COVID time period with reference to determining time-varying regime shifts with the MS-VAR modelling framework were very rare. Furthermore, no such paper accounted for the 'change in direction of covariates' across regime shifts as a determinant of greater trade-related risks in the country. This provides a very novel idea for me to take this work further and come out with some interesting and useful empirical outcomes.

Methodology

The entire data was captured in a spreadsheet from the World Trade Organisation (WTO) website database. The research used four endogenous variables, namely exports, imports, international liquidity, and SDR exchange rates, and all figures were in million US dollars converted to growth rate percentages, excluding the scale and unit effect. The period chosen was from January 2013 to June 2020 on a monthly basis. The selection of this time frame was motivated primarily by two factors: first, it covered a significant period prior to the implementation of COVID in December 2019. And, from 2013 on, events like Brexit, the Indo-China trade war, and some other global and regional shocks also impacted the South Asian economies.

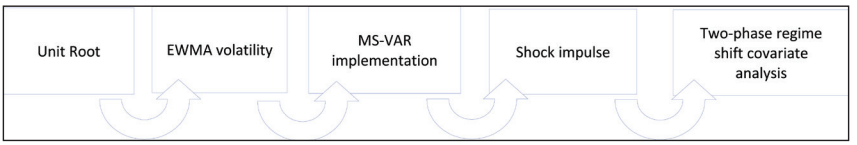
For conditional volatility (on an annual basis), the use of an exponentially weighted moving average (in short, EWMA) was employed, where the decay rate was kept at 0.97. In this article, a two-phase study has been conducted,

The first phase (or pre-COVID phase) is when we included April 2013 through November 2019 in the first differences of logarithmic EWMA volatility figures, and the other one is where the early-COVID period was also added, that is, April 2013 through June 2020 (a total of 7 months of the pandemic were included). Hence, this study used two phases with unequal periods.

The method adopted can be explained in the following steps:

- First, the exponential weighted moving average (time-varying volatility) was calculated for all four macroeconomic indicators and with respect to six economies.
- Second, after gathering the exponential weighted moving average time series, the unit root test was conducted.
- Third, the Markov-switching (mean) Vector-Autoregressive model was implemented.
- Fourth, the corresponding shock response data was gathered.
- Finally, the direction and reversion time of the two-phase regime-shift covariates were examined.

Graphically, it can be presented like this:



Results

Test of Unit Root

Table 1 depicts the unit root results, which were applied uniformly to the first differences of logarithmic conditional volatility. As can be seen, for all six countries (currently for export data), there are no unit root properties exhibited.

Changes in the direction of regime-shift covariates during the early and late COVID phases, as well as the corresponding shock responses (in relation to India's time-varying volatility predictions).

Only if the covariates or coefficients associated with early-COVID and during-COVID phase regime shifts (i.e., Regimes 1 and 2) change direction under both phases can empirically be analysed. Then only such countries have a significant impact on the time-varying volatility of the underlying macroeconomic indicator. What it also means is that since the direction of regime coefficients or covariates is altered in both phases, which means that the COVID impact on certain

nations has not been discounted in exports, imports, international liquidity, and SDR-associated exchange rates' time-varying volatility. As a result, predicting a higher variance in the dependent macroeconomic volatility over time is more difficult. The same can be said of the shock responses in terms of their reversion period. In this case, as in the preceding preposition, if the regime shifts for the early and late COVID phases, the recovery time period for both phases changes. It clearly indicates a more volatile state of underlining macroeconomic dependence and time-varying volatility.

Hence, all the respective tables are divided into two sets of analysis:

First, for understanding the countries whose covariates changed with regimes across two phases, And then a similar analysis was conducted for shock impulses and their reversions.

Accordingly, looking at the results from Tables 6, 8, 10, and 12 simultaneously, India's chances of experiencing higher time-varying export and import volatility are Nepal's time-varying export volatility regime shifts and their direction should be taken into empirical consideration. Similarly, Bangladesh's and Bhutan's time-varying international liquidity volatility is a concern for India's time-varying international liquidity volatility.

Further, in terms of shock responses, particularly the reversion time period, It can be seen through Tables 7, 9, 11, and 13 that when the 1-SD shock was provided to India's time-varying export volatility, we could visualise the 'inconsistencies in the recovery period' (with reference to change in the post-shock recovery time

Table 6. Markov-switching (endogenous switching means) VAR Coefficients for Export Volatility Series*.

INDIA (IND)—Dependent Variable (2013–2020)**				
Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)	−0.2347	−0.2342	−0.4288	−0.0513
Bangladesh (BAN)	0.4129	0.0701	0.3142	0.0583
Bhutan (BHU)	−0.0216	−0.1121	−0.1371	−0.0501
Nepal (NEP)	0.0960	−0.0650	−0.0854	0.0853
Sri Lanka (SRL)	0.2664	0.3458	0.3194	0.0855
Pakistan (PAK)	0.4604	0.3204	0.2577	0.5108
Bangladesh (BAN)—Dependent Variable				
India (IND)	0.5568	−0.5351	−0.2570	−0.3171
Bangladesh (BAN)	0.1700	−0.5654	−0.5566	0.1893
Bhutan (BHU)	0.0160	−0.0750	−0.1116	−0.0066
Nepal (NEP)	0.0474	−0.1687	−0.1884	0.4505
Sri Lanka (SRL)	0.0212	0.0862	−0.0370	−0.3830
Pakistan (PAK)	0.4693	0.2351	0.0172	0.4274

(Table 6 continued)

(Table 6 continued)

Bhutan (BHU)—Dependent Variable				
Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)	0.8771	−0.7204	−0.3045	0.0290
Bangladesh (BAN)	0.5489	−0.1523	−0.4138	1.0861
Bhutan (BHU)	−0.4136	−0.2560	−0.0742	−0.5819
Nepal (NEP)	0.2661	0.0341	−0.0945	0.3163
Sri Lanka (SRL)	−0.1927	−0.3034	−0.3574	−0.1863
Pakistan (PAK)	0.0003	0.2400	0.5582	−0.5635
NEPAL (NEP)—Dependent Variable				
India (IND)	0.2692	−0.2458	−0.3244	−0.2243
Bangladesh (BAN)	−0.0161	0.3803	0.3259	0.0698
Bhutan (BHU)	0.0310	−0.1269	−0.0947	−0.2028
Nepal (NEP)	0.0407	−0.4386	−0.3305	0.0231
Sri Lanka (SRL)	0.0660	−0.1576	−0.0310	0.3791
Pakistan (PAK)	1.0194	−0.5214	00762	−0.1521
Sri Lanka (SRL)—Dependent Variable				
India (IND)	−0.0463	0.0949	0.2384	−0.0062
Bangladesh (BAN)	−0.0707	−0.0593	−0.2822	−0.0481
Bhutan (BHU)	−0.1747	0.0095	−0.1146	0.1035
Nepal (NEP)	0.2291	−0.1772	0.0267	0.0889
Sri Lanka (SRL)	−0.0978	−0.4309	−0.2262	0.2148
Pakistan (PAK)	0.1589	−0.0681	−0.4015	0.3083
Pakistan (PAK)—Dependent Variable				
India (IND)	0.0424	−0.2889	0.1120	−0.4267
Bangladesh (BAN)	−0.0579	−0.4131	−0.4759	0.4100
Bhutan (BHU)	0.2457	−0.0628	0.0127	0.1684
Nepal (NEP)	−0.2381	0.2270	0.1543	−0.1202
Sri Lanka (SRL)	0.0916	0.2038	0.0990	−0.1222
Pakistan (PAK)	−0.0459	−0.4102	−0.3898	−0.4387

Notes: *Here, the VAR coefficients are for the first lag values of the first differences of logarithmic volatility.

**Period is 2014-01 to 2020-06 (78 monthly values for the early COVID phase and 71 monthly values for the pre-COVID phase).

Table 7. MS-VAR Impulse Response for Export Volatility Series*.

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		2	2	2	3
Bangladesh (BAN)		3	4	4	3
Bhutan (BHU)	India (IND)	2	6	4	3
Nepal (NEP)		2	4	4	2
Sri Lanka (SRL)		3	3	2	3
Pakistan (PAK)		>10	4	3	3
India (IND)		2	2	2	2
Bangladesh (BAN)		2	2	2	>10
Bhutan (BHU)	Bangladesh (BAN)	>10	2	3	2
Nepal (NEP)		2	3	3	2
Sri Lanka (SRL)		2	4	2	2
Pakistan (PAK)		>10	3	2	3
India (IND)		2	>10	3	2
Bangladesh (BAN)		4	2	3	2
Bhutan (BHU)	Bhutan (BHU)	2	2	2	2
Nepal (NEP)		2	8	2	3
Sri Lanka (SRL)		4	4	4	2
Pakistan (PAK)		2	2	2	3
India (IND)		2	2	2	3
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Nepal (NEP)	2	2	2	2
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		4	4	2	2
Pakistan (PAK)		2	3	3	2
India (IND)		2	3	2	7
Bangladesh (BAN)		2	2	2	3
Bhutan (BHU)	Sri Lanka (SRL)	3	4	5	2
Nepal (NEP)		2	3	5	2
Sri Lanka (SRL)		2	3	2	5
Pakistan (PAK)		2	4	4	2

(Table 7 continued)

(Table 7 continued)

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		2	2	2	2
Bangladesh (BAN)		2	2	2	7
Bhutan (BHU)	Pakistan (PAK)	2	3	2	2
Nepal (NEP)		3	2	2	2
Sri Lanka (SRL)		2	2	4	2
Pakistan (PAK)		2	2	2	2

Note: *Initial shock recovery period (in months).

Table 8. Markov-switching (endogenous switching means) VAR Coefficients for Import Volatility Series*.

Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)—Dependent Variable (2013–2020)**				
India (IND)	−0.3705	−0.3912	−0.5159	−0.3973
Bangladesh (BAN)	0.3441	0.1422	0.1718	0.2137
Bhutan (BHU)	0.3341	−0.3606	−0.0514	−0.1212
Nepal (NEP)	0.0507	−0.1233	−0.1343	0.0241
Sri Lanka (SRL)	0.0956	0.1328	−0.1178	0.0268
Pakistan (PAK)	0.7949	0.4144	0.5889	0.5282
Bangladesh (BAN)—Dependent Variable				
India (IND)	−0.3526	−0.2909	−0.3355	−0.1077
Bangladesh (BAN)	0.0855	−0.6287	0.0238	−0.5460
Bhutan (BHU)	0.2388	−0.0909	−0.1292	−0.0274
Nepal (NEP)	−0.0092	0.1990	−0.0595	−0.1558
Sri Lanka (SRL)	−0.4793	−0.5255	−0.2812	−0.1573
Pakistan (PAK)	0.0087	0.5177	0.1240	0.0998
Bhutan (BHU)—Dependent Variable				
India (IND)	−0.1598	−0.0021	−0.8273	0.3152
Bangladesh (BAN)	0.1489	−0.1806	0.0710	0.1047
Bhutan (BHU)	−0.1958	−0.5284	−0.4281	−0.3189
Nepal (NEP)	0.7018	0.0282	0.0946	0.3077
Sri Lanka (SRL)	−0.5238	0.0303	0.0977	−0.1662
Pakistan (PAK)	−0.2009	0.4721	−0.1780	−0.0662

(Table 8 continued)

(Table 8 continued)

Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
Nepal (NEP)—Dependent Variable				
India (IND)	−0.0382	−0.0637	−0.1470	−0.2668
Bangladesh (BAN)	0.6702	0.2280	0.3955	0.2579
Bhutan (BHU)	0.2479	0.0377	0.1160	0.0957
Nepal (NEP)	−0.5889	−0.0131	−0.5700	−0.0834
Sri Lanka (SRL)	0.1085	−0.2332	0.3819	−0.0545
Pakistan (PAK)	0.0467	0.2345	−0.3965	0.3461
Sri Lanka (SRL)—Dependent Variable				
India (IND)	−0.0590	−0.2471	−0.1802	−0.2129
Bangladesh (BAN)	0.0835	−0.1886	−0.1110	−0.3419
Bhutan (BHU)	−0.1461	0.0968	−0.1713	−0.1724
Nepal (NEP)	−0.2966	0.2999	−0.1531	0.2913
Sri Lanka (SRL)	−0.1156	−0.6460	−0.1397	−0.4455
Pakistan (PAK)	0.0311	0.4578	0.1274	0.0277
Pakistan (PAK)—Dependent Variable				
India (IND)	−0.5812	0.0129	−0.8620	−0.0458
Bangladesh (BAN)	0.1057	−0.0690	0.0747	−0.0269
Bhutan (BHU)	−0.3483	−0.0605	−0.1273	−0.2597
Nepal (NEP)	0.1398	0.3538	0.4097	−0.3581
Sri Lanka (SRL)	0.1117	−0.2509	−0.2810	0.6197
Pakistan (PAK)	−0.7143	0.1816	−0.4053	−0.4788

Notes: *Here, the VAR coefficients are for the first lag values of the first differences of logarithmic volatility.

**Period is 2014–01 to 2020–06 (78 monthly values for the early COVID phase and 71 monthly values for the pre-COVID phase).

Table 9. MS-VAR Impulse Response for Import Volatility Series*.

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		2	2	2	2
Bangladesh (BAN)		3	3	4	3
Bhutan (BHU)	India (IND)	2	3	2	3
Nepal (NEP)		3	4	2	3
Sri Lanka (SRL)		3	4	2	2
Pakistan (PAK)		2	2	2	2

(Table 9 continued)

(Table 9 continued)

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		2	2	2	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Bangladesh (BAN)	2	4	3	2
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		2	2	2	2
Pakistan (PAK)		2	2	4	2
India (IND)		2	2	3	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Bhutan (BHU)	2	2	2	2
Nepal (NEP)		3	5	3	2
Sri Lanka (SRL)		2	4	2	2
Pakistan (PAK)		3	2	2	5
India (IND)		2	2	2	2
Bangladesh (BAN)		3	4	2	3
Bhutan (BHU)	Nepal (NEP)	3	3	2	2
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		3	4	4	4
Pakistan (PAK)		3	4	2	3
India (IND)		2	2	3	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Sri Lanka (SRL)	2	3	4	3
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		2	2	2	2
Pakistan (PAK)		2	2	3	2

(Table 9 continued)

(Table 9 continued)

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		4	2	3	4
Bangladesh (BAN)		3	2	2	2
Bhutan (BHU)	Pakistan (PAK)	3	4	2	3
Nepal (NEP)		2	3	2	2
Sri Lanka (SRL)		2	3	2	3
Pakistan (PAK)		2	3	2	2

Note: *Initial shock recovery period (in months).

Table 10. Markov-switching (endogenous switching means) VAR Coefficients for International Liquidity Volatility Series*.

Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)—Dependent Variable (2013–2020)**				
India (IND)	−0.1298	−0.2682	−0.1457	−0.1709
Bangladesh (BAN)	−0.0940	0.0302	−0.2590	0.0981
Bhutan (BHU)	0.1544	−0.0196	−0.3921	0.0639
Nepal (NEP)	0.1958	0.0312	−0.1705	0.1754
Sri Lanka (SRL)	−0.0065	−0.0666	0.1621	−0.2135
Pakistan (PAK)	0.2073	0.2488	0.3229	0.2208
Bangladesh (BAN)—Dependent Variable				
India (IND)	0.1957	−0.1618	−0.1151	0.0961
Bangladesh (BAN)	−0.2563	−0.6927	0.0609	−0.7551
Bhutan (BHU)	0.3354	0.0964	0.4713	−0.0598
Nepal (NEP)	0.1340	−0.0516	0.1396	−0.0984
Sri Lanka (SRL)	0.1191	0.0372	−0.0037	−0.1056
Pakistan (PAK)	−0.0490	0.0200	0.0272	−0.0801
Bhutan (BHU)—Dependent Variable				
India (IND)	0.3031	−0.1562	−0.6751	−0.1673
Bangladesh (BAN)	−0.3013	0.2913	−0.2462	0.0718
Bhutan (BHU)	−0.1184	−0.2857	−0.8328	−0.3359
Nepal (NEP)	0.2184	−0.1151	0.1544	−0.1859
Sri Lanka (SRL)	0.3649	0.0834	−0.0726	0.0778
Pakistan (PAK)	0.0275	−0.3553	0.7987	−0.5081

(Table 10 continued)

(Table 10 continued)

Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
Nepal (NEP)—Dependent Variable				
India (IND)	−0.2464	−0.2361	−0.0184	−0.1335
Bangladesh (BAN)	0.3953	0.0023	0.4814	−0.0587
Bhutan (BHU)	−0.0214	−0.2836	0.2667	−0.4293
Nepal (NEP)	−0.4095	0.1572	−0.4395	−0.0336
Sri Lanka (SRL)	0.1712	0.2591	0.2194	−0.0631
Pakistan (PAK)	−0.3363	−0.2410	−0.1437	−0.3605
Sri Lanka (SRL)—Dependent Variable				
India (IND)	−0.1438	0.0344	−0.0595	−0.0028
Bangladesh (BAN)	0.3106	−0.3751	0.1223	−0.1014
Bhutan (BHU)	−0.1950	0.0423	−0.1018	−0.0962
Nepal (NEP)	0.2835	0.2244	−0.1011	0.1962
Sri Lanka (SRL)	−0.2892	0.0963	−0.1587	0.0421
Pakistan (PAK)	0.0325	0.2588	−0.2278	−0.0136
Pakistan (PAK)—Dependent Variable				
India (IND)	−0.3956	−0.3932	−0.4007	−0.3328
Bangladesh (BAN)	−0.2563	0.4350	−0.3444	0.3419
Bhutan (BHU)	−0.3492	−0.4124	−0.0336	−0.1873
Nepal (NEP)	−0.2117	−0.1550	−0.5353	−0.0217
Sri Lanka (SRL)	0.0490	−0.1504	−0.0535	0.0300
Pakistan (PAK)	−0.1716	−0.5548	−0.0401	−0.1798

Notes: *Here, the VAR coefficients are for the first lag values of the first differences of logarithmic volatility.
**Period is 2014-01 to 2020-06 (78 monthly values for the early COVID phase and 71 monthly values for the pre-COVID phase).

Table 11. MS-VAR Impulse Response for International Liquidity Volatility Series*.

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		2	2	2	2
Bangladesh (BAN)		3	3	2	3
Bhutan (BHU)	India (IND)	2	4	2	2
Nepal (NEP)		2	2	2	3
Sri Lanka (SRL)		3	2	4	2
Pakistan (PAK)		4	3	3	3

(Table 11 continued)

(Table 11 continued)

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		3	2	2	2
Bangladesh (BAN)		2	2	3	2
Bhutan (BHU)	Bangladesh (BAN)	3	2	2	2
Nepal (NEP)		4	2	3	2
Sri Lanka (SRL)		2	2	2	2
Pakistan (PAK)		2	2	2	2
India (IND)		2	3	3	3
Bangladesh (BAN)		2	3	4	3
Bhutan (BHU)	Bhutan (BHU)	2	2	3	2
Nepal (NEP)		2	4	2	3
Sri Lanka (SRL)		2	2	5	2
Pakistan (PAK)		2	3	2	3
India (IND)		3	3	4	2
Bangladesh (BAN)		4	2	4	2
Bhutan (BHU)	Nepal (NEP)	2	4	2	4
Nepal (NEP)		2	3	2	2
Sri Lanka (SRL)		3	2	3	2
Pakistan (PAK)		2	2	2	2
India (IND)		2	3	2	2
Bangladesh (BAN)		2	3	3	2
Bhutan (BHU)	Sri Lanka (SRL)	2	4	2	3
Nepal (NEP)		5	3	2	3
Sri Lanka (SRL)		2	3	2	3
Pakistan (PAK)		2	3	3	2
India (IND)		2	2	2	2
Bangladesh (BAN)		2	3	2	3
Bhutan (BHU)	Pakistan (PAK)	3	4	2	4
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		3	2	4	2
Pakistan (PAK)		2	2	2	2

Note: *Initial shock recovery period (in months).

Table 12. Markov-switching (endogenous switching means) VAR Coefficients for SDR Exchange Rates Volatility Series*.

India (IND)—Dependent Variable (2013–2020)**				
Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)	0.1551	1.2606	0.02406	0.1715
Bangladesh (BAN)	−0.0005	−0.0044	−0.0001	0.0105
Bhutan (BHU)	1.0079	1.0147	1.0008	1.0121
Nepal (NEP)	−0.0012	−0.0069	−0.0002	−0.0029
Sri Lanka (SRL)	0.0017	0.0041	−0.0006	0.0103
Pakistan (PAK)	0.0018	0.0118	0.0034	−0.0053
Bangladesh (BAN)—Dependent Variable				
India (IND)	−0.8585	18.137	−7.7140	−0.4022
Bangladesh (BAN)	−0.5831	−0.6891	−0.5862	−0.4738
Bhutan (BHU)	−0.0149	−0.0161	0.0201	−0.0013
Nepal (NEP)	0.00862	0.0254	−0.0075	0.1332
Sri Lanka (SRL)	−0.1398	1.1994	−0.0044	−0.3921
Pakistan (PAK)	0.2907	−0.1566	0.2004	0.1979
Bhutan (BHU)—Dependent Variable				
India (IND)	−3.6920	28.0482	−9.4202	−2.4358
Bangladesh (BAN)	0.0032	−0.1390	−0.1808	−0.3468
Bhutan (BHU)	−0.3284	−0.5903	−0.2236	−0.5574
Nepal (NEP)	−0.0366	0.1585	−0.0814	0.4133
Sri Lanka (SRL)	−0.2511	0.4722	0.0378	−0.5501
Pakistan (PAK)	0.0168	0.1033	−0.0041	0.3718
Nepal (NEP)—Dependent Variable				
India (IND)	−2.7522	−17.9904	−3.5426	−2.5830
Bangladesh (BAN)	0.1438	0.4439	0.4112	−0.6043
Bhutan (BHU)	0.6101	0.7677	0.7638	0.3866
Nepal (NEP)	−0.6260	−0.4712	−0.4133	−0.7292
Sri Lanka (SRL)	−0.4888	−0.0059	−0.2137	−0.7966
Pakistan (PAK)	−0.0257	0.3008	−0.1388	0.4907
Sri Lanka (SRL)—Dependent Variable				
India (IND)	−0.8941	−0.2308	−2.6558	−1.5335
Bangladesh (BAN)	0.1821	0.1172	−0.0368	−0.1785
Bhutan (BHU)	0.3957	−0.3745	0.2633	0.4641
Nepal (NEP)	−0.3390	1.0118	−0.0424	−1.1241
Sri Lanka (SRL)	−0.6493	0.7235	−0.1744	−0.5300
Pakistan (PAK)	0.3253	−0.0588	0.0070	0.6317

(Table 12 continued)

(Table 12 continued)

Pakistan (PAK)—Dependent Variable				
Economies Regimes	Early-COVID Regime-1	Early-COVID Regime-2	During-COVID Regime-1	During-COVID Regime-2
India (IND)	−1.3501	12.7636	−3.6761	−2.7618
Bangladesh (BAN)	−0.2695	0.0778	−0.1816	−0.4702
Bhutan (BHU)	0.0819	0.1295	0.3819	−0.1392
Nepal (NEP)	0.0542	0.3947	0.1563	0.7322
Sri Lanka (SRL)	−0.3928	−1.0281	−0.0213	−1.0836
Pakistan (PAK)	0.0910	−1.0202	−0.1907	0.5181

Notes: *Here, the VAR coefficients are for the first lag values of the first differences of logarithmic volatility.
**Period is 2014-01 to 2020-06 (78 monthly values for the early COVID phase and 71 monthly values for the pre-COVID phase).

Table 13. MS-VAR Impulse Response for SDR Exchange Rates Volatility Series*.

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		3	5	3	3
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	India (IND)	2	2	3	3
Nepal (NEP)		2	2	3	3
Sri Lanka (SRL)		2	2	3	3
Pakistan (PAK)		2	2	2	2
India (IND)		2	2	3	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Bangladesh (BAN)	2	3	2	2
Nepal (NEP)		2	8	2	4
Sri Lanka (SRL)		2	7	2	2
Pakistan (PAK)		3	2	3	3

(Table 13 continued)

(Table 13 continued)

Economies	Impulse Stimulated To	Early COVID Regime 1	Early COVID Regime 2	During COVID Regime 1	During COVID Regime 2
India (IND)		4	2	2	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Bhutan (BHU)	2	2	2	2
Nepal (NEP)		2	3	2	3
Sri Lanka(SRL)		2	4	2	2
Pakistan (PAK)		2	4	2	4
India (IND)		3	3	2	2
Bangladesh (BAN)		3	4	3	2
Bhutan (BHU)	Nepal (NEP)	3	4	3	2
Nepal (NEP)		2	2	2	2
Sri Lanka (SRL)		2	3	3	2
Pakistan (PAK)		2	3	5	3
India (IND)		3	6	2	2
Bangladesh (BAN)		3	3	2	2
Bhutan (BHU)	Sri Lanka (SRL)	3	7	3	4
Nepal (NEP)		2	7	4	2
Sri Lanka (SRL)		2	6	2	2
Pakistan (PAK)		3	8	3	3
India (IND)		2	2	2	2
Bangladesh (BAN)		2	2	2	2
Bhutan (BHU)	Pakistan (PAK)	2	2	4	2
Nepal (NEP)		2	2	4	4
Sri Lanka (SRL)		2	2	2	2
Pakistan (PAK)		3	2	2	3

Note: *Initial shock recovery period (in months).

period across two phases between the regime shifts) for Bangladesh, Bhutan, and Nepal. While, in the case of India's shock response in terms of time-varying import volatility, inconsistencies were observed with countries like Bhutan and Nepal. Further, in terms of a 1-SD shock to India's time-varying international liquidity volatility, Sri Lanka's recovery responses were inconsistent. And finally, with respect to India's time-varying SDR exchange rate volatility shock, none were seen to have inconsistencies across both phases.

Since similar '*p*' values appeared for the rest of the four macroeconomic variables, their results are not depicted.

Discussion

Corresponding to the above analysis and specifically with reference to the Indian economy It has been observed that trade-related (import and export) time-varying volatility will be deeply affected by the change in the direction of regime shifts between the two phases of Nepal's time-varying export and import volatility. With reference to shock responses by time-varying India's export and import volatility, Bhutan and Nepal's time-varying export and import volatility had dissimilar reversion periods in both phases (i.e., early COID and during COID). Hence, this empirical work opens an interesting dimension towards studying the patterns of 'change in direction of the covariate of regime shifts' as the key learning that can propel the intensity of variability or volatility in the dependent variable series. On the contrary, any stable movement of a covariate across phases usually makes the forecast predictable, and thus any of India's trade policies face fewer challenges of knee-jerk reactions. During the COVID period, the countries' trade volatility responses were found to have had some intense impacts on India's trade volatility in the past. And as explained, any change in the direction of the regime shift coefficients will further exacerbate the situation.

Conclusive Remarks

Countries with strong trade relations must use tools like Markov switching in advance to ensure that any regime shift patterns can help the countries plan their future course of action in terms of trade-related risks. It is also important that international liquidity and SDR exchange rates be independently studied in order to see their role in managing trade-related imbalances.

Limitations

One of the major limitations was that this study only took the two phases, that is, early COVID and COVID, as an arbitrary measure. Hence, a more scientific basis

for such classification may be needed. The study focused on India's changing relationships with its member countries in terms of trade, liquidity, and exchange rate-related measures over time. Finally, the duration could have been extended. In addition, after leaving COVID, other local (country-specific) factors could have been studied while the regime shifts covariates were observed.

Remedies to Overcome Limitations

Significant advances have been made in the preposition of using 'change in the direction of covariates of regime shifts across two phases' as the sole outcome defining the extent of increased probability of trade-related volatility in India. It is therefore essential that a more robust and extensive sample period and countries be utilised for the study to make the statistical proposition more generalised and theoretically validated.

Furthermore, previous research on trade-related risks employed time-varying techniques like autoregressive distributed lag regression. Such techniques must have been compared to ensure the superiority of Markov-switching vector autoregression for this study.

Scope

This work can be used by policy experts who are dealing with trade-related risks and other international trading firms in terms of managing their cash flows and hedging using the above model outcomes. Moreover, macroeconomic analysts and modellers may find the use of 'change in direction of regime shift covariates across two phases' a very useful and novel idea to predict early signals in terms of trade-related shocks in the economy. Besides, this study can be easily extended for multiple countries' trade data and other stylized shock responses.

Policy Implications

From the standpoints of trade policy and macroeconomic policy, this study explains why, during times of economic stress, closely-knit trading countries should avoid trade-related risks when they anticipate an alarming sign of time-varying regime shifts. Such studies, therefore, have very useful applications for early warning signals, particularly in reference to trade-related shocks, which can appear in the early, middle, or late stages of economic stress.

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Conceptual Paper

Impression Management by Women: Reconceptualising Attitude Towards Gender Stereotypes (ATGS)

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Abstract

This article tries to extend the Framework for Impression Management by Women in India (FIMWI) by refining the conceptualisation of attitude towards gender stereotypes (ATGS). We try to explore the possible attitudes of women to gender stereotypes using the combinations of high or low accepting and challenging ATGS. Using these combinations, we identify four possible categories of responses to gender stereotypes, namely 'High Accepting, High Challenging' (HAHC), 'Low Accepting, High Challenging' (LAHC), 'High Accepting, Low Challenging' (HALC) and 'Low Accepting, Low Challenging' (LALC). Using the social identity theory, we explore the ways in which the ATGS would perhaps influence the choice of impression management tactics with in-group and out-group members. We further identify the potential impression management tactics that would be implemented by women in each of these categories. We propose that hard impression management techniques would be used for out-group members by women having the HAHC combination. They would use soft impression management techniques for in-group members. Hard impression management techniques would be used by women having the LAHC combination with in-group as well as out-group. Soft impression management techniques

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would be used by women having the HALC combination with in-group as well as out-group. Soft impression management techniques would be used by the women having LALC combination. Future research possibilities are suggested; practical implications are also discussed.

Keywords

Attitude towards gender stereotypes (ATGS), impression management, social identity theory, ingratiation, intimidation, supplication, coalition, blocking

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Introduction

Impression Management

Impression management is a natural human behaviour. The social nature of human society increases the relevance of impression management in social contexts. With increasing prominence of organisations across the world, one of the common and prominent contexts where impression management has been studied is the workplace. Impression management could be defined as the process through which individuals use their 'expressiveness' to make 'impressions' on their 'audience', with the implication that the audience will constantly seek to decode these expressions (Goffman, 2010).

Despite the prevalence of impression management studies in other cultures, the cultural dimension has been considered rarely. On the contrary, it has been assumed that studies on impression management are the same everywhere (Bolino et al., 2016). The generalisation that impression management across cultures would be the same highlights a major gap in the research on impression management (Bolino et al., 2016). This article tries to address this gap by highlighting the nuances in the Indian context.

Gender Stereotypes and Attitude Towards Gender Stereotypes (ATGS)

Although ATGS has been studied across cultures, it has been less researched in the context of workplaces. This creates avenues for exploring ATGS in the Indian workplace. Within the purview of Indian workplaces, ATGS will help in understanding the reactions/responses to the prevailing gender stereotypes.

Research Question

This article attempts to extend the Framework for Impression Management by Women in India (FIMWI) framework by exploring the ATGS of women as an antecedent to the choice of impression management behaviours. In other words, this article attempts to answer the research question 'How does ATGS influence impression management strategies used by women in their workplaces?'

Potential Contributions

Gender stereotypes and ATGS, therefore, form interesting variables for the purpose of research since it opens doors for exploring its various implications across different settings. There are some reasons as to how this study could contribute to the existing literature.

First, due to its focus on the aspects of impression management and ATGS in the Indian workplace, the article aims to understand how the relationship between these components would affect the Indian working women and pave way for bringing their narratives in the workspace to the forefront, something that the high-power distance nature of the Indian culture resists rather than promoting. Second, the focus on ATGS would provide the reader a chance to witness the receiving end of gender stereotypes. It would help the readers understand how women respond to gender stereotypes.

The implications of ATGS form an interesting avenue for research. Since it has already been established that attitude is a strong indicator of behaviour, ATGS will affect the decision-making process of women to a great extent. It would impact the decisions they make across all walks of life.

Being an important tool in the organisational atmosphere, the choice of impression management technique is a crucial decision to be made. This decision is influenced largely by one's ATGS. This exploration will also contribute to the existing literature in the context of impression management.

We will try to ensure these contributions by reviewing past literature on impression management, ATGS and FIMWI, gender role theory and gender stereotypes. We will then try exploring a reconceptualised version of ATGS by combining high and low levels of accepting and challenging ATGS. After exploring the combinations of ATGS, we will try to understand the effect of the various combinations of ATGS on the choice of impression management behaviours adopted by women. We will also briefly explore the role played by social identity theory in moderating the effect of ATGS on choice of impression management behaviours.

Literature Review

Impression Management

Jones and Pittman (1982) identified five techniques that were associated with specific desired images. They were 'ingratiation' which could be used to be seen as likeable or friendly, 'self-promotion' which could be used to be seen as competent, 'exemplification' which could be used to be seen as dedicated and hardworking, 'intimidation' which could be used to be seen as threatening, and 'supplication' which could be used to be seen as needy. Impression management can also be understood as either tactical (short term) or strategic (long term) and assertive (initiated by the actor) or defensive (used by the actor for responding to an undesired image) (Tedeschi & Melburg, 1984). An interesting research finding

in the field of impression management in the recent times is that impression management strategies used by women differ from that of men (Guadagno & Cialdini, 2007).

However, studies also point at the scarcity of research on impression management strategies used by women, especially in the Indian context. There have been some research contributions in this field from Asian countries such as Hong Kong, China and Singapore, but India is yet to be churned adequately for insights in this field (Barkema et al., 2015).

ATGS and FIMWI

In the Indian context, FIMWI was proposed (Sanaria, 2016). This framework explored the impression management techniques used by women in India. It used the social role theory (Guadagno & Cialdini, 2007), masculine and feminine job roles and ATGS to understand the types of impression management strategies used by women in India.

ATGS (Larwood, 1991) was expected to affect the choice of impression management behaviours adopted by women in India. Women would have either an accepting or challenging ATGS. This variation in ATGS could provide a rich ground to explain the process underlying the choice of impression management strategies by women in Indian organisations (Sanaria, 2016).

Gender Role Theory

Gender role theory (Sczesny et al., 2018) describes behavioural norms for women and men indicating that the expected behaviours are different for men and women. According to these norms, women are expected to engage in more communal behaviours, whereas men are expected to engage in more agentic behaviours (Smith et al., 2013). Drawing implications from the above, actions that demonstrate modesty, friendliness, submissiveness, unselfishness and concern for others are stereotyped as feminine tactics. Juxtaposed to this, behaviours that demonstrate self-confidence, assertiveness, self-reliance, directness and instrumentality represent the masculine stereotype (Bolino et al., 2016).

Gender Stereotypes and ATGS

Gender stereotypes have been extensively researched (Ellemers, 2018). The concept of ATGS was introduced by Sanaria (2016). Attitudes being a strong indicator of behaviour makes the concept of ATGS a predictor of the way one would behave/respond towards a particular gender stereotype. In some situations, people prefer preserving the gender stereotype. This is defined as ‘accepting ATGS’. Similarly in some situations, people do not accept the stereotype and challenge it. This is defined as ‘challenging ATGS’. These are the two types of ATGS found in Indian context (Basu, 2008).

ATGS and Impression Management Behaviours

Reconceptualising ATGS

ATGS could have a high and a low level. These high or low levels of attitudes are described as follows:

High Accepting ATGS. The person having accepting attitude at high levels would tend to accept the stereotypes of the gender they identify as. For example, a woman would readily accept the identity of being soft, subtle and communal as per the common stereotypes held about women by the society.

Low Accepting ATGS. The person having accepting attitude at low levels would tend to be less accepting of the stereotypes of the gender they identify as. For example, a woman would rarely accept the stereotype of being soft, subtle and communal.

High Challenging ATGS. The person having challenging attitude at high levels would tend to challenge the stereotypes of the gender they identify as. In this scenario, a woman would strongly deny the stereotypes held about women being soft, subtle and communal. She would consider women as capable as men in any front.

Low Challenging ATGS. The person having challenging attitude at low levels would tend to be less challenging of the stereotypes of the gender they identify as. For example, a woman would rarely challenge the stereotypes held against her about being soft, communal and submissive.

The two dimensions, accepting and challenging ATGS, are independent of each other (Larwood, 1991). If we juxtapose the two dimensions (high and low) of the two types of ATGS, we get four combinations as exhibited in Table 1.

Types of ATGS

This section describes each type of ATGS that has been derived from the combination of 'high' and 'low' levels with 'accepting' and 'challenging' ATGS. These are based on the descriptions of internalisation and compliance (Kelman, 1958). The high levels of accepting or challenging ATGS could be associated with internalisation since the acceptance of the gender stereotype or the challenge against the gender stereotype is congruent and integrated with their value system which either accepts women as communal or identifies them as agentic like men.

Table 1. Types of ATGS.

	High Accepting	Low Accepting
High challenging	HAHC	LAHC
Low challenging	HALC	LALC

The low levels of accepting or challenging ATGS could be associated with compliance since the acceptance of the gender stereotype or the challenge against the gender stereotype is caused not because of one's belief in the content of the stereotypes. It is accepted or challenged only in situations in which the individual hopes to gain rewards or avoid punishment (Kelman, 1958).

High Accepting, High Challenging (HAHC). Women with an attitude that is highly challenging yet highly accepting of the gender stereotype would tend to oscillate between being the quintessential feminine to the ultra-masculine. She would tend to accept stereotypes but also challenge them. She would believe in the ability to ace her performance in all jobs, even in those that are typically assumed to be masculine in nature. In situations where she is required to be soft and communal, she would present herself as optimally soft and communal. In situations that require her to be dominant and agentic, she would ace in displaying those attributes as well. It could be said that she would find a need to be high on both the accepting and challenging attitude towards the gender stereotypes for she would neither want to lose her prowess nor the comforting softness that she is a possessor of. Maintaining both these aspects are extremely important for her. The combination of high accepting and high challenging ATGS indicates the strong presence of internalisation of beliefs that women can be both agentic and communal as per situational needs.

Low Accepting, High Challenging (LAHC). Women with an attitude that is low accepting and high challenging of gender stereotypes will tend to not accept or challenge the stereotypes. She will tend to challenge the stereotypes because it is congruent with her value system that considers women capable of being agentic unlike the stereotype that labels them as communal. However, she will tend to accept the gender stereotypes only when she feels that complying with it would lead her to specific rewards and help her avoid punishments.

High Accepting, Low Challenging (HALC). Women with an attitude that is highly accepting, and low challenging of the gender stereotype, will tend to accept and be less challenging of the stereotype about women. The combination of high level of accepting attitude and low level of challenging attitude could also be explained with the help of internalisation and compliance (Kelman, 1958). In this situation, the woman will tend to accept the way the society identifies her as a soft communal entity. She will thus find it important to preserve the stereotype because it is congruent with her existing belief system that considers woman as friendly, submissive and communal. In other words, she will have internalised the stereotype which will induce her to accept it. However, she may challenge the stereotype about women only when she wants to gain specific rewards (for example, support of popular radical feminists) or wants to avoid punishment (for example, fear of social isolation by peers who are radical feminists).

Low Accepting, Low Challenging (LALC). Women with an attitude that is low accepting and low challenging of the gender stereotype would tend to be less

accepting and less challenging of stereotypes about women. Accounting for the low accepting attitude in the combination, the woman would consider women as soft and communal only to gain a specific reward or avoid a negative consequence. However, she will challenge the gender stereotype not because of her existing beliefs but because through her challenging of the stereotypes too, she aims to gain rewards and avoid punishment. The combination of low accepting and low challenging ATGS indicates the strong presence of compliance in women who have this combination of ATGS.

Social Identity Theory

We use the social identity theory (Tajfel & Turner, 1979) to further understand how ATGS impacts the choice of impression management strategies. The social identity theory is a social psychological theory of intergroup relations, group processes and the social self. According to the social identity theory, we categorise the social world as in-groups and out-groups. An in-group is a social category or group with which we identify strongly. An out-group, conversely, is a social category or group with which we do not identify. Simply put, the social identity theory helps us put people into buckets of 'us' and 'them' (Tajfel & Turner, 1979).

In a collectivistic country such as India, in-group members are perceived from the focal point of the 'relational self'. It means that when we interact with in-group members, our self-knowledge is largely derived from our knowledge about our significant others, and the significant others play a major role in characterising ourselves (Chen et al., 2011). We approach them using familial terms and treat them as our kins. On the contrary, we perceive our out-group members from the focal point of 'individual self'. The 'individual self' focusses on one's unique side. It is a combination of attributes like one's traits, goals and aspirations, experiences, interest and behaviours that differentiate the person from others. This representation of the self is relatively independent of relational bonds or memberships in-groups. These two versions of self or two different identities of a person generate differences in our ways of perceiving people (Sedikides et al., 2011). As individuals interact with each other and become engaged with these groups, their identities become more prominent. Social categories such as race, ethnicity and gender are most salient. These serve to create and perpetuate in-groups and out-groups in societies and organisational settings. Therefore, socially constructed identities based on group membership can be a source of misunderstanding, conflict and problems (Haynes & Ghosh, 2012).

In the context of understanding gender stereotypes and the way in which these stereotypes influence decision-making (choice of impression management in this context), social identity theory plays an intriguing role. It helps us understand why human beings, who are supposed to be rational creatures, or at least capable of rational thought and behaviour continue to operate according to gender expectations and stereotypes. Similarly, it can also help us ponder over the reasons owing to which they challenge a gender stereotype. Identity theory supports understanding the reasons for which such gender stereotype preserving or challenging behaviours

are displayed (Carter, 2014). Hence, this theory will be used to find the cause due to which a specific ATGS influences the choice of impression management techniques.

How Does ATGS Influence Impression Management Behaviours?

Attitudes have an affective, cognitive and behavioural dimensions. Therefore, attitudes contribute extensively to the development of thoughts, feelings and behaviour. Due to this three-dimensional impact, almost every domain of our life, lies within the panorama of attitudes (Ajzen & Fishbein, 1977). This implies that decision-making in each of domains is influenced by our attitudes. This further implies that decision-making or the choices that one makes in one's workplace is also influenced by attitudes.

As understood from the review of past literature, stereotypes hint towards a perception that has been formed towards a phenomenon over a large time duration by a large group of people. Since these perceptions have been historically preserved and reinforced time and again, they root themselves in the collective consciousness. This process offers stereotypes a kind of omnipotence that makes it difficult for people to be blind to it. It also implies that stereotypes are an integral part of the society and makes its presence felt in every part of it (Ellemers, 2018). The Indian workplace is still struggling to inculcate gender egalitarianism in its culture. Exploring the impact of ATGS in impression management behaviours adopted by women in organisations is, therefore, a relevant field of inquiry in the organisations (Sanaria, 2016).

From the lens of organisational dramaturgy that was conceptualised by Erving Goffman (2010), every individual in the workplace could be perceived as an actor. This actor has a target audience and wishes to influence them by creating, preserving and protecting an alter image of themselves. In other words, every actor engages in the process of impression management in order to create a favourable image in the minds of their target audience (Gardner III, 1992). Therefore, it could be said that the choice of impression management techniques used by the various actors in organisations would be affected by their ATGS.

Taking the categorisation of in-group and out-group and the relational and individual identities in consideration, we attempt to explore the impact of ATGS in the choice of impression management tactics by women working in Indian organisations.

High Accepting, High Challenging (HAHC). As discussed earlier, these women accept and reject the gender stereotypes. Taking insights from the social identity theory (Tajfel & Turner, 1979), identification with in-group members transforms self-conception and behaviour to embody the group attributes which is manifested through attitudes and behaviours sanctioned by the group. These attitudes and behaviours are internalised as an evaluative self-definition that governs what one feels, thinks and does (Hogg et al., 2012). We, therefore, propose that women with this combination of ATGS will have an accepting ATGS while interacting

with their in-group members since the stereotypes held by the in-groups have been internalised.

However, while interacting with the out-group members, she will display a challenging ATGS. According to the social identity theory (Tajfel & Turner, 1979), it is established that the purpose of group norm or group prototype is to maximise the contrasts between in-groups and out-groups. This implies that adhering to the group norm or embodying the group prototype requires one to distance oneself from the group norms or prototype of the out-groups (Hogg et al., 2012). One way through which the distance or contrast between the in-groups and the out-groups could be created is by challenging the stereotypes held by members of the out-group. This could be a reason due to which she would tend to challenge stereotypes held by out-group members.

Therefore, her choice of impression management tactics will be aimed at preserving stereotypes in her interaction with in-group members. It will be aimed at challenging the stereotypes in her interactions with out-group members.

High Accepting, Low Challenging (HALC). Women having this combination of ATGS would be highly accepting and are less likely to challenge the stereotype. We discuss this combination of ATGS using the concepts of personal identity and social identity from the social identity theory (Tajfel & Turner, 1979). Social identity refers to people's self-categorisations in relation to their group memberships. Personal identity refers to the unique ways that people define themselves as individuals (Leaper, 2011). For women having a combination of high accepting and low challenging ATGS, it could be said that their social identity is stronger than their personal identity. Their identity emanates from the definition of themselves that they gather from their social surroundings. It is their strong social identity that accounts for their high accepting ATGS. Since the stereotypes about women prevalent in the society has been internalised owing to its congruence with the value system (Kelman, 1958), the woman will have an accepting ATGS for both in-groups and out-groups.

She would challenge the stereotype only in scenarios where challenging the stereotype would provide her with some benefit or save her from punishment. In other words, challenging the stereotype would be a result of compliance with the situation (Kelman, 1958).

Low Accepting, High Challenging (LAHC). Women having this combination of ATGS tend to challenge the stereotypes about women and are less likely to accept it. From the social identity theory perspective, it could be said that for women with such a combination of ATGS, personal identity overpowers the social identity. Their definition of self is defined entirely by themselves. The societal description of women are redundant for them. Therefore, the prevailing stereotypes of friendly, submissive and communal for a woman would be challenged by them. Thus, their choice of impression management techniques would be aimed at challenging the stereotypes about women. Since they have internalised the beliefs that women can be agentic and authoritative and are not restricted to being communal and submissive, they will challenge the gender stereotype with both in-groups and out-groups.

One of the reasons why they would accept the stereotypes would be the possibility of gaining a reward or avoiding a punishment. We could therefore say that accepting the stereotypes in the case of women having high challenging and low accepting ATGS would be a product of compliance to the situation (Kelman, 1958).

Low Accepting, Low Challenging (LALC). Women with this combination of ATGS, tend to neither accept nor challenge the gender stereotype. From the social identity theory perspective, it could be said that they place value on both personal and social identity. However, they subscribe to the personal or social identities based on the possibility of gaining a reward or avoiding a punishment. Driven by their compliance with situations, they may either challenge the gender stereotypes or may accept the gender stereotypes. We argue that if they find subscribing to their personal identities more rewarding than subscribing to their social identity, they exhibit low acceptance towards gender stereotypes.

However, it could be possible that if their fear of rejection by society is due to their challenging of the gender stereotypes, this may contribute to the presence of a more conforming nature. This could account for their low challenging ATGS. Therefore, their impression management technique would aim at conforming with the social norms due to their low accepting and low challenging ATGS with both in-groups and out-groups.

Choice of Impression Management Tactics Basis ATGS

It was proposed with the help of social identity theory that ATGS influences the choice of impression management tactics used by women in workplaces, we now suggest which impression management tactics would be preferred by women given a particular combination of ATGS.

High Accepting, High Challenging (HAHC)

As discussed above, women with this combination of ATGS will aim to preserve the stereotypes while interacting with in-groups and will challenge the stereotypes while interacting with out-groups. She will thus make use of soft impression management techniques in order to preserve the stereotype (Sanaria, 2016). Techniques such as ingratiation and coalition are soft management techniques which would be used with in-group members. The rationale behind the usage of techniques such as ingratiation and coalition would be the exhibition of the communal, submissive and friendly attributes that are central to the gender stereotype help about women (Sanaria, 2016). Women are perceived as more effective when displaying behaviours which are considered appropriate based on gender stereotypes (Carli, 1990). However, in order to maintain the contrast between herself and the members of the out-group, she will try to present herself as antithetical to the gender stereotypes by challenging them. A woman with challenging ATGS will tend to display hard impression management strategies (Larwood, 1991; Rudman, 1998;

Rudman & Glick, 2001). In order to present herself as agentic and authoritative as men, she will make use of hard impression management techniques such as intimidation and blocking with out-groups members.

Ingratiation. One of the techniques used by in-group members is ingratiation. It is a technique whereby individuals seek to be viewed as likable by flattering others or doing favours for them (Bolino & Turnley, 2003). Using this technique, they will try to present themselves in a more favourable light to their in-group members. They may engage in acts of praising and flattering to make themselves more likeable. This way, the tactic of ingratiation will help them preserve the stereotype as guided by their accepting ATGS.

Coalition. Another tactic of impression management that could be proposed in the context of in-groups is coalition. Coalition tactic is used to mobilise support from allies (Vanhaltren & Peter, 2019). It could be used to form networks of people to gather their support and validation for achieving a common goal. Propelled by their accepting ATGS, it could be said that they would work towards forming close-knit circles of their in-group members to draw more support from them. Exemplification could be also used as an impression management technique for in-group members.

Intimidation. One of the techniques used with out-group members is intimidation technique. It is a technique (Bolino & Turnley, 2003) whereby individuals seek to be viewed as intimidating by threatening or bullying others. In order to challenge the gender stereotype women could engage in acts like calling by the name, providing radical criticism, directing and giving instructions and the like while interacting with people from the out-group.

Blocking. Another technique that could be used with out-group members is blocking. It deals with the usage of threats to notify outside agencies, engaging in work slowdowns and reduction of pro-social behaviour (Kipnis et al., 1980). Verbal blocks could be used to halt an ongoing interaction and put one's professional identity to the forefront of the interaction and thus establish her presence (Hatmaker, 2013). Through these practises, the stereotypes about women held by the out-group members would be challenged.

Assertiveness and self-promotion could also be used as impression management techniques for out-group members.

Low Accepting, High Challenging (LAHC)

As proposed earlier, this combination of ATGS will induce women to use hard management techniques since this would challenge the stereotype for both out-group and in-group members. Hard impression management strategies use a combination of direct and aggressive impression management strategies such as assertiveness, self-promotion, intimidation and the like (Sanaria, 2016).

Assertiveness. It is defined as demanding forcefully and persistently by establishing one's ideas, feelings (Vanhaltren & Peter 2019). This challenges the common stereotype of women being communal and submissive.

Self-promotion. It occurs when an individual tries to associate themselves with someone or something that is viewed positively by their target audience. People practising self-promotion try self-enhancements, entitlements and basking in reflected glory (Gardner III, 1992). This challenges the common stereotype of women being modest and unselfish.

Intimidation and blocking techniques could also be used in this context.

High Accepting, Low Challenging (HALC)

As proposed earlier, this combination of ATGS will induce women to use soft management techniques with both in-groups and out-groups since they would accept the stereotype on most occasions and want to preserve these stereotypes. Soft impression management strategies include indirect and subtle impression management strategies such as ingratiation, coalition, exemplification and the like (Sanaria, 2016).

Exemplification. It is a process by which individuals seek to be viewed as dedicated by going beyond the call of duty (Bolino & Turnley, 2003). It is used to present oneself in an honest and straightforward way by showing integrity and exemplary behaviour (Gardner III, 1992). This behaviour would largely be driven by the need to be consistent with the stereotypes held about women being communal. Ingratiation and coalition techniques can also be used in this context.

Low Accepting, Low Challenging (LALC)

As proposed earlier, women with this combination of ATGS, have a low acceptance for gender stereotypes yet tend not to challenge the same, possibly to gain rewards or avoid punishments. The resultant attitude is a conforming one that aims to preserve gender stereotype without accepting it. In the context of conforming to the stereotypes, the following impression management techniques may be used.

Supplication. Supplication makes use of passive behaviours, such as acting needy to gain assistance or sympathy, or pretending to not understand a task to avoid an unpleasant assignment (Bolino & Turnley, 1999). Through the technique of supplication, one aims at presenting their weaknesses and broadcasting one's limitations. It could be appropriately used in an LALC combination since the appearance of weak and needy could be leveraged in a situation where a gender ideal behaviour (stereotype) is expected from the woman and her low accepting ATGS directs her to refrain from doing it.

Table 2. Summary of Impression Management Techniques Used by Women with Different Combinations of ATGS.

	High Accepting	Low Accepting
High challenging	HAHC Ingratiation, coalition, exemplification (in-groups) Intimidation, blocking, assertiveness, self-promotion (out-groups)	LAHC Assertiveness, self-promotion, intimidation, blocking
Low challenging	HALC Ingratiation, coalition, exemplification	LALC Supplication, face saving techniques like defence of innocence and apology

Face Saving Techniques. Face saving techniques like defence of innocence would be used in crisis situations where, the low accepting ATGS would have directed one to transgress the expected gender behaviours. In this very scenario, their low challenging ATGS would help the person to dissociate herself from an alleged event and hence prove that she was innocent and did not challenge the stereotype (Gardner III, 1992).

'Apology' could be another face-saving technique in the context of crisis situations. Through apology, the woman could convince her target audience that the situation is not an appropriate description of what she is. This is another possible way through which she would manifest her low accepting ATGS along with the low challenging ATGS (Gardner III, 1992).

A summary of the impression management techniques used by women with different combinations of ATGS can be seen in Table 2.

Theoretical, Practical Implications and Future Research Possibilities

This article holds relevance due to the following reasons. First, there is a dearth of studies focusing on impression management strategies used by women in the Indian context (Sanaria, 2016). This article contributes to the research on impression management strategies used by women by building upon their ATGS. Second, this article, in its endeavour to explore ATGS, tries to look at various combination of ATGS using the high/low dimension and the accepting/challenging dimension. This highlights that it would be unfair to presume that ATGS could either be accepting or challenging. This study contributes towards the understanding that it should be witnessed under the lens of one's understanding of oneself and the situation in which they perform as actors. Third, impression management is said to be the result of a multiplicity of factors, many of which are yet to be unearthed by existing research. This article contributes by identifying the type of

ATGS, the nature of one's identity using the social identity theory as relevant factors for determining the choice of impression managements.

An interesting finding in prior research is that observers tend to react more favourably to attempts at impression management that fit gender role prescriptions (Rudman, 1998; Smith et al., 2013). It could thus be said that using the same impression management tactic may lead to different outcomes for men and women. It was found that men who used intimidation received more favourable evaluations, as compared to women. In addition to the same, the use of intimidation did not make men less likeable, but it affected the likeability of women negatively (Bolino & Turnley, 2003). On the contrary, Kipnis and Schmidt (1988) found that ingratiation led to positive evaluations for women, but it did not work the same way for men. This, thus, reflects the success of soft impression management techniques in the context of women. Therefore, exploring the impact of ATGS on impression management ATGS, specifically those with challenging ATGS, can potentially contribute towards novel findings in the field of impression management strategies by women.

Women in workplaces are usually perceived as emotional, illogical and intuitive decision-makers (Green & Casell, 1996). Along with the same, there is also a common perception that they are physically, mentally and emotionally less capable in confronting certain challenges because of being temperamental and lacking in motivation (Tabassum & Nayak, 2021). These stereotypes about women in workplaces that have been a part of the organisational narrative take into consideration the opinions of the larger society that contributes to the formation of these stereotypes about women. Our study allows a window to verify if these stereotypes still hold true and, if it does, do women accept it or challenge it.

Conclusion

The article aims to initiate steps towards recognising the efforts of women to sustain in organisational climate that favours masculinity. The Indian culture is marked by an unequal societal status of women and men, and this inequality plays out in all walks of life. Workplaces are no exception. This societal placement has been the forerunner to a desperation for equality, which has given rise to several women's movements. This body of work, thus, brings to forefront an interface between gender and ATGS and encourages dialogues on the employee–employer relationship, the Indian organisational culture and more importantly the challenges faced by women employees in the organisations. The discussion addresses the lack of research on the idiosyncrasies of Indian workplaces in the sphere of impression management and explains the context that drives women to use them. While explaining the numerous aspects that women keep in mind while deciding upon their impression management techniques, the article emphasises on the intersection of social forces that are at play (like their personal vs social identity and their in-groups and out-groups) in the Indian woman's workplace and the resilience and cognitive pro-activeness required to address them. Some future directions for research in this context could commence in the lines of gathering narratives on gender stereotypes in workplace to understand if perceptions about women have changed or are still the same, comparing

intergenerational perspectives on impression management by women in workplace and the like. We hope that this article encourages future research on the aspects related to ATGS and impression management behaviours to promote the voice and discuss the challenges faced by women employees in Indian organisations.

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Conceptual Paper

Work Identity Among Differently Abled Employees

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Abstract

Disability inclusion is increasingly becoming popular among many companies, both in small-scale and large MNCs, as a strategy for competitive advantage in recent years. However, researchers previously have identified a lack of attention to this area in the field of research. Consequently, with the phenomenon not being explored extensively, companies trying to form disability inclusion initiatives have been observed to lack sensitivity to the phenomenon on various levels. To bridge this gap, the present study attempts to understand the concept of disability identity, ableism, and its influence on the perceived inclusion of a differently abled employee within an organisation under different circumstances. Three propositions have been arrived at in this conceptual paper, which indicates the complexity associated with the concept of disability identity, which is eventually supposed to drive disability inclusion initiatives for a given organisation. Implications and future directions indicate the need for more quantitative studies in the area to provide data evidence as empirical support.

Keywords

Disability inclusion, disability identity, ableism, perceived inclusion, diversity, work identity

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Introduction

Disability inclusion as a strategy has increasingly gained importance in the corporate world in recent years. Multiple studies have been conducted in the past decade which has emphasised that the advantages of disability inclusion in the workplace can result in benefits like employees with increased organisational commitment and, most important competitive advantage (Kalargyrou, 2014; Lindsay et al., 2018; Miethlich & Oldenburg, 2019). However, the same studies have also indicated that stereotyping differently abled employees can lead to lesser productivity. As indicated by Ashforth and Mael (1989), aspects like organisational commitment can be potential consequences of work identities formed by employees within an organisation. This suggests that differently abled employees will likely develop identities specific to their workplaces. However, in the context of capabilities, these employees differ from others in an organisation. Since individual capabilities can potentially play a role in the formation of identities, as suggested by Riach and Loretto (2009) in their research where aging workers were observed to have their work identities affected due to their ability to do work, it can be deduced that the work identities formed by differently abled employees can differ from the identities created by other employees in the organisation. Given that disability inclusion has been an essential strategy for various corporate companies in recent times, it would be beneficial or rather crucial for companies to understand the formation of work identities among differently abled employees to continue reaping the benefits of the strategy. Studies on disability inclusion have been qualitative and usually involve the hospitality and medical sectors. This article aims to understand workplace identity among differently abled employees better and proposes that the disability identity for differently abled employees influences their perceived inclusion within the organisation.

Theoretical Background and Propositions

In their research, Stone and Colella (1996) have previously indicated that factors like the nature of job and organisation facilities significantly affect the perception of differently abled employees within an organisation. They further noted that factors like supervisor attitude and co-worker attitude influence differently abled employees the most in creating a liking/disliking for their job role within an organisation. In their research study, Bruyere et al. (2003) also noted that the commitment from top management officials of a firm towards creating a non-discriminating environment for differently abled employees is the key to removing barriers that these employees might possess. Santuzzi and Waltz (2016) recognised that differently abled employees of any organisation form a unique and variable identity in the workplace, dependent on several factors. They further elucidated that this work identity is complex and exists with the integration of several other identities that can be formed in a work context. According to them, the following factors contribute to creating work identity among differently abled employees, which they term ‘Disability Identity’.

The first factor is an intraindividual factor which broadly means an individual's personal experience, as perceived by them at a workplace. According to Santuzzi and Waltz (2016), if an individual does not choose to identify with any disability they possess, this factor might be neutralised, which can lead to potential difficulties for the individual that they did not foresee. The second factor is an interpersonal factor which broadly includes the supervisor and co-worker attitudes towards the differently abled employees at the workplace, which can have a significant positive/negative impact on the intended individual. The third factor includes organisational aspects like the nature of the job, work stress, facilities provided to make access to things more accessible for differently abled employees, and job demands/changes. A fourth factor beyond the organisation's boundaries is also included, which involves how the disability for the individual is defined medically and what legal reforms the individual is benefitting from, along with the cultural stereotyping that the individual might be facing outside of the workplace too. According to the authors, the positive disability identity formed from the influence of these factors can increase the individual's self-esteem and improve their psychological health and work. The authors further point out that failing to develop such an identity that is in positive alignment with an individual's position can lead to grievous health risks for the individual, both physically and mentally, thereby potentially affecting the individual's work life.

Two more concepts are pivotal for this conceptual paper's understanding of disability identity. The first concept is Perceived Inclusion, as Chen and Tang (2018) explained. According to the authors, perceived inclusion is an individual's feeling of being accepted/included in a workplace. The authors show that this can significantly increase organisational commitment in their study. For a differently abled employee, it can be argued that factors like the organisation facilities exclusively provided to them for making them feel included, the nature of their job, and the nature of the interaction (specifically how empathetic and inclusive) with their colleagues and supervisors majorly add towards increasing their organisational commitment. These factors, as explained previously, can be categorised under the organisational and interpersonal factors influencing the disability identity of a differently abled employee and workplace. Perceived Inclusion for a differently abled employee can be logically significant when organisational factors and interpersonal factors of the disability identity are positively influencing the individual. Hence the following proposition.

Proposition 1: Perceived inclusion for a differently abled employee increases with the positive influence of organisational and interpersonal factors within an organisation.

The second concept closely related to disability identity is 'Ableism', as explained by Jammaers et al. (2016). According to them, Ableism refers to the ideas, practices, institutions, and social relations that operate with the presumption of able-bodiedness within an organisation. In terms of disability identity, ableism strongly and negatively affects the organisational factors and interpersonal factors for a differently abled employee since, in an organisation that is functioning on high ableism, there

is a tendency to discriminate or disregard the needs of differently abled employees. This can logically affect the disability identity of a differently abled employee within an organisation negatively. Hence the following proposition.

Proposition 2: The positivity of disability identity for a differently abled employee within an organisation increases with a decrease in ableism observed within the organisation.

However, suppose the disability identity for a differently abled employee is negative, that is, In that case, the employee is not open to identifying with their disability (intraindividual factor). The prevalence of ableism within an organisation for the employee can potentially increase the differently abled employee's perceived inclusion. This can be possible due to the organisation and employees' mutual disregard for the disability that is prevalent. Although this can consequently lead to various physical and psychological difficulties for the differently abled employee (based on the nature of disability), the following proposition can imply under these circumstances.

Proposition 3: Perceived inclusion for a differently abled employee increases with an increase in ableism within an organisation, provided that the intraindividual conception of the disability is negative.

Discussion

The three propositions stated in the article help in identifying that the degree of disability identity of a differently abled employee within an organisation ranging from positive to negative based on the factors mentioned, can significantly influence the perceived inclusion of the employee differently under different circumstances. Ableism, which is generally observed to be a discriminatory phenomenon against the differently abled employees of an organisation, can positively impact the perceived inclusion of a differently abled employee under certain specific circumstances (when the disability identity of the employee is negative). All these arguments indicate the complexity of the concept involving disability identity, which influences various factors and is further influenced by several factors during its formation for a differently abled individual within an organisation. This complexity of disability identity consequently leads to the argument on sensitivity. Disability inclusion as a strategy has been gaining popularity among companies in recent years. However, it remains to be verified how many companies are sensitive and considerate when policies and initiatives are designed for disability inclusion. This article's contribution is mainly towards encouraging the sensitisation of the companies while forming and leading disability inclusion initiatives by helping them understand the complexity of disability identity.

The propositions proposed in this article can further lead to a new definition of a positive disability identity for differently abled employees which can say that 'the positive disability identity for a differently abled employee within an

organisation is a function of increased perceived inclusion and decreased ableism within the organisation combined with the external cultural and medical influence on the differently abled individual'.

Randel et al. (2005) integrated role identity theory and status characteristic theory to propose that identity commitment to a particular status characteristic can influence an individual's perception of task competence and group conformity in a workplace. Suppose this logic is applied to positive disability identity. In that case, it can be noticed that status characteristics for the differently abled employee will be neutralised in the context of disability due to decreased ableism and increased perceived inclusion for the employee in the organisation. This would indicate that a positive disability identity for a differently abled employee can help improve the self-esteem of the individual through increased task competence and group conformity within the organisation, hence confirming the theory of Santuzzi and Waltz (2016) that the positive disability identity for a differently abled employee can increase their self-esteem leading to improved work life for the individual.

Implications and Future Directions

The implication of this study is directly for the organisations looking to maintain the benefits they are receiving since the strategic implementation of disability inclusion at their workplace. The proposed propositions of this conceptual paper can be further hypothesised and tested empirically across different organisations for generalisation since most of the current studies on disability inclusion in organisations are mainly qualitative and are restricted to specific sectors of organisations like hospitality and medical sectors. To explore the area quantitatively, the constructs of disability identity, perceived inclusion, and ableism can be operationalised with specific dimensions for which appropriated scales can be developed. The focus on quantitative studies in the area is emphasised as quantitative studies provide the much-needed data support as empirical evidence for companies to understand, apply and invest in the strategy of disability inclusion, which at present is at a nascent stage in research as well as a strategy for competitive advantage.

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Empirical Research

Analysis of Indian Port Performance Post Reforms in an Overlapping Hinterland: A Segmented Regression Approach

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Abstract

India has about 12 major ports under the aegis of the Indian Government, in its approximately 7,500 km long coastline and competing with another 200 state-government-run ones. Over the last 20 years, the Indian government has implemented several reforms. This article answers two research questions. RQ1: Have port reforms improved port performance? RQ2: Do ports with overlapping hinterlands compete, or does one port's performance complement the other? The article proposed a composite operational port performance index (PPI) and carried out a breakpoint (segmented) regression analysis to study the impact of port reforms. This article makes three crucial propositions—First, port performance affects its output, that is, the ship calls when competition is high, but the same does not hold if the port enjoys monopoly or oligopoly status or due to other factors such as cargo demand. Second, performance of ports with lower capacity, also referred to as satellite ports, is affected by the performance of its complementing ports with higher capacity. Third, Reforms may lead to competition and cannibalisation of profits and growth of ports in a dynamic environment.

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Indian ports, port reforms, composite port performance index, port performance, ship calls causality, principal component analysis, segmented regression

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Introduction

India has an extensive coastline of approximately 7,517 km along nine coastal states: Gujarat, Maharashtra, Karnataka, Goa, Kerala (west coast), Tamil Nadu, Andhra Pradesh, Orissa and West Bengal (East Coast). There are 12 major ports and docks and over 200 minor ports. Of the 12 major ports, six are on the west coast (Kandla, Mumbai, JNPT, Mormogao, Cochin and New Mangalore) and six on the east coast (Chennai, Ennore, Tuticorin, Paradip, Visakhapatnam, Kolkata, Chennai, Mumbai and Mormogao ports are over 100 years old. Kolkata port has two major dock systems, one at Kolkata and the other at Haldia. JNPT started its operation after 1989. Ennore port (now known as Kamarajar port) is the 12th major port that started operation in 1999. Ennore port is the only port in India registered as a company, and others are governed by the Major Ports Act. Approximately 95% of India's trading volume and 70% by value are done through maritime ports.

After liberalisation in 1991 and the emergence of the global production process, commodity exports very quickly increased manyfold through the seaports and forced countries worldwide to undergo port reforms. India is no exception. Previous showed that not all privatised ports were equally efficient, and some performed poorly compared to government-run ports (Dasgupta & Sinha, 2016). Another work (Sinha & Chowdhury, 2018) showed that given the pension and fixed cost burden of Indian ports, not all terminals or services should be privatised.

In the last decades, general awareness about the impact of port performance and efficiency on trade has increased partly due to numerous reports on the fragile state of Indian port infrastructure. India started the reformation process to enhance the performance and productivity of its ports through some development programs (PIB, 2015; PIB, 2011; Ministry of Ports, Shipping and Waterways, 2016). It includes taking measures like—adopting the landlord port model and outsourcing some of its cargo handling operations to private players, capacity expansion and dredging activities to increase the draft depth to accommodate larger ships, introducing containerisation, replacing obsolete and poorly maintained equipment, installing modernised equipment, reducing excessive labour and the intervening of trade unions and labour strikes.

The four major performance indicators for Indian ports are ship turnaround time (TRT), idle time in percentage (IT%), pre-berthing delay (PBD) and output per ship-berth-day (OSBD).

The basic definitions for these performance indicators as stated in the Basic Port Statistics Report (2020–2021) of the Ministry of Shipping, Government of India, as below:

1. Turnaround time: Total time a ship spends (in days) from pilot boarding to de-boarding.
2. Output per ship-berth-day: Total tonnage handled distributed over the total number of berth days
3. Idle time percentage: Percentage of non-working time of a ship (without loading or unloading of cargo) at berth.
4. Pre-berthing delay: The time (in days) a ship waits before entering a berth.

The functional values of the above indicators give a fair and reasonable picture of port performance. It is necessary to reduce TRT, PBD and IT and to increase OSBD for a port to operate efficiently and increase its productivity and market share of port throughput.

Previous studies show (Chakrabartty & Sinha, 2022; Nayak et al., 2022) that a composite indicator leads the way for port planners to delve down into the cause of inefficiency or other performance, for example, sustainability (Sinha & Chowdhury, 2020). However, there is an insignificant reference to studies that compared the performance of ports over different periods and amongst those that shared a common hinterland—competing with a common customer base or cargo source. Periods refer to the time when different reforms were initiated and whether such measures did impact port performances.

Over the last 20 years, the Indian government has implemented several reforms. Since 2005, various port infrastructure and institutional development initiatives have been taken. These include 'The National Maritime Development Programme' (PIB, 2015), the 'Maritime Agenda 2010–2020' (PIB, 2011) and reforms in 'Major Port Authorities Act-2021' (NIC, 2021).

In 2016, Customs and Indian Ports introduced measures to minimise the dwell time of containers. These schemes included Direct Port Delivery (DPD) and Direct Port Entry (DPE) for import and export containers. Under the DPD scheme, an importer can clear the container at a port without routing it through container freight stations (CFS). DPE allows export containers stuffed at a factory or exporter's warehouse to be self-sealed and move to port directly without touching inland container depots (ICDs) or container freight stations (CFS; Shipping Ministry, 2021).

Under Maritime India Vision 2030, the Government of India initiated investments (worth 6 Trillion USD) in enhancing port capacity under the initiative called Sagarmala. The aim is to achieve a capacity of 3,300 Million Tons per annum (MIV, 2021).

However, the share of major ports continues to slide—it had a 90% share in 1950 and reduced to less than 50% in 2019. The traffic handled by non-major ports (613 million tons) exceeded the handling by the major ports (575 million tons) in 2019 (refer to https://timesofindia.indiatimes.com/blogs/voices/what-future-holds-for-maritime-logistics-in-india/). The ports in India could not match the performance levels of many other ports in Asia and around the world. In 2022, the average turnaround time (ATRT) in Indian ports was around 2.18 days (Basic Port Statistics Report, 2021), as against 0.34 days in a Japanese port, 0.62 days in Chinese ports, 0.8 days in Singapore port and Netherlands ports and 0.7 days in UK ports (Statista.com).

Existing researches (Nayak et al., 2022) on major Indian ports show their performance comparisons and consider financial performance as the output affected by the physical, socioeconomic and operational efficiencies. This study has three major limitations—one: financial performance can improve with an increase or articulation of port tariff; two: port performance affects the primary stakeholders—ships and shippers—not considered for research validation and three: the existing study does not consider that government reforms aimed at improvement of port performance.

Thus, there is a need to consider the impact of port performance on ship calls. The stakeholders' decision to prefer one port over the other is reflected in the number of ships visiting the port. If performance deteriorates, the ships and shippers will avoid such ports. Second, whether government reforms impact the port equally or partially may vary with the degree of its implementation by individual port authorities.

This article aims to answer two research questions:

RQ1: Have port reforms improved port performance?
RQ2: Do ports with overlapping hinterlands compete, or does one port's performance complement the other?

The authors developed a composite port performance index in this article and compared port performance across different periods. It also showed how operational performance affects the number of ships calling at the port.

This article has seven sections. The next section describes the objectives in detail, and the third section discusses the extant literature. The fourth section describes the methodology and the results are discussed in the fifth section. The sixth section analyses the managerial implications of the findings, and the seventh section concludes the research work and states the limitations.

Objectives

There are two main objectives of this article:

1. The first objective is to compute a composite port performance index (PPI) using principal component analysis (PCA) for all the major ports. A composite port performance indicator is necessary, as different ports perform differently in terms of performance indicators, and it becomes difficult to benchmark the ports based on individual performance indicators.

   The PPI comprises the four important performance indicators—TRT, PBD, OSBD and IT%. The average value (annual) of these indicators has been considered for the study.
2. The second objective is to use the composite performance index to assess the effect of the port performance on the number of vessels (port calls) for the ports using breakpoint regression analysis (segmented regression analysis).

For the second objective, we have restricted to three ports—Paradip, Visakhapatnam and HDC (Haldia port). The article uses breakpoint regression analysis (segmented regression) to capture the effect, considering 'time'. These three ports are all on the eastern coast of India. These three ports primarily handle bulk cargo, such as coal and iron ore, and share an overlapping hinterland. Thus, the hypothesis is: Ports sharing a common hinterland always compete with each other—RQ2.

Literature Review

Research articles on assessing the relative performance of Indian ports based on performance indicators and composite performance index over different periods are scarce. Very few articles also find a causal relationship between port productivity or port calls (number of vessels) and performance indicators in the Indian context.

De and Ghosh (2003) tried to uncover the long-term and short-term causal relationship between port performance and port traffic individually for all the major ports in India using co-integration analysis and Engle Granger causality, two important tools used in econometrics from 1985 to 1999. They have derived the composite performance index for each port using operational indicators like average turnaround time (ATRT), PBD, idle time percentage, OSBD, berth occupancy rate, berth throughput rate and financial indicators like operating surplus per tonne of cargo handled. In the case of most of the ports, they found either weak or strong causality or no causality with direction from performance to traffic.

Dayanand and Dwarakish (2018) examined the correlation between port productivity (port throughput volume) and performance indicators like ATRT, average pre-berthing delay, average output per ship-berth-day, idle time percentage, average output per hook per shift and number of vessels (port calls) for New Mangalore port for the period 1990 to 2014. Idle time percentage, turnaround time and pre-berthing delay have a negative correlation with productivity, and the rest have a positive correlation.

(Mandal et al., 2016) ranked the Indian ports by constructing a composite PPI and grouping the ports based on hierarchical clustering. The basic performance indicators were turnaround time, pre-berthing delay, average output per ship-berth-day and idle time percentage. Instead of using TRT and PBD directly, they have created a ratio of TRT and average output per ship berth day to compute the ATRT and a ratio of PBD and average output per ship-berth-day to compute a new variable detention time to output ratio (DTOR). The weights for the performance indicators have been derived using Analytic Hierarchy Process.

Solanki and Inumula (2020) have ranked the major Indian ports by constructing a composite PPI, using key performance indicators like TRT, PBD, OSBD and IT percentage as components using PCA to give weights to the indicators. Data for the period 1999 to 2017 was used for the analysis. JNPT port occupies the first position, followed by Ennore port in the second rank and Kandla port in the third position. Kolkata, Haldia and Tuticorin demonstrated poor performance and ranked in 13, 12 and 11th positions, respectively. Kumar (2022) extended the

same method by Dayanand and Dwarakish (2018) to all the major ports of India using Pearson correlation analysis using data between 2007 and 2019.

In recent work, Nayak et al. (2022) computed a unified PPI based on the quantile approach and compared it with the PCA method. The article established the relevance of the indicator by showing its positive relationship with the financial outcome of the ports. This article validated its method on the Indian ports. The results may stand negated if ports increase their tariff and service charges. Besides, ports do not share the same hinterland, so its comparison with all ports for all cargo may not reflect the right rankings. In this article, a comparison of ports sharing a common hinterland has been made.

Choosing the right output variable is crucial for measuring port performance (Dasgupta & Sinha, 2016; Sinha & Dasgupta, 2017). The impact of performance affects ship calls, which impacts cargo throughput. This article tests the effect of port performance on ship calls based on the port performance scores and ship calls over time.

Research Methodology

This section is divided into three subsections. In the first subsection, a box plot analysis, for all the major ports, has been carried out to show the initial findings about port performance regarding four crucial operational performance indicators. The second subsection discusses the development of a composite indicator—the PPI. The third subsection illustrates the use of breakpoint regression analysis to validate the relationship of port performance with ship calls.

Annual data for the period 1999 to 2000 to the year 2020 to 2021 has been selected for the study. The sources of the data are:

1. Basic Port Statistics reports (MoS) for data from FY 2008 to 2020
2. Data from 1999 to 2007 were compiled from the works of Solanki and Inumula (2020).

Initial Box Plot Analysis of the Performance of the Major Ports

Figure 1a and Table A1 show that JNPT has the least ATRT (1.23–2.54 days) with the least variance in ATRT value. The next best level performers, after JNPT, are Cochin (1.45–3.54 days), New Mangalore (1.90–3.80 days) and Kamarajar port (1.72–4.24 days). Mormugao port (2.33–8.91 days) is the worst performer, followed by Kandla port (2.45–7.26 days). HDC (2.75–5.47 days) outperforms KDC (3.17–6.80 days). Visakhapatnam (2.43–5.84 days), Paradip port (2.34–7.01 days), Chennai (1.98–6.40 days), Tuticorin (1.67–4.94 days) and Mumbai (1.70–5.60 days) are performing approximately at the same level. The outlier values of the indicators, shown in Figure 1, have been excluded.

Figure 1b and Table A2 show that Kamarajar port (0.07–2.38 days), Kolkata (0.4–1.1 days) and Cochin (0.43–1.09 days) are at the top levels of performance, followed by JNPT (0.49–1.17 days). New Mangalore (0.55–1.26 days) and

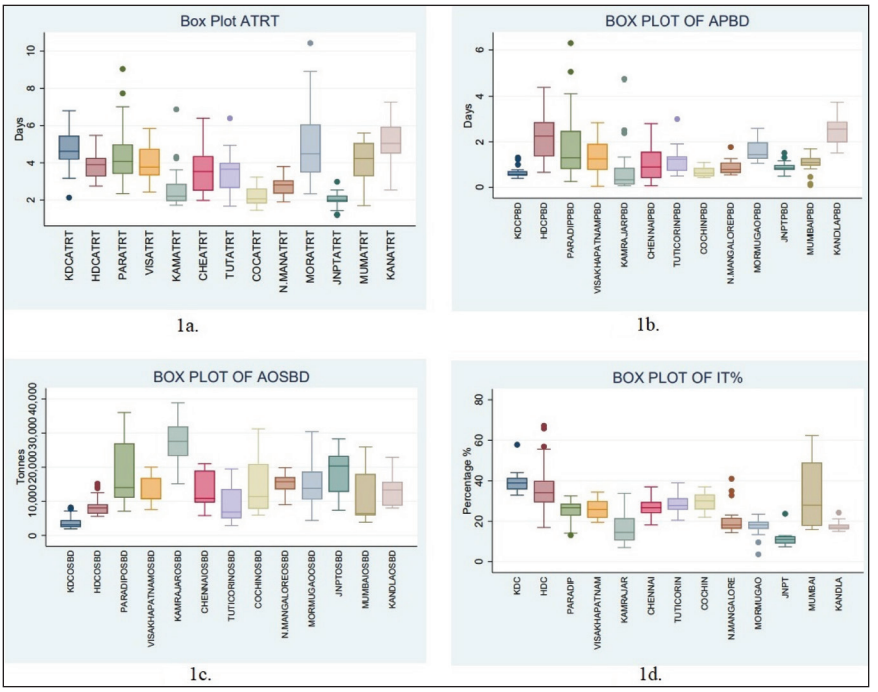

Figure 1. Box Plots of ATRT, APBD, AOSBD and IT%.

Source: STATA 16 (trial version).

Principal components/correlation — Number of obs = 13; Number of comp. = 4; Trace = 4; Rotation: (unrotated = principal); Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.96648	.816978	0.4916	0.4916
Comp2	1.1495	.45634	0.2874	0.7790
Comp3	.693159	.502294	0.1733	0.9523
Comp4	.190865	.	0.0477	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
atrt	0.5394	-0.4974	-0.3320	0.5928	0
osbd	0.4942	-0.3585	0.7086	-0.3537	0
pbd	0.5727	0.3080	-0.5200	-0.5538	0
it	0.3699	0.7275	0.3424	0.4656	0

Figure 2. PCA.

Source: STATA 16.

Mumbai port (0.10–1.41 days) are at the next best level of performance. Paradip port (0.26–4.11 days), Visakhapatnam (0.07–2.84 days) and Mormugao port (1.06–2.59 days) have APBD at approximately the same level. HDC (0.66–3.73 days) and Kandla Port (1.51–3.74 days) have high APBD.

Figure 1c and Table A3 demonstrate Kamarajar port has the best performance in terms of OSBD (15,149–38,871 tonnes). JNPT (7,391–28,296 tonnes), Paradip (7,106–36,030 tonnes) and Cochin (5,979–31,258 tonnes) also performed well. The worst performer is Kolkata (1,918–7,765 tonnes), HDC (5,599–14,223 tonnes) and Tuticorin (2,891–19,494 tonnes) are just above Kolkata in OSBD performance.

Figure 1d and Table A4 show that in terms of idle time percentage, KDC (32.9%–44.0%), HDC (16.9%–55.6%) and Mumbai (15.9%–62.4%) are much higher than other ports. JNPT (7.4%–23.7%) is the best performer (7.4%–12.9%). Other ports are more or less at the same level of performance.

From the above analysis, it is apparent that ports perform differently with reference to different performance indicators. Box plots only preliminarily indicate the performance of a port for an individual indicator in a time-invariant manner. It cannot capture the overall performance of a port relative to other ports, with all performance indicators with reference to time, and hence, there is a need to determine a single composite PPI that reflects performance variation, in all four indicators.

In the next section, we will construct a Composite Port Performance Index (0–100 scale, 0 refers worst performance and 100 is the best performance) from the above four performance indicators.

Principal Component Analysis

A composite index is constructed by combining several variables or indicators. Composite indices can summarise multi-dimensional issues (Saisana et al., 2005). The literature on composite indicators is vast. Composite index has been widely used in many fields, including social sciences (Booysen, 2002), healthcare, environmental science, economy, technological development and human resources. For example, the Health System Achievement Index adopted by WHO (Reinhardt & Cheng, 2000), the Internal Market Index in the field of Economy (Tarantola et al., 2004), the Information and Communication Technology Development Index in the field of Information and Communication Technology adopted by International Telecommunication Union in 2009 and revised in 2020, Human Development Index adopted by United Nations Development Programme is a widely known index to assess human development, combining indicators of health, education and income.

In the port sector also, several composite indicators are used, for example—

At the country level, liner shipping connectivity index (Niérat & Guerrero, 2019) indicates how well countries are connected to global shipping networks. It computes the index based on six components of the maritime transport sector, namely the number of ships, ships' container-carrying capacity, maximum vessel

size, the number of services, the number of country pairs with a direct connection and the number of companies that deploy container ships in a country's ports.

PPI of container handling ports (World Bank, 2022) is computed primarily combining FA (factor analysis) and administrative approach (expert judgment). The index is based on the comprehensive measure of port hours per ship call determined bygreater or lesser workloads and smaller or larger capacity ships; calls are analysed in 10 narrow call size groups and five ship size groups that generally reflect the types of ships deployed on specific trades and services.

The most important part of a composite PPI is allocating weight to individual port performance indicators. Popular methods of weight are mathematical formulas, AHP and principle components. Weight by the AHP method is subjective and ad-hoc, resulting in biased and unwarranted results.

In this article, the composite PPI is constructed in the following steps:

Step 1: Raw data is normalised according to the following formula

1. If the higher value of a variable is better, then the formula for transformation is

$$\frac{y_i - \min(y)}{\max(y) - \min(y)}$$

   The higher value of OSBD is better.
2. If the lower value of the variable is better, then the formula for transformation is

$$\frac{\max(y) - y_i}{\max(y) - \min(y)}$$

   The lower value of ATRT, APBD and IT(%) is better.

Step 2: Year-wise values of the four variables ATRT, AOSBD, APBD and IT(%) are collected and PCA is applied to the normalised data.

Step 3: The weights for a particular year are derived using the formula—

$$w_i = \sum_{j=1}^{n} |loading_{ij}| \times Eigenvalue_j \quad (1)$$

Where (i) denotes a particular indicator variable, $loading_{ij}$ is the loading value of i^{th} indicator on its j^{th} principle component. $Eigenvalue_j$ is the eigenvalue of the j^{th} principle component. Principle components with eigenvalues greater than or equal to 1 are considered.

Step 4: Final PPI for a port, from 1999–2000 to 2020–2021 is calculated using formula -

$$\mathrm{PPI}_{\text{Port P, Year i}} = \frac{W_{ATRT} \times (ATRT_{\text{year i}}) + W_{AOSSBD} \times (AOSBD_{\text{year i}}) + W_{APBD} \times (APBD_{\text{year i}}) + W_{IT\%} \times (IT\%_{\text{year i}})}{W_{ATRT} + W_{AOSSBD} + W_{APBD} + W_{IT\%}} \quad (2)$$

We illustrate Step 1 to 4, with year 2006 data (Table 1).

The scree plot (Figure 3) shows two components having eigenvalue greater than 1. Hence, two components have been used to calculate the weight of 2006.

Equations (1a.) to (1d.) calculate the weight for the performance indicators for the year 2006 using Equation 1.

$$w_{ATRT} = |0.5394| \times 1.96648 + |-0.4974| \times 1.1495 \quad (1a.)$$

$$w_{AOSBD} = |0.4942| \times 1.96648 + |-0.3585| \times 1.1495 \quad (1b.)$$

$$w_{APBD} = |0.5727| \times 1.96648 + |0.3080| \times 1.1495 \quad (1c.)$$

$$w_{IT\%} = |0.3699| \times 1.96648 + |0.7275| \times 1.1495 \quad (1d.)$$

The weights, computed for the rest of the years, are shown in Table 2. Using Formula (2), PPIs for each port for all the years are calculated and tabulated in Table 3. Year-wise ranks of the ports are shown in Table 4.

Table 1. Raw Data for All the Indicators for Year 2006 Weight Calculation for Illustration.

2006	ATRT	OSBD	PBD	IT
KDC	0.518201	0.408867	0.967033	0.883534
HDC	0.595588	0.330554	0.662198	0.59841
PARADIP	0.820896	0.162115	0.86755	0.154639
VISAKHA	0.642229	0.264113	0.684588	0.826667
KAMRAJ	0.96699	0.841582	0.987124	0.689349
CHENNAI	0.687783	0.28546	0.813187	0.421809
TUTICORIN	0.576271	0.130097	0.704	0.437838
COCHIN	0.595506	0.091103	0.772727	0.706667
N.MANGALORE	0.347368	0.375599	0.92623	0.864662
MORMUGAO	0.528395	0.514901	0.039216	0.186586
JNPTP	0.865922	0.446592	0.931373	0.96319
MUMBAI	0.248718	0.093632	0.433962	0.791398
KANDLA	0.381356	0.122725	0.475336	0.300412

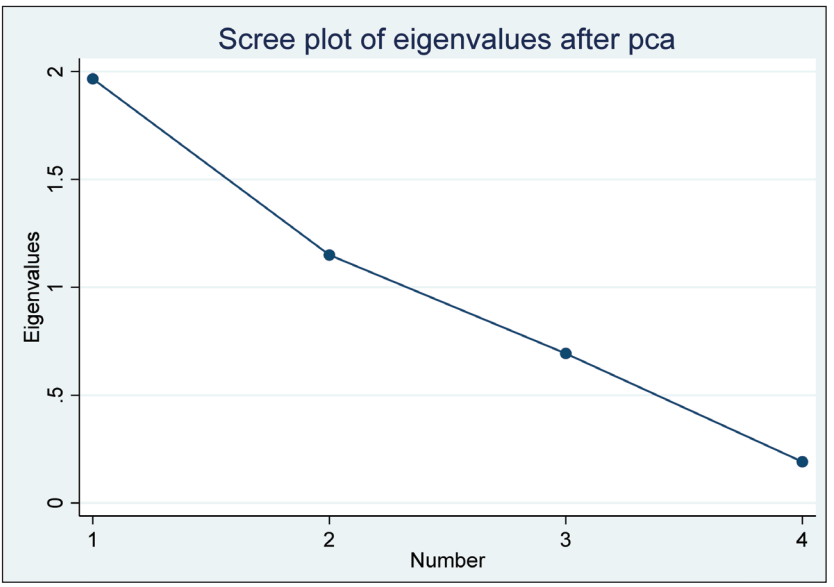

Figure 3. Scree Plot for Illustration.

Source: STATA.

Table 2. The Time Varying Weights of All Performance Indicators (1999–2000 to 2020–2021).

Year	ATRT	OSBD	PBD	IT
1999	1.512375	1.570662	1.534294	1.466837
2000	1.500188	1.557215	1.688123	1.298026
2001	1.382361	1.13785	1.561303	1.319969
2002	1.59027	2.070884	1.071238	1.333593
2003	1.626131	0.949107	1.017501	1.530597
2004	1.481089	1.594501	1.204359	1.247055
2005	1.470269	1.055644	1.132845	1.508202
2006	1.623974	1.374159	1.480249	1.563662
2007	1.437724	1.553888	1.523135	1.201801
2008	1.543219	1.108028	1.424575	1.502786
2009	1.426068	1.36027	1.40547	1.274108
2010	1.113006	1.101954	1.530492	1.147489
2011	1.415773	1.43664	1.301672	1.228623
2012	1.361294	1.101505	1.19217	1.018138
2013	1.188761	0.765629	1.471407	1.175478
2014	1.131972	1.046164	1.421603	1.283917
2015	1.777128	1.595241	1.659901	1.554409
2016	1.583023	1.212907	1.222911	1.400205
2017	0.962049	1.366504	1.350012	1.258173
2018	0.970429	1.448408	1.339216	1.195479
2019	1.230935	1.353126	1.137046	0.972112
2020	1.51034	1.545438	1.486943	1.339047

Source: The authors own computation in STATA.

Table 3. The Port Performance Index for the 13 Major Ports.

Port Performance Index PPI (%)													
Year	KDCPPI	HDCPPI	PARPPPI	VISPPI	KAMPPI	CHEPPI	TUTPPI	KANPPI	COCPPI	NMANPPI	MORPPI	JNPTPPI	MUMPPI
1999–2000	24.00	34.37	45.13	28.03	*	0.00	0.00	21.46	7.30	13.85	55.55	58.24	20.88
2000–2001	43.10	55.69	49.69	51.33	*	13.34	35.79	49.88	19.94	47.20	53.00	51.97	25.18
2001–2002	51.83	58.46	46.51	61.65	52.14	21.61	36.27	20.49	37.88	52.72	49.39	36.51	21.98
2002–2003	48.16	60.84	48.76	58.76	68.74	36.45	39.99	23.77	33.82	80.18	49.85	51.86	27.25
2003–2004	64.04	74.19	55.09	73.58	84.77	37.90	58.17	40.57	57.38	84.11	37.11	64.07	48.68
2004–2005	63.87	56.74	47.87	67.87	95.33	46.06	57.28	42.68	45.35	66.65	48.79	61.10	45.00
2005–2006	65.71	48.99	45.34	61.51	83.02	52.69	56.60	48.30	46.85	66.52	40.68	67.78	48.81
2006–2007	69.78	55.24	51.01	61.43	87.15	55.82	47.03	32.46	55.30	62.95	31.70	81.18	39.93
2007–2008	53.52	45.13	39.35	54.29	85.82	43.90	80.84	36.30	59.68	59.03	32.71	69.02	43.05
2008–2009	51.72	44.18	47.10	58.31	72.83	51.08	52.67	24.16	57.77	44.58	50.46	67.15	37.62
2009–2010	16.85	23.88	10.49	44.33	61.42	49.54	50.80	40.48	54.39	60.63	38.70	62.96	41.75
2010–2011	25.10	30.69	21.49	15.64	56.41	48.00	55.27	28.85	41.79	73.54	33.60	35.57	37.99
2011–2012	45.34	46.73	39.17	23.45	76.34	55.14	40.35	23.79	55.48	64.91	38.29	39.40	32.91
2012–2013	57.55	48.49	62.33	26.84	66.51	67.59	52.22	27.49	52.36	58.67	47.50	47.00	28.22
2013–2014	62.97	55.72	61.51	36.95	48.96	81.07	66.77	41.15	44.40	68.62	55.19	56.84	46.49
2014–2015	55.48	63.52	35.88	17.79	39.16	84.20	72.37	44.72	54.54	91.98	53.55	67.17	30.30
2015–2016	61.32	79.53	58.60	47.18	16.29	75.93	65.81	50.79	52.51	73.60	59.40	53.72	40.09
2016–2017	62.30	27.68	56.53	57.44	67.39	78.94	57.81	75.63	62.10	84.63	66.54	67.81	60.72
2017–2018	69.90	45.88	83.92	52.97	72.28	78.81	67.14	65.92	71.09	73.24	87.74	61.22	50.73
2018–2019	85.89	63.53	87.26	62.18	61.91	94.59	92.33	60.87	71.05	80.30	61.58	71.77	56.84
2019–2020	74.52	71.39	94.46	79.29	84.75	91.79	92.67	75.19	85.18	77.77	66.77	86.03	81.63
2020–2021	74.18	64.48	93.25	69.54	72.96	86.04	99.53	53.32	69.93	78.33	73.82	81.31	78.64

Note: *represents the port not under operation.

Table 4. Rank Based on the Port Performance Index for the 13 Major Ports.

Rank of Ports Based on PPI													
Year	KANPPI	KAMPPI	NMANPPI	KDCPPI	VISPPI	MORPPI	JNPTPPI	HDCPPI	COCPPI	TUTPPI	MUMPPI	PARPPPI	CHEPPI
1999–2000	7	*	9	6	5	2	1	4	10	11	8	3	11
2000–2001	5	*	7	9	4	2	3	1	12	10	11	6	13
2001–2002	13	4	3	5	1	6	9	2	8	10	11	7	12
2002–2003	13	2	1	8	4	6	5	3	11	9	12	7	10
2003–2004	11	1	2	6	4	13	5	3	8	7	10	9	12
2004–2005	13	1	3	4	2	8	5	7	11	6	12	9	10
2005–2006	10	1	3	4	5	13	2	8	11	6	9	12	7
2006–2007	12	1	4	3	5	13	2	8	7	10	11	9	6
2007–2008	12	1	5	7	6	13	3	8	4	2	10	11	9
2008–2009	13	1	10	6	3	8	2	11	4	5	12	9	7
2009–2010	9	2	3	12	7	10	1	11	4	5	8	13	6
2010–2011	10	2	1	11	13	8	7	9	5	3	6	12	4
2011–2012	12	1	2	6	13	10	8	5	3	7	11	9	4
2012–2013	12	2	4	5	13	9	10	8	6	7	11	3	1
2013–2014	12	9	2	4	13	8	6	7	11	3	10	5	1
2014–2015	9	10	1	6	13	8	4	5	7	3	12	11	2
2015–2016	10	13	3	5	11	6	8	1	9	4	12	7	2
2016–2017	3	5	1	7	11	6	4	13	8	10	9	12	2
2017–2018	9	5	4	7	11	1	10	13	6	8	12	2	3
2018–2019	12	10	5	4	9	11	6	8	7	2	13	3	1
2019–2020	10	6	9	11	8	13	4	12	5	2	7	1	3
2020–2021	13	12	11	10	9	8	7	6	5	4	3	2	1

Note: *represents the port is not under operation.

Table 5. Standardised Port Performance Index (SPPI) for the 13 Major Ports.

SPPI (%)													
Year	KDCPPI	HDCPPI	PARSPPI	VISSPPI	KAMSPPI	CHESPPI	TUTSPPI	KANSPPI	COCSPPI	NMANSPPI	MORSPPI	JNSPPI	MUMSPPI
1999–2000	−1.90	−1.26	−0.41	−1.25	−3.70	−2.26	−2.69	−1.27	−2.64	−3.17	0.30	−0.20	−2.21
2000–2001	−0.76	0.22	−0.19	0.05	−3.70	−1.73	−1.03	0.47	−1.89	−1.17	0.11	−0.66	−1.94
2001–2002	−0.24	0.41	−0.35	0.62	−0.85	−1.40	−1.01	−1.33	−0.82	−0.83	−0.15	−1.82	−2.15
2002–2003	−0.45	0.58	−0.24	0.46	0.06	−0.81	−0.84	−1.13	−1.06	0.82	−0.12	−0.67	−1.81
2003–2004	0.49	1.50	0.07	1.29	0.93	−0.75	0.00	−0.10	0.34	1.06	−1.03	0.24	−0.45
2004–2005	0.48	0.29	−0.28	0.97	1.51	−0.43	−0.04	0.03	−0.37	0.01	−0.19	0.02	−0.68
2005–2006	0.59	−0.24	−0.40	0.62	0.84	−0.17	−0.07	0.37	−0.29	0.00	−0.78	0.51	−0.44
2006–2007	0.84	0.19	−0.13	0.61	1.06	−0.04	−0.51	−0.60	0.22	−0.22	−1.42	1.51	−1.01
2007–2008	−0.13	−0.51	−0.69	0.21	0.99	−0.51	1.05	−0.36	0.48	−0.45	−1.35	0.61	−0.81
2008–2009	−0.24	−0.58	−0.32	0.44	0.28	−0.23	−0.25	−1.11	0.37	−1.32	−0.07	0.47	−1.15
2009–2010	−2.32	−1.99	−2.09	−0.34	−0.34	−0.29	−0.34	−0.11	0.16	−0.36	−0.92	0.15	−0.89
2010–2011	−1.83	−1.52	−1.56	−1.95	−0.62	−0.35	−0.13	−0.82	−0.59	0.42	−1.29	−1.89	−1.13
2011–2012	−0.62	−0.40	−0.70	−1.51	0.47	−0.07	−0.82	−1.13	0.23	−0.10	−0.95	−1.60	−1.45
2012–2013	0.11	−0.28	0.42	−1.32	−0.07	0.43	−0.27	−0.90	0.04	−0.47	−0.28	−1.04	−1.75
2013–2014	0.43	0.22	0.38	−0.76	−1.02	0.96	0.40	−0.06	−0.43	0.12	0.27	−0.30	−0.59
2014–2015	−0.02	0.76	−0.86	−1.83	−1.56	1.09	0.66	0.15	0.17	1.53	0.15	0.47	−1.62
2015–2016	0.33	1.88	0.24	−0.18	−2.81	0.76	0.36	0.53	0.05	0.42	0.57	−0.54	−1.00
2016–2017	0.39	−1.72	0.14	0.39	−0.02	0.88	−0.01	2.05	0.62	1.09	1.09	0.52	0.31
2017–2018	0.84	−0.46	1.46	0.14	0.25	0.87	0.42	1.45	1.16	0.40	2.62	0.02	−0.32
2018–2019	1.80	0.76	1.63	0.65	−0.32	1.50	1.59	1.15	1.16	0.83	0.73	0.81	0.07
2019–2020	1.12	1.31	1.97	1.61	0.93	1.39	1.60	2.02	2.00	0.68	1.10	1.87	1.64
2020–2021	1.10	0.83	1.92	1.07	0.29	1.16	1.92	0.68	1.09	0.71	1.61	1.52	1.45

Note: *represents the port not under operation.

To assess the relative performance of each of the 13 major docks with respect to its own performance over the years, a standardised port performance index (SPPI) (Mandal et al., 2016) for each port is constructed based on formula (3) and the result is tabulated in Table 5.

$$\mathrm{SPPI}_{\mathrm{Port\ j}} = \frac{\mathrm{PPI_j} - \mathrm{Mean}\left(\mathrm{PPI_j}\right)}{\mathrm{STDEV_j}} \tag{3}$$

SPPI = 0 means average performance, and SPPI > 0 is below above average performance, while SPPI < 0 means below average performance.

The data from 1999 to 2020 was considered for 13 ports and dock systems with four variables. Thus, the dataset constitutes secondary data; hence, the sample size is fixed and cannot be varied by including higher responses as in the primary survey. In any case, in this study, the KMO values ranged around 0.6, indicating the acceptability of findings with some exceptions. The findings were validated with box plot and regression analysis.

Breakpoint Regression

A linear regression model explains the dependent variable y in terms of the independent variable x in the form:

$$y = \beta_0 + \beta_1 \times x + \varepsilon \tag{4}$$

β_0 is the intercept and β_1 are coefficient of x_1, respectively.

ε represents the unobserved random variable component. The linear regression model above assumes that the parameters β_1 of the model do not vary across observations.

In the case of time series data, the series may reflect abrupt change at a single point or multiple points in time in trend or intercept or both. These time points are known as 'structural breakpoints'. If there are T breakpoints, there must be T + 1 segments.

With structural breaks, the assumption of non-variance of the parameters of a simple linear regression model holds no more. Coefficients vary from segment to segment. This type of regression model is known as a 'segmented regression model' or sometimes termed as 'breakpoint regression model' in econometrics.

For illustration, consider there is a single breakpoint T in the dependent variable. Therefore, the linear regression equation (1) now breaks into two equations as:

$$y = \beta_0' + \beta_1' \times x + \varepsilon' \text{ for } x < T \tag{5}$$

$$y = \beta_0'' + \beta_1'' \times x + \varepsilon'' \text{ for } x \geq T \tag{6}$$

The procedure for breakpoint regression can be divided into two steps:

1. Single or multiple breakpoint detection in dependent series.
2. Fitting equations in the form of (5) and (6) with the usual procedure of linear regression.

The studies on structural break began with the work of Gregory Chow (1960). The Chow test is applied in the data series if a single break date is known. In the late 1970s and early 1990s, many researchers have worked on estimating unknown single breakpoint in time series (Andrews, 1993; Bai et al., 1998; Banerjee et al., 1992; Brown et al., 1975; Hansen, 1992; Perron, 1989, 1990; Zivot & Andrews, 1992). The focus was not only on estimating the break dates but also towards evaluating the stability of the estimated coefficients, detection of serial correlation, unit root and heteroskedasticity in residual terms of the model, which affects the stability of the regression model in whole. In economic time series, multiple breakpoints are quite common. (Bai, 1997; Bai & Perron, 1998) have significantly contributed to the literature by suggesting some procedures, popularly known as Bai-Perron class of tests, to estimate multiple breakpoints in time series using global maximiser, sequential analysis and hybrid method employing both global maximiser and sequential method.

The breakpoint regression analysis can be performed with coefficients that are ordinary least squares. However, the reliability of the coefficients may be in question if the time series have serial correlation and heteroskedasticity in the errors. In this case, the estimation method proposed by (Newey & West, 1987) may be used, which estimates robust coefficients using some non-parametric adjustments (pre-whitening the residuals) to the coefficient covariance matrix.

The coefficients estimation can be done assuming homogenous error variances with a common distribution across regimes or error variances that are different across regimes.

We have carried out the segmented regression (breakpoint regression) in the following steps:

Step 1: Maximum of three breakpoints are determined using 'Bai-Perron test of 1 to M globally determined breaks' with unweighted Max F method. N breaks generate N + 1 segments.

Step 2: For each of the N + 1 segments, a linear fit equation of the form $y = mx + c$ is generated. The coefficients of the model and the intercept terms are generated not using the ordinary least square method but using HAC or Newey and West method, which considers heteroskedasticity and serial correlation in the model.

Step 3: The derived model is tested with Jarque–Bera test of normality, Breush–Pagan test of the presence of serial correlation (specifying lags in the model), Durbin Watson test of Serial correlation (without lag in the model) and Breusch–Pagan–Godfrey test of heteroskedasticity.

A model is selected only if the R-square is sufficiently high, residuals are free from serial correlation and heteroscedasticity and the residual distribution is normal. Durbin Watson value is between 1.50 and 2.50.

In this article, we have used breakpoint regression analysis on a dataset for 20 years (1999–2020) to find out whether the PPIs of HDC, Visakhapatnam and Paradip ports affect their number of vessels, significantly. The models are specified the sixth section.

Results and Discussion

PPI, SPPI and Box Plot Analysis

PPI for all the major ports computed using Equation (2) is listed in Table 4.

Figure 4 is divided into two sections—Figure 4a (1999–2000 to 2009–2010) and Figure 4b (2010–2011 to 2020–2021)—to understand relative performance change in terms of rank (change in box plot levels) for the ports. Kamarajar port (KAM), the best performing port in 1999–2010, is no longer the best-performing port in 2010–2020 as its rank varies with a large IQR, meaning that its performance is no more consistent. Chennai port (CHE), poor-performing port from 1999 to 2010, has improved its performance to a significant level and the rank variation has also reduced to a great extent showing consistently well performance. Rank of JNPT has also gone down from 2010–2020. New Mangalore port (NMAN) has also improved its performance. Rank of Kolkata port (KDC) and Mumbai port (MUM) has not changed much in the two-time ranges. Performance of Visakhapatnam port (VIS) and Haldia port (HDC) have deteriorated.

Figure 5 shows the performance change of each port relative to its performance. From Figure 5a to 5b, it is evident that most major Indian ports performed below average. Some improvements are visible to some extent in Figure 5c and finally in Figure 5d. In time period 2017–2020, all the ports performance has improved significantly above average with Paradip port being the best performer,

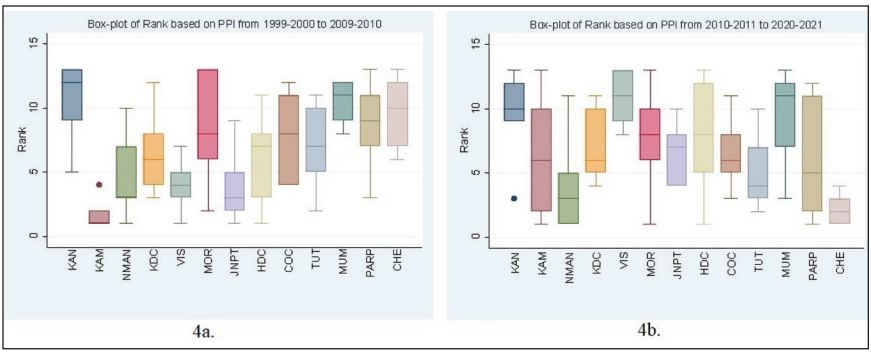

Figure 4. Box Plots of the Ranks of Ports Based on PPI.

Source: STATA 16.0.

Figure 5. Box Plot for SPPI Divided Into Four Time Periods—(1999–2004), (2005–2010), (2011–2016) and (2017–2020).

followed by Cochin port and Chennai port in the second position. The worst performers are HDC, Mumbai and Kamarajar ports.

In 2005–2006, the Central government formulated the National Maritime Development Programme to augment the capacity of the major Indian ports and improve their performance by 2012. For this, an investment of ₹55,800 crore was planned. Focus of the programme was also to improve the service quality of the ports by carrying out operations at ports under PPP mode.

To assess the progress, a performance analysis of the functioning of major Indian ports was conducted by the Comptroller and Audit General of India on behalf of the Ministry of Shipping, GOI in 2009, report number 3 (CAG, 2009).

The major findings of the audit were:

1. Lack of navigable draft depth—Most of the major ports of India, except Chennai, New Mangalore and Visakhapatnam, lacked navigable draft depth at their channels which barred larger vessels with dead weight tonnage greater than 60,000. The situation was worst for KDC and HDC, where more than 21% of the vessels were to be lightened to access the berths.
2. High pre-berthing delay, except Visakhapatnam port, the significant pre-berthing delay was observed in all ports due to a lack of specialised

berths and a delay in providing pilotage to incoming vessels, leading to high congestion of vessels. It was estimated that maritime trade loss amounted to ₹1,400 crore per year due to pre-berthing delay.

3. High turnaround time—In most ports, less than 8% of the berths had specialised equipment and mechanised berths for handling dry bulk (coal, iron ore, etc.) This is the major reason for a high turnaround time. In liquid bulk (petroleum, POL), a slow rate of discharge by marine loading arms leads to high TRT. HDC and Cochin ports were losing a significant amount of liquid berths to other ports due to insufficient storage capacities and low draft at liquid berths.
4. Obsolete port equipment—At most of the ports, except Kandla and JNPT, the port equipment used were beyond their economic lives, and the average utilisation of equipment was below the minimum utilisation norm of 60% as prescribed by Ministry of Shipping. HDC, whose major cargo share is dry bulk, had consistently incurred expenditure in modernising container equipment without modernising its dry bulk cargo handling equipment.
5. Poor hinterland connectivity—Most of the ports suffered from the poor rail, road and inland waterway connectivity and the absence of exclusive freight corridors connecting highways to ports.

The above observations are reflected in Figure 5.

In 2011, the Ministry of Shipping prepared the Maritime Agenda (2010–2020) and proposed a capacity addition of 767.15 MMTPA through 352 projects from April 2010 to March 2020 in three phases.

According to the performance audit report number 49 (CAG, 2015), from the period 2010 to 2012, the ports could achieve achieved a capacity addition of 79.80 MMTPA (25.31%) against the planned capacity addition of 315.23 MMTPA and the contribution of PPP projects was 31.90 MMTPA (10.12%). The report reflected slow progress in the implementation of projects, thereby hindering fulfilment of the basic objective of resorting to the PPP route for faster augmentation of infrastructure resources by utilising private funds, inducting the latest technology and improving management practices. Ports like Visakhapatnam, Kandla, HDC and Mumbai failed to increase their draft depth to required target leading to restricted berthing of large vehicles, which further led to poor performance of these ports. However, there was a significant the reduction in average turn round time and pre-berthing delay and some increase in output per ship-berth day, improving the overall performance of all ports to some extent.

In 2015, the central government adopted a port development programme Sagarmala for modernising major ports, integrating them with special economic zones, industrial parks, warehouses, logistics parks and transport corridors. The focus was on developing the entire logistic chain of which the ports are nodes. 206 port modernisation projects worth ₹78,611 crores (US$ 10.71 billion) were planned of which 81 projects worth ₹24,113 crores (US$ 3.29 billion) have been completed so far and 59 projects worth ₹24,288 crores (US$ 3.31 billion) are being implemented (IBEF report, 2021).

According to Rajya Sabha report number 319, titled 'Progress made in the implementation of Sagarmala Projects', considering all ports, the ATRT has improved to 55.67 hours from 2020 to 2021 as against 82.32 hours from 2016 to 2017. The AOSBD has increased on average from 14,576 tonnes in 2016 to 17 to 15,373 tonnes from 2020 to 2021. The reported APBD was 25.67 hours from 2020 to 2021, which is now quite near the international standard of a little less than 24 hours. However, the Indian ports still suffer from low draft depth to accommodate Capesize vessels, which is important as exporters and importers prefer bigger ships for lower freight costs. Figure 5d shows a good improvement in the overall performance of all major ports. This shows that the initiatives taken through the Sagarmala project have yielded positive results.

Improvement in operational efficiency of a port is expected to have a positive impact on the port calls which in turn increases the port traffic throughput volume.

Segmented Regression

In this section, three regression models have been derived, as given from Table 6 to Table 8.

The test validity results are given by Table B1 to Table B3. Table 6 suggests that 2003, 2009 and 2017 are the structural breaks for the number of vessels (HDNOV) of HDC. Prior to 2003, between 2000 and 2002, the coefficient of Log (HDCPPI) was positive, indicating port performance impacted the number of vessels. In the following time segments, that is, 2003 to 2008, 2009 to 2016 and 2017 to 2020, the port performance (PPI) did no effect the number of vessels calling HDC. In the period 2009 to 2016, the coefficient was found to be insignificant at the 5% level.

The derived model in Table 7 suggests that in the period 2015 to 2020, the port performance significantly affected the number of vessels compared to the previous time segments when there was no positive effect.

Table 8 suggests that from 2012 to 2020, the port performance significantly affected the number of vessels compared to the previous time segments when there was no positive effect.

Managerial Implications

The results of the above analysis show that ports in India have inconsistent performance, and port reformatory measures did not impact performance uniformly across all ports. The success of reforms lay with the individual ports. Several ports had a reactive approach. This is illustrated by the findings as a drop in performance during a period is followed by improvement in the next. Ports that showed consistent performance can serve as a benchmark for their peers. The turnaround time of ships, dwell time of cargo and turn times of road carriers are crucial key performance indicators (KPIs) to monitor. These KPIs also lead to the derivation of sustainability of the ports. Higher waiting times, turnaround and dwell times lower the sustainability of the port as it refers to higher emission levels and energy

Table 6. Regression Model Coefficients for HDC port, with Number of Vessels (HDCNOV) = f(HDC(HDCPPI)).

Model: log(*HDCNOV*) = f (log(*HDCPPI*)) Break Dates (2003, 2009, 2017)				
2000–2002				
Variable	Coefficient	Std. Error	t-Statistics	Probability
Log(HDCPPI)	1.887194	0.014533	129.8524	0.0000
C (constant)	8.35024	0.007886	1059.319	0.0000
2003–2008				
Log(HDCPPI)	–0.533007	0.073832	–7.219159	0.0000
C (constant)	7.371348	0.056867	129.6240	0.0000
2009–2016				
Log(HDCPPI)	–0.111338	0.076753	–1.450602	0.1706
C (constant)	7.528889	0.062493	120.4755	0.0000
2017–2020				
Log(HDCPPI)	–0.134396	0.040230	–3.340704	0.0053
C (constant)	7.636428	0.027593	276.7543	0.0000

Table 7. Regression Model Coefficients for Paradip Port, with Number of Vessels (PARADIPNOV) = f(HDC (PARADIPPPI)).

Model: log(*PARADIPNOV*) = f (log(*PARADIPPPI*)) Break Dates (2003, 2006, 2015)				
2000–2002				
Variable	Coefficient	Std. Error	t-Statistics	Probability
Log(PARADIPPPI)	–0.032077	0.044394	–0.722556	0.4827
C (constant)	6.775698	0.034285	197.6282	0.0000
2003–2005				
Log(PARADIPPPI)	–1.695335	0.038175	–44.40899	0.0000
C (constant)	5.807514	0.025778	225.2892	0.0000
2006–2014				
Log(PARADIPPPI)	–0.061581	0.028832	–2.135845	0.0523
C (constant)	7.202497	0.059595	120.8579	0.0000
2015–2020				
Log(PARADIPPPI)	0.528622	0.048236	10.95903	0.0000
C (constant)	7.639869	0.013491	566.3065	0.0000

Source: EVIEWS 12 Student Version.

consumption. Port performance can be improved through measures such as process improvements and capital investments in infrastructures (Sinha, 2011).

Ports may not always compete with each other, instead two ports can exhibit complementarity, that is, an increase in ship calls in a port also leads to an increase

Table 8. Regression Model Coefficients for Visakhapatnam Port, with Number of Vessels (VISAKHANOV) = f(HDC (VISAKHAPPI)).

Model: log(*VISAKHANOV*) = f(log(*VISAKHAPPI*)) Break Dates (2003, 2007, 2012)				
2000–2002				
Variable	Coefficient	Std. Error	t-Statistics	Probability
Log(VISAKHAPPI)	–0.202220	0.000482	–419.9310	0.0000
C (constant)	7.272914	0.003289	2211.010	0.0000
2003–2006				
Log(VISAKHAPPI)	–1.180377	0.076104	–15.51002	0.0000
C (constant)	7.055284	0.032836	217.8524	0.0000
2007–2011				
Log(VISAKHAPPI)	–0.041780	0.012883	–3.243157	0.0064
C (constant)	7.742095	0.016000	483.8952	0.0000
2012–2020				
Log(VISAKHAPPI)	0.026250	0.027659	0.949052	0.3599
C (constant)	7.623556	0.030039	253.7853	0.0000

Source: EVIEWS 12 Student Version.

in the complementary port. The results of regression analysis show that poor performance did not affect significantly the performance of Haldia Dock Complex from 2009 to 2016. The ports of Paradip and Visakhapatnam, to some extent, also share common ship calls with HDC. This is because HDC has a low draft (around 8 meters) and cannot accommodate fully laden Panamax vessels (80,000 DWT). The fully laden ships that visit Paradip and Visakhapatnam partially unload cargo in these ports and carry the rest to HDC, depending on the demand but within the permissible navigable draft. The frequency of such visits makes HDC more dependent on the performance of the ports of Paradip and Visakhapatnam. This is the reason for the insignificant impact of PPI on the number of vessels calling at HDC.

Paradip and Visakhapatnam ports enjoyed monopolies prior to 2015 and 2012, respectively, as there were few competing ports. Port of Dhamra was built close (around 130 km) to Paradip port. It started its operation in 2011 and is now a competitor of Paradip port, as both setups handled the common dry bulk cargo. Visakhapatnam port now competes with minor (under state governments) ports of Krishnapatnam (set up in 2008) and Gangavaram (set up in 2009).

Thus, this study shows that ports can exhibit complementarity and competitiveness depending on the facilities and performance. Reforms had led privatisation of port services and the growth of private greenfield ports. These developments have led to increased competition. The ports in India are feeder ports (Kavirathna et al., 2021), depend on hinterland cargo demand and do not handle international transshipment cargo. Since there has been a proliferation of ports and terminals, one cannibalises the throughput of the other.

Conclusion

In the post-liberalisation period of rapid economic development, like other countries, India has also taken several reformations and port development measures to enhance operational efficiency and overall performance of its ports. Port researchers worldwide have already established that port performance positively affects port calls and productivity. Through this comprehensive study for the time period (1999 to 2020), we have tried to capture the true state of performance of the 13 major docks of India with a single composite performance index (PPI) for each port with respect to time. The SPPI for a port at a point in time shows time shows how it performs relative to its performance over time. PPI/SPPI shows that not all the ports are consistent with respect to performance, and the progress in performance enhancement is quite slow and varies significantly from port to port in spite of government initiatives for reformation through several programs in the last 15 years to enhance the performance of all the major ports.

The results of causality between port performance and ship call at a particular port showed varied outcomes. The effect of port performance on port calls varied from negative to positive and was sometimes insignificant in the case of the HDC and Visakhapatnam ports. The performance of the Paradip port for the last five years has had a significant positive effect on the port calls.

This article makes three crucial propositions—first, port performance affects its output, but the same may not impact the ship calls if the port enjoys monopoly or oligopoly status and due to other factors such as cargo demand. Second, performance of ports with lower capacity, also referred to as satellite ports, is affected by performance of its complementing ports with higher capacity. Third, reforms may lead to competition and cannibalisation of profits and growth of ports in a dynamic environment (Pancras et al., 2012).

As a future scope of work this analysis can be extended for all the ports and benchmarked against global ports. Besides, the extent of market concentration can also be studied over time.

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Table A1. Descriptive Statistics for ATRT.

	Min	Max
KDCATRT	3.17	6.80
HDCATRT	2.75	5.47
PARATRT	2.34	7.01
VISATRT	2.43	5.84
KAMATRT	1.72	4.24
CHEATRT	1.98	6.40
TUTATRT	1.67	4.94
COCATRT	1.45	3.54
N.MANATRT	1.90	3.80
MORATRT	2.33	8.91
JNPTATRT	1.23	2.54
MUMATRT	1.70	5.60
KANATRT	2.45	7.26

Source: Basic Port Statistics Report (2020–2021) of the Ministry of Shipping, Government of India.
Notes: KDCATRT: Average Turn Round Time of Kolkata Dock Comp; HDCATRT: Average Turn Round Time of Kolkata Dock; PARATRT: Average Turn Round Time of Paradip Port; VISATRT: Average Turn Round Time of Visakhapatnam Port; KAMATRT: Average Turn Round Time of Kamarajar Port; CHEATRT: Average Turn Round Time of Chennai Port; TUTATRT: Average Turn Round Time of Tuticorin Port; COCATRT: Average Turn Round Time of Cochin Port; N.MANATRT: Average Turn Round Time of New Mangalore Port; MORATRT: Average Turn Round Time of Marmagao Court; JNPTATRT: Average Turn Round Time of Jawaharlal Nehru Port; MUMATRT: Average Turn Round Time of Mumbai Port; KANATRT: Average Turn Round Time of Kandla Port.

Table A2. Descriptive Statistics for APBD.

	MAX	MIN
KDCPBD	1.00	0.4
HDCPBD	3.73	0.66
PARPBD	4.11	0.26
VISPBD	2.84	0.05
KAMPBD	2.38	0.07
CHEPBD	2.8	0.07
TUTPBD	1.91	0.50
COCPBD	1.09	0.43
N.MANPBD	1.26	0.55
MORPBD	2.59	1.06
JNPTPBD	1.17	0.49
MUMPBD	1.41	0.10
KANPBD	3.74	1.51

Source: Basic Port Statistics Report (2020–2021) of the Ministry of Shipping, Government of India.
Notes: KDCPBD: Pre-berthing Time of Kolkata Dock Complex; HDCPBD: Pre-berthing Time of Haldia Dock Complex; PARPBD: Pre-berthing Time of Paradip Port; VISPBD: Pre-berthing Time of Visakhapatnam Port; KAMPBD: Pre-berthing Time of Kamarajar Port; MUMPBD: Pre-berthing Time of Mumbai Port; CHEPBD: Pre-berthing Time of Chennai Port; TUTPBD: Pre-berthing Time of Tuticorin Port; COCPBD: Pre-berthing Time of Cochin Port; N.MANPBD: Pre-berthing Time of New Mangalore Port; MORPBD: Pre-berthing Time of Marmagao Court; JNPTPBD: Pre-berthing Time of Jawaharlal Nehru Port; KANPBD: Pre-berthing Time of Kandla Port.

Table A3. Descriptive Statistics for AOSBD.

	MAX	MIN
KDCOSBD	7765	1917
HDCOSBD	14223	5599
PAROSBD	36030	7106
VISOSBD	20032	7579
KAMOSBD	38871	15149
CHEOSBD	21001	5836
TUTOSBD	19494	2891
COCOSBD	31258	5979
N.MANOSBD	19856	9004
MOROSBD	30414	4409
JNPTOSBD	28296	7391
MUMOSBD	25941	3876
KANOSBD	22903	8016

Source: Basic Port Statistics Report (2020–2021) of the Ministry of Shipping, Government of India.

Table A4. Descriptive Statistics for IT%.

	MAX	MIN
KDC	44	32.9
HDC	55.6	16.9
PARADIP	32.5	14.1
VISAKHAPATNAM	34.4	19.4
KAMRAJAR	33.8	15
CHENNAI	37	18.2
TUTICORIN	39	21.2
COCHIN	37	22
N.MANGALORE	23.1	14.4
MORMUGAO	23.5	13.4
JNPT	12.9	7.4
MUMBAI	62.4	15.9
KANDLA	21.2	15

Table B1. Model Validity Test Statistics for log(*HDCNOV*) = f (log(*HDCPPI*)).

Model: log(*HDCNOV*) = f (log(*HDCPPI*))		
R-Square	Durbin–Watson	F Statistics (Probability)
0.945973	2.063292	32.51732 (0.000000)
Model Validity		
Jarque–Bera test of Normality (Ho- Normal Distribution)		
Statistics	Value	Probability
Jarque–Bera	0.093104	0.954515

(Table B1 continued)

(Table B1 continued)

Breusch–Godfrey test of serial correlation (Ho- No serial correlation)		
F-stat	0.573881	0.4633
Obs × R-square	0.958455	0.3276
Breusch–Pagan–Godfrey test of Heteroskedasticity (Ho-Homoskedasticty)		
F-stat	0.759196	0.6299
Obs × R-square	6.093676	0.5289

Table B2. Model Validity Test Statistics for log(*PARADIPNOV*) = f (log(*PARADIPPPI*)).

Model: log(*PARADIPNOV*) = f (log(*PARADIPPPI*))		
R-Square	Durbin–Watson	F Statistics (Probability)
0.976498	1.812026	77.16385 (0.00000)
Model Validity		
Jarque–Bera test of Normality (Ho-Normal Distribution)		
Statistics	Value	Probability
Jarque–Bera	0.974158	0.614419
Breusch–Godfrey test of serial correlation (Ho-No serial correlation)		
F-stat	0.170972	0.6865
Obs × R-square	0.294999	0.5870
Breusch–Pagan–Godfrey test of Heteroskedasticity (Ho-Homoskedasticty)		
F-stat	1.813884	0.1679
Obs × R-square	10.37627	0.1682

Table B3. Model Validity Test Statistics for log(*VISAKHANOV*) = f (log(*VISAKHAPPI*)).

Model: log(*VISAKHANOV*) = f (log(*VISAKHAPPI*)) Regression Model Statistics		
R-Square	Durbin–Watson	F Statistics (Probability)
0.986564	1.940008	136.3662 (0.00000)
Model Validity		
Jarque–Bera test of Normality (Ho-Normal Distribution)		
Statistics	Value	Probability
Jarque–Bera	0.411462	0.814052
Breusch–Godfrey test of serial correlation (Ho-No serial correlation)		
F-stat	0.007888	0.9307
Obs × R-square	0.013795	0.9065
Breusch–Pagan–Godfrey test of Heteroskedasticity (Ho-Homoskedasticty)		
F-stat	0.627362	0.7258
Obs × R-square	5.302708	0.6231

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Empirical Research

The Impact of Storytelling Advertising on Consumer Advertising Experiences and Brand Equity

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Abstract

Video ads that tell stories have become a popular method of connecting with viewers and making them feel emotionally invested in a product or a service. Long-form videos, as opposed to shorter types of advertising like TV spots and print advertising, can persuade viewers with a sincere and compelling brand story, creating favourable brand associations. We empirically investigated the impacts of narrative transportation caused through audio-visual storytelling advertising on consumers' affective, sensory, cognitive, behavioural experiences and brand equity states using structural equation modelling in SPSS Amos 25.0. Our research supports the relationship between ad-elicited narrative transportation and various brand effects. We also evaluated the moderating effect of previous negative online purchase experiences (POPE) on all forms of advertising experience. The impact of high-quality competing advertising on the impressions formed by consumers who have had negative prior experiences and the strategies employed by brands to use negative experiences build positive equity for their brands. Discussions and implications are discussed.

Keywords

Customer experience, brand equity, storytelling advertising, prior customer experiences, brand perception

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Introduction

Video advertising is projected to increase from $35.45 billion to $69.43 billion by 2024 (Nilsen, 2022). Video commercials are effective, according to 64% of 25 to 34-year-old and 70% of 16 to 24-year-old who have seen social media clips recently. Since 1998, narrative-style video storytelling advertising has gained popularity. Advertisers can use drama, slice-of-life and transformative advertising as formats to communicate a brand story (Polletta & Callahan, 2017). This advertising style tends to appeal to consumers' emotions, especially when drawn into the storylines to facilitate changes in the customer experience, promoting brand awareness and overall strong brand equity. Unlike traditional or print advertisements, video storytelling advertising uses TV, desktop, laptop and mobile platforms (Nilsen, 2022).

Academics have used narrative advertising methods to understand video storytelling advertising due to its growing prominence in digital advertising (Woodside et al., 2008). According to Chen (2013), through this study, we employ video storytelling advertising to link 'companies in an ad story and self-related goals' and to convey 'the fundamental message by telling a story' (Escalas, 2003, p. 168). Customers feel more connected to a company when it has a story, which boosts engagement (Kang et al., 2006). As they explain concepts through stories, brand story advertisements are believable due to their accuracy and narrative structure (Kang et al., 2006; Lee et al., 2017).

According to studies, narrative advertising may be more persuasive. Previous studies examined how customers receive data on product attributes and video storytelling components (like music, humour or spokespersons). The length, flow, frequency and relevancy predict retention of the message in video storytelling advertising. Brechman and Purvis (2015) studied the possibility of brand narratives affecting consumer perceptions in a made-up universe. According to their research, customer receptivity determines how impactful story advertising is.

Story advertising has consistent, non-product-specific effects (Kang et al., 2020) and studies on search and experience goods, premium scent items (Ryu et al., 2018), food service and restaurants and financial and investment services revealed positive narrative impacts (Godey et al., 2016). However, most studies have used student samples comprising undergrads and graduates (Lien & Chen, 2013; Mazzocco et al., 2010). Despite being related to the product categories examined, customer types are yet to be investigated.

Many advertising studies have focused on deconstructing narrative print ads to examine their influence on advertising-related characteristics (An et al., 2020). According to Chen (2015), oral narrative advertising can influence consumer attitudes and product evaluation. Modern advertising relies more on video than print, particularly in digital media, which may have reduced the managerial relevance of print-only studies (Berezkin, 2013). Few studies have examined how narrative advertising can help brands and consumers form personal connections by conjuring up pleasant brand experiences (da Silva & Larentis; Hagarty & Clark, 2009). Limited research has been conducted to determine whether video advertising can affect consumer experience and brand equity.

This study asks, 'Does video story advertising increase customers' affective, behavioural, sensory and intellectual experiences, which in turn impact overall brand equity, consisting of perceived worth, awareness and loyalty with brands'? In order to better comprehend these factors in narrative advertising research and conduct a more extensive analysis of the phenomenon of video storytelling advertising, we propose merging narrative mobility and marketing impact variables (Keller, 2020).

Literature Review

Advertising, Narrative Transportation and Persuasion Effects of Video Storytelling

Video storytelling advertising would define brand meanings using a compelling story and brand benefits that are personally relevant to the viewer (Haring, 2003). 'All mental processes and capacities converge on narrative events' is the definition of storytelling (Green & Brock, 2000, p. 701). We postulate that viewers become entirely engrossed in a brand's video storytelling initiative and feel like the characters featured in the advertisement (Curenton et al., 2008). A reduced desire to concentrate on an advertisement's advantages promotes peripheral processing (Brechman & Purvis, 2015). A compelling video narrative ad could promote heuristic processing, decrease elaboration and boost persuasion (Bordahl, 2003; Lim & Childs, 2020). Emotionally invested customers are far less inclined to resist persuasion and develop counterpoints to restrict the efficacy of advertising (Iurgel, 2003; Koenig & Zorn, 2002).

The majority of research on narrative advertising has concentrated on conventional advertising factors such as improved brand recall (Brechman & Purvis, 2015), mindset toward the promoted product (Wang & Calder, 2006b), the promoted brand, as well as the willingness to buy or use it (Sangalang et al., 2013). A more fundamental question remains unanswered, forming the basis of many advertising studies: How can compelling advertising contribute to the generation of favourable branding outcomes that result in long-term gain, as several marketing professionals and business experts anticipate? By telling a compelling tale, brand storytelling advertising can strengthen a brand and impact the advertising experience of customers and other brand-related outcomes (Sangalang et al., 2013; Wang et al., 2015).

Advertising Experience

Advertising experience is a subjective consumer response that can be elicited by a narrative brand message (Hung et al., 2012). Brand tales are an example of a 'managed advertising effort' that can enhance the advertising customer journey and impact the results, increasing brand equity and improving brand perception, among other things (McEwen et al., 2016). This complex marketing term has been

used to examine the impact of advertising experience on outcomes like trust, brand loyalty, recommendation, preference, uniqueness and fulfilment (Betty, 2020; Xu et al., 2017). In video narrative advertising, affective advertising brand experience relates to feelings, emotional states and feelings, whereas sensory advertising brand experience refers to how consumers respond to colours, sounds, sights and phrases (Papacharissi & Oliveira, 2012; Ramon, 2021; Urgesi et al., 2016). While behavioural advertising brand experience encompasses customers' physiological experiences, bodily acts and purchasing and consumption behaviours, the intellectual advertising brand journey corresponds to conflict-solving skills, stimulated thinking and company interest (Barcelos & Gubrium, 2018). We suggest examining how brand stories affect the kind of experience, that is, how storytelling advertisements alter behavioural, intellectual, sensory and emotive ad experiences. Thus, we predict:

- H_1: Storytelling ads have a significant influence on advertising behavioural experience.
- H_2: Storytelling ads have a significant influence on advertising intellectual experience.
- H_3: Storytelling ads have a significant influence on advertising sensory experience.
- H_4: Storytelling ads have a significant influence on advertising affective experience.

Advertising Brand Experience and Brand Equity

Experiences can be categorised according to philosophers, cognitive scientists and management specialists. Our hypothesis states that brand-related stimuli, such as shades, forms, fonts, layouts, slogans, mascots and brand personalities, evoke experiential qualities (Koll et al., 2010; Machado et al., 2019; Rossolatos, 2020). A single stimulus triggers no one experience dimension. Colour schemes, textures, fonts and designs can elicit sensory, emotional or intellectual responses (such as the blue bird for Twitter) or both (e.g., when intricate patterns are used in designs; Suarezserna, 2020). Taglines, logos and brand figures can inspire creative feelings, thoughts or actions (Hepola et al., 2017). For instance, 'Amul Girl' relates directly to the advertising mascot of the Indian dairy company Amul. Any positive brand encounters that consumers have should leave a lasting impression, where a permanent trace is preserved in the consumer's long-term memory based on several brand-related stimuli (Yoo, 2008). We investigate if the notion of advertising brand experience encountered here is in line with consumers' past experiences and how it impacts brand equity.

An asset or liability linked to a brand, its name, and its symbol adds or subtracts value provided to a firm or its customers (Seifert & Chattaraman, 2020). Brand equity is the added value a product receives from its brand name (Koll et al., 2010). Suarezserna (2020) defined brand equity as the value a brand receives due to its strong relationship with potential customers and key stakeholders.

Brand advertising seeks to raise awareness and subsequently influence a consumer's purchase decision (Machado et al., 2019). Consumers make decisions based on prior knowledge (Machado et al., 2019), so brand awareness remains critical (Godey et al., 2016). In this case, storytelling helps consumers remember information, increasing awareness and recall. Hung et al. (2012) found that sellers use stories to engage, persuade and educate consumers. Thus, we predict:

***H_5*:** Advertising behavioural experience has a significant influence on overall brand equity.

The buyer's perception of a product or service's quality is critical in marketing. A higher perceived worth leverages or gives an advantage to brands to charge higher prices (Godey et al., 2016). According to Lee and Jahng (2020), stories impact brand experience, which impacts the perceived worth of the brand in consumers'' minds. Storytelling as a marketing strategy builds trust because it's less intrusive than traditional marketing campaigns (Grigsby & Mellema, 2020). Similar to Lundqvist et al. (2013), the story influences how consumers associate the product and brand. Brand associations influence consumption and perceived brand associations are essential to brand equity (Chen et al., 2012). To build a strong brand, the consumer must have a positive association with it, which increases the product's value (Chen, 2015). The story serves both as an information source and a way to get consumer equity. Thus, we predict:

***H_6*:** Advertising intellectual experience has a significant influence on overall brand equity.

***H_7*:** Advertising sensory experience has a significant influence on overall brand equity.

A loyal consumer increases purchases and helps gain overall brand trust, increasing the company's value (Aaker et al., 2012). According to Fog et al. (2005), consumers are loyal to a brand because they perceive value in the product or service. He further argues that using storytelling to connect with consumers will lead to more loyal customers. According to Lundqvist et al. (2013), consumers who felt emotionally connected to a brand were more likely to be loyal to it, which is reflected in two ways: repeat purchases or brand equity (Ohanian, 1990). According to Lee et al. (2005), a company must create a bond between the brand and the consumer. Thus, we predict:

***H_8*:** Advertising affective experience has a significant influence on overall brand equity.

Moderating Effect of Negative Prior Online Purchase Experience

According to Helson (1964), the sum of an individual's experiences, context or background, and stimuli determines how they respond to an evaluative task.

Online shopping is increasing day by day (Nilsen, 2022), so they tend to view it as more precarious than traditional in-store transactions (Armstrong & Overton, 1977; Sawhney et al., 2005). So, the quality of the experience is crucial for online shoppers, and it can only be achieved from previous purchases (Bhattacharya et al., 1995). Our past experiences will heavily influence our actions in the future (Li et al., 2002). Online shoppers rate their satisfaction with various aspects of the shopping experience, including the availability of relevant product information (Hennig-Thurau et al., 2004). These include the ease with which they could make a payment, the speed of order fulfilment, the quality of customer service, the overall level of service, privacy and security measures in place, the uniqueness of their shopping experience and the enjoyment they had while doing so, to name a few (Zeithaml et al., 1996).

Customers' positive online experiences are the primary factor in expanding e-commerce, claim Elliot and Fowell (2000). For Shim and Drake (1990), it is clear that consumers with a history of positive online purchase experiences have an advantage when making the next purchase decision. More importantly, customers with previous positive online shopping experiences are more likely to purchase than those with negative experiences (Delgadillo & Escalas, 2004). According to Keller et al. (2000), this trend arises because people with some history of online shopping, even if only for modest transactions at first, are more likely to acquire the competence and self-assurance necessary to make larger, more significant purchases online. The expectancy-value model becomes more critical in guiding behaviour when an individual has limited background knowledge of the issues (Chiu et al., 2012a). Customers are more likely to return to online retailers if they have had positive purchasing experiences with them (Azifah & Dewi, 2016). Online shopping has the potential to lose customers if their previous attempts are judged to have been unsuccessful.

For this reason, it is crucial to provide excellent service to current Internet buyers so they will return to the firm's website in the future (Azifah & Dewi, 2016; Weber & Roehl, 1999). The enormous body of literature suggests that a customer's previous online buying experience significantly influences their propensity to shop again (Flavián et al., 2017; Hesketh, 2021). However, mass-market brands may have at least one negative purchase experience (Graham & Wilder, 2020). Therefore, the present study aims to examine the impact of negative experiences related to online purchasing/shopping on consumers' advertising brand experience while watching an ad. Thus, we predict:

- H_9: Prior online purchase experience moderates the relationship between storytelling ads and advertising behavioural experience.
- H_{10}: Prior online purchase experience moderates the relationship between storytelling ads and advertising intellectual experience.
- H_{11}: Prior online purchase experience, the relationship between storytelling ads and advertising sensory experience.
- H_{12}: Prior online purchase experience moderates the relationship between storytelling ads and advertising affective experience.

Methodology

We used a quasi-experimental design to investigate the effects of storytelling on brand-related outcome variables (Sayar et al., 2018). The experimental method is popular for studying brand storytelling advertising effects (Chiu et al., 2012b; Lien & Chen, 2013) and the advertising experience (Beierwaltes et al., 2020). We also used two existing and professionally produced video storytelling advertising campaigns as stimuli.

Because the advertising messages for these items would alter to represent how customers reach their purchase choice, we have followed the search and experience product paradigm often used in narrative advertising research (Taute et al., 2011; Wang & Calder, 2006b; Woodside, 2010; Zhang et al., 2020). Consider the scenario where customers prioritise product testing before making a choice. In that instance, the item is regarded as an experienced product, necessitating an evocative storytelling ad (Seo et al., 2018). However, if customers prioritise product information while choosing a search product, demonstrating these functional qualities and benefits will be seen as essential (Graham & Wilder, 2020; van Laer et al., 2019).

Stimuli

The search and experience ad paradigm used in the narrative advertising research (Laurence, 2018) as advertising messages for these products shall differ in how consumers make purchasing decisions (Weathers et al., 2007). An emotionally charged storytelling ad is needed if consumers value product experience before buying (Brechman & Purvis, 2015). However, demonstrating these functional attributes and benefits will be critical if consumers value product information when buying search products (Polyorat & Alden, 2005). We avoided the high-versus-low-involvement dichotomy because low-involvement products can be products (like daily-use products) or experienced products (like vehicles).

Our research used full-length, long-duration (Dhote & Kumar, 2019, p. 31) video storytelling advertising campaigns instead of one-page print ads or posters (Escalas, 2004; Mitchell & Clark, 2021). This restriction prevented us from artificially manipulating message elements to create a complex design with too many variables. Narrative advertising studies increasingly use real-world video ads as experimental stimuli (Chen, 2015; Chen & Chang, 2017, p. 22).

Sampling

We recruited 850 student participants using convenient sampling, and 808 participant responses were deemed fit and usable for analysis. After reading and signing the informed consent form, participants were randomly assigned to view a Bajaj or Cadbury advertisement (N = 390 and 418, respectively). 32.4% of the participants were male, while 67.6% were female. Their average age was 24.35 (SD = 5.98) years, and the majority of them (N = 94.3%) were single.

Justifications for the use of student participants in our study are provided below.

First, the student sample would be a concern if the research objectives are to extend these relationships to real-world contexts. However, many narratives and storytelling advertising studies have employed experimental or quasi-experimental (Chen, 2015) methods and easily recruited college students for their research. Second, the existing product usage experience has checked (Frost et al., 2020) and employed the college student population. Thirdly, a strong and plausible match exists between the student participants and the two highlighted products in the experimental stimuli (Ciarlini et al., 2010). Fourth, student participants yield managerially relevant insights because 18 to 24-year-olds are heavy users of social media platforms capable of delivering a great deal of video advertising content. Moreover, 68% of the participants in the same demographic segment use YouTube regularly, while 89% use Instagram and 63% use Snapchat. Our current sample size for each condition is comparable to previously published research (Yoo, 2008).

Measures, Face-Validity and Statistical Software

The online questionnaire included demographic, multidimensional, brand awareness and brand loyalty questions. The three-item narrative transportation scale was adapted from Green and Brock (2000) to measure brand story elements and consumer emotions when reading brand narratives. The experience variable was derived from Huang and Ha (2020). It included a three-item brand sensory experience, a three-item brand intellectual experience, a three-item brand behavioural experience, overall brand equity (Yoo, 2008) and a four-item prior online purchase experience (Hepola et al., 2017). The 5-point Likert scale was used, with one indicating 'Strongly Disagree' and five 'Strongly Agree'. AMOS 20.0, SPSS 25.0 and Excel were used for data analysis.

Data Analysis

Since the questionnaire is the sole tool the researchers are using, Harman's single factor test was performed to determine whether common method bias was present. For this, exploratory factor analysis (EFA) was performed after all the variables' elements were placed onto a single factor without rotating. The items, response format, instruction, researcher, respondent capability, and motivation all contribute to method bias, as stated by common method bias (CMB) at the start of the measurement procedure. For instance, the questionnaire's first question may impact a respondent's response, skewing the results. A two-pronged question or unclear phrase may have confused the respondent. Respondents must use entrenched responses since they can't create a suitable response. Double-barreled questions are asked to two people. These characteristics cause common variance among indicators, which can hurt inferential statistics. There were no CMB problems (Podsakoff et al., 2003). Additionally, the researchers used the common latent factor approach to confirm the outcome (CLF). Here, the regression weight showed a delta of less than 0.20 for the two models, one with the CLF and the

other without the CLF, indicating that the CMB was absent (Ranaweera & Jayawardhena, 2014). No difference in the response of early and late respondents to the survey was observed, thus indicating no issues related to nonresponse bias (Armstrong & Overton, 1977).

Approach to Data Analysis

A two-step approach was applied to analyse the model's goodness of fit and proposed hypotheses in a single research model using structural equation modelling (SEM) in AMOS 26.0 software. First, we assessed the goodness of fit of the model. On the satisfactory measurement of the model, we examine the indirect and direct relationship between multiple exogenous and endogenous variables by employing the maximum likelihood method and the interaction effect between brand storytelling ads and sympathy. As per Byrne (2016), SEM provides a unique way of assessing the authenticity and consistency of the hypothesised data. Conventional indices such as chi-square, incremental fit indices and absolute fit indices were employed to test the structural models. As suggested by scholars, the following model fit indices were: chi-square (χ^2)—less than 3 (Byrne, 2006); root means square error of approximation (RMSEA)—less than 0.08 (Hu & Bentler, 1998); comparative fit index (CFI)—greater than 0.90 (Hair et al., 2014); goodness of fit index (GFI)—between 0.80 and 0.90 (Greenspoon & Saklofske, 1998); Tucker-Lewis index (TLI)—greater than 0.90 and Normed Fit Index (NFI)—between 0.80 and 0.90. In addition, the statistical significance of the index of moderated mediation, the moderated mediation and moderated serial-mediation effects were tested at a 95% confidence interval.

Preliminary Analysis

Mean (M), standard deviations (SD) and Cronbach's α of six variables are presented in Table 1. The figures in Table 1 indicate that all six variables have satisfactory reliabilities. Nunnally (1978) suggested Cronbach's α needs to be greater than 0.70.

Measurement Model and Validity

In this study item parcels were created for the variables of narrative transportation (11 Items) to reduce the model estimation error and complexity. The online

Table 1. Mean, Standard Deviations and Reliabilities.

	M	SD	α
NT	2.8376	1.45729	0.942
ABE	2.4325	1.01054	0.934
ASE	2.6921	1.50377	0.914
AIE	2.3694	1.23676	0.908
AAE	2.4772	1.16751	0.819
OBE	2.3715	1.23116	0.841
POPE	2.6760	1.21554	0.921

Abbreviations: NT, narrative transportation; ABE, advertising behavioural experience; ASE, advertising sensory experience; AIE, advertising intellectual experience; AAE, advertising affective experience; OBE, overall brand equity; POPE, prior online purchase experience.

Table 2. Composite Reliability (CR), Average Variance Extracted (AVE) and Maximum Shared Variance (MSV) for Latent Construct of Measurement Mode.

	NT	ABE	ASE	AIE	AAE	OBE	POPE
CR	0.929	0.935	0.897	0.910	0.819	0.843	0.862
AVE	0.687	0.677	0.594	0.630	0.531	0.574	0.558
MSV	0.323	0.078	0.192	0.478	0.167	0.478	0.367

Abbreviations: ABE, advertising behavioural experience; ASE, advertising sensory experience; NT, narrative transportation; AAE, advertising affective experience; AIE, advertising intellectual experience; OBE, overall brand equity; POPE, prior online purchase experience.

questionnaire included demographic, multidimensional, brand awareness and brand loyalty questions. The three-item narrative transportation scale was adapted from (Green & Brock, 2000) to measure brand story elements and consumer emotions when reading brand narratives. The experience variable was derived from Huang and Ha (2020). It included a three-item brand sensory experience, three-item brand intellectual experience, three-item brand behavioural experience, overall brand equity and four-item prior online purchase experience. Testing of measurement model revealed a good model fit ($\chi^2 = 979.9$, $p = 0.000$, $\chi^2/df = 2.041$, RMSEA = 0.052, CFI = 0.940, GFI = 0.864, NFI = 0.891 and TLI = 0.935). Factor loadings of the observed indicators on the latent variables were significant as $p < 0.05$, with each construct ranging from 0.645 to 0.912. Table 2 provides composite reliability (CR), average variance extracted (AVE) and square root average variance extracted for the model construct. The reliability of all the latent variables was seen as CR values exceeded the threshold value of 0.60 (Bagozzi & Yi, 1988). AVE was employed for the convergent validity of the model and showed that all the AVE figures exceeded the acceptable criteria of 0.50 (Bagozzi & Yi, 1988; Chin, 1998). Discriminant validity was established where maximum shared variance (MSV) was lower than the average variance extracted (AVE) for all the constructs, indicating acceptable discriminant validity of the measurement model (Chin, 1998).

Common Method Bias and Non-response Bias

Self-reported data on various constructs might raise the possibility of common method bias. Therefore, we conducted Harman's one-factor test (Podsakoff et al., 2003). All items of seven variables were forced to load on a single unrotated factor. The results suggested that the principal factor explained 38.495% of the variance, less than 50%. This shows that a single factor did not capture variance, and the extent of the common method bias is limited. Furthermore, the researchers confirmed the result by executing the standard latent factor method (CLF). Here, the regression weight for the two models, one with the CLF and the other without the CLF, exhibited a delta of less than 0.20, confirming the absence of the common-method variance (Ranaweera & Jayawardhena, 2014). No difference in the response of early and late survey respondents was observed, thus indicating no issues related to nonresponse bias (Armstrong & Overton, 1977). Furthermore, a one-factor model was tested and revealed a good fit to the data ($\chi^2 = 1227.13$, $p = 0.000$, $\chi^2/df = 1.9025$, RMSEA = 0.049, CFI = 0.933, NFI = 0.870 and TLI = 0.923).

Analysis of Structural Model

Maximum likelihood estimate was used in SEM for the present study (Kwon et al., 2005; Anderson & Gerbing, 1988). Results showed that the model attained a good model fit, $\chi^2 = 4.9898$, $p = 0.000$, $\chi^2/df = 1.247$, RMSEA = 0.0257, CFI = 0.998, GFI = 0.997, NFI = 0.995 and TLI = 0.982. Figure 1 shows narrative transportation (NT) ads exerted a strong significant effect on advertising behavioural experience ABE ($\beta = 0.679$, $p < 0.001$) (H_1 accepted) and advertising sensory experience (ASE) ($\beta = 0.474$, $p < 0.001$) (H_2 accepted). Furthermore, narrative transportation significantly predicts both advertising intellectual experience (AIE) and advertising affective experience (AAE) ($\beta = 0.610$, $p < 0.001$) (H_3 Accepted) and ($\beta = 0.506$, $p < 0.001$) (H_4 accepted). In addition, advertising sensory experience (ASE) significantly predicts overall brand equity OBE ($\beta = 0.364$, $p < 0.001$) (H_5 accepted) but not advertising behavioural experience ($\beta = 0.51$, $p = 0.628$) (H_6 accepted). In contrast, advertising intellectual experience (AIE) was a significant predictor of overall brand equity ($\beta = 0.569$, $p < 0.001$) (H_7 accepted) and advertising affective experience (AIA) ($\beta = 0.402$, $p < 0.001$) (H_8 accepted).

Analysis of Moderation

Criteria stated by Baron & Kenny (1986) were used to test the moderation effect. Where the moderator should not directly relate to the dependent variable, the moderator should practice as an independent variable, and the moderator hypothesis is supported if the interaction is significant. By using moderated structural equation modelling approach, Figure 2 shows that the interaction coefficient is significant ($\beta = 0.05$, $p < 0.05$). Moderation results were further confirmed with a slope test to examine the effect of prior online purchase experience (POPE) on narrative transportation for one standard deviation with all

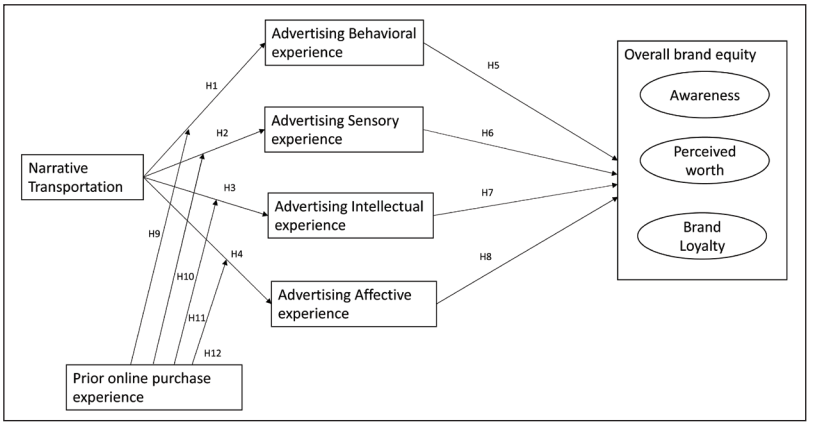

Figure 1. Proposed Research Model.

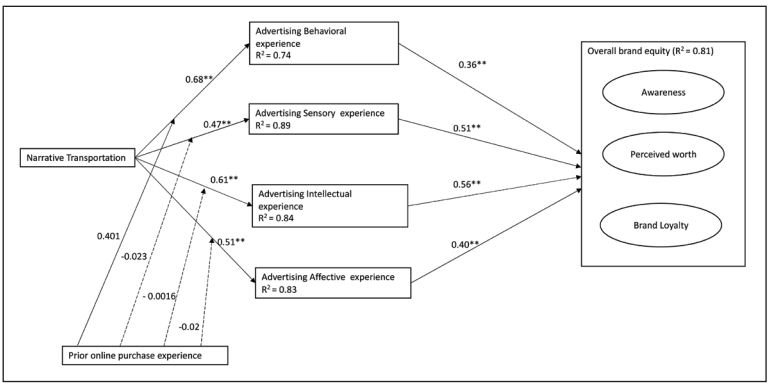

Figure 2. The Research Model.

Note: *$p < 0.05$, **$p < 0.001$; Solid Lines Indicates Significant Paths and Dotted Line Indicate Non-Significant, for Which Path Coefficient Are Not Shown.

advertising behavioural constructs. As per Cohen (1983), the relationship between narrative transportation and advertising behaviour is lower when the prior online purchase experience (POPE) is higher ($\beta = 0.401$, $t = 6.597$ $p < 0.05$). Thus, H_9 is supported.

Furthermore, the interaction coefficient is significant ($\beta = 0.062$, $p < 0.05$) toward advertising attitude. Further, the slope test confirmed the effect of brand storytelling ads on advertising attitude with one standard deviation above and below the level of sympathy. The relationship between narrative transportation and advertising sensory, intellectual and affective is higher when the prior online purchase experience (POPE) is lower. Thus, $H_{10,}$ H_{11} and H_{12} were not supported, and POPE did not moderate consumers' affective, sensory and intellectual experience while watching an advertisement.

Discussion

Advertising Experience and Narrative Storytelling

Our findings indicate the positive impact of ad-elicited narratives on aspects of the advertising experience and confirm that storytelling video ad impacts viewers' experiences and positively impacts overall brand equity. Once advertising communications create narrative transportation, they can increase brand awareness, loyalty and perceived worth independent of the product or platform. Customers can easily be transported to the fictional world by watching video storytelling advertising, leaving society behind, as an innovative approach to stimulate their neural activity (Escalas, 2004). Due to its lengthy style, video narrative advertising is convincing and creative (Trivedi & Trivedi, 2018). These effects can enhance the brand's behavioural, sensory, intellectual and affective experience due to prolonged exposure to advertisements. Transportation should be viewed from a cognitive perspective as an active 'participatory

response' (Wang & Calder, 2006b, p. 406) that enables consumers to form thoughts when exposed to the video narrative ad, probably providing a more positive advertising experience. Consumers can use dramatisation and illustration to visualise a product's advantages (Zwack et al., 2016). Customers are 'pulled into a story wonderfully and actively' (Wang et al., 2006a, p. 406) while experiencing a video storytelling advertisement, allowing them to virtually experience the brand. For instance, the chocolate commercial's heartfelt song and romantic story may remind viewers of their first love. Transportation probably enhances the advertising customer experiences (Phillips & McQuarrie, 2010).

Escalas (2004) describes constructing an advertising brand experience after narrative processing. Personal experiences are connected to the brand narrative project by customer interpretations. We postulate that storytelling evocation brought on by video storytelling advertisements can aid viewers in recalling 'autobiographical memories' or simulating potential romantic encounters (Tattam, 2010). For example, a chocolate campaign may inspire young consumers to think about what lies ahead or remind many older consumers about their first love from high school, creating an 'affect transfer' (Grigsby & Mellema, 2020). This strengthens consumer relationships with the advertised brand and fosters a more satisfying sensory advertising brand experience (Hepola et al., 2017). These techniques can be used to explain the beneficial correlations between the advertising impression and storytelling conveyance in video advertisements.

Whether or not customers can connect with an advertised brand can be attributed to the positive effects of narrative transportation. Video storytelling advertising gives consumers a dynamic platform for brand involvement (Hollebeek et al., 2014). Customers may relate to what characters experience in a video storytelling advertising campaign that depicts how characters engage with the brand in a story event, creating the company's experiencing meaning (Kehrli, 2021) or instrumental meaning (Mollen & Wilson, 2010). Instrumental and experiential brand meanings can boost the sensory and intellectual brand experience. To 'personally experience' the benefits of a product, consumers relate to what a brand storytelling character (or characters) may have gone through and indirectly engage in such events (Boller & Olson, 1991). Our findings indicate that video storytelling ads have a more significant effect on customers' intellectual and affective brand perceptions via brand interactions as described in both of the video storytelling campaigns in this study (high path coefficient in brand sensory experience, [$\beta = 0.51$]).

Overall Brand Equity

Video storytelling ads help consumers discover a brand's consistent and appealing content. Cognitive and behavioural brand experiences will spark customers' overall brand equity (Huang et al., 2011), which includes perceived worth, brand loyalty and awareness (He, 2014). According to a previous study, prevalent brand equity explains 37% of brand loyalty variance. Our analysis shows that brand loyalty variance is 36% predictive. Like Huang, the brand's intellectual experience was the most potent predictor of the experiential product's advertising experience ($\beta = 0.56$).

For instance, when customers choose a brand, if the brand stimulates [their] curiosity and makes [them] think, it is vital to their intellectual experience. Hence, marketers must build story tactics to elicit diverse brand experiences. Our results do not support Huang and Ha's (2020) clinically important finding that corporate behaviour based on behavioural experience and brand equity are statistically associated. Only experience products are included in Huang's survey so that participants can assess claims about brand behaviour. Based on three Likert statements, Cadbury, a chocolate brand, in our study may be considered 'action-oriented' since it 'engages [consumers] in physical patterns of behaviour when I use this brand' or 'results in behaviour experiences'. However, in the case of Bajaj, an Indian automobile company, they can be moved by an advertisement, but it does not translate into consumers making a purchase. Our study supports the model's positive correlations between advertising sensory and intellectual experiences on brand equity (Hwang et al., 2016; Pera, 2017). Sensory advertising experience predicts liking for experience products. Our findings suggest that brand equity is a long-term effect triggered by an emotionally intense video narrative ad.

Positive advertising sensory experience and brand equity may be attributed to whether watching these video storytelling commercials affects consumers' information processing and persuasive effects (Lim & Childs, 2020). Emotionally charged video narrative advertising may alter people's emotions when behavioural advertising experiences affect product appraisal and buying intention (Wanggren, 2016). Marketing literature has examined the impact of advertising experiences on loyalty, however, studies have yet to explore the influence of advertising experience on brand equity as an experience-based antecedent. Similarly, Nuske and Hing (2013) and Zhang et al. (2020) demonstrated how behavioural experience significantly influenced brand loyalty; however, the study did not examine brand equity.

Our study focused on the influence of consumers' intellectual, sensory and affective experiences on brand equity, whereas prior studies focused solely on behavioural experiences (Zhang et al., 2020). Our findings help clarify ad-induced advertising brand experience and its implications for creating high brand equity (Machado et al., 2019).

Conclusion

Offering lengthy or short video storytelling is one of the advantages of video advertising via YouTube and other popular social media platforms. Traditional television advertising, on the other hand, is typically limited in length (Suarezserna, 2020). Additionally, the price of prolonged branded advertising material may not always be higher than that of standard television advertising (Kaushik & Soch, 2021). Due to these benefits, video narrative advertising is more cost-effective and creative than conventional advertising. Continuous exposure to video storytelling advertisements causes narrative transportation, which is more successful at influencing consumers (Hepola et al., 2017). Notably, its impacts are not limited by the sorts of offered products, indicating that narrative transfer is a

robust and consistent predictor of consumer advertising brand experience. The findings also suggest that video narrative advertising could be an effective creative strategy for several product categories. Moreover, after a bad online purchase experience, if a brand uses effective narrative techniques, it can improve (recover) overall brand equity using a positive sensory, affective and intellectual advertising experience. Moreover, storytelling may or may not impact their behavioural actions toward the brand.

Managerial and Theoretical Implications

The present study contributes to the literature in several ways. First, we diverge from the methods and theoretical underpinnings used in recent narrative advertising works (Koll et al., 2010). The concept that narrative mobility might also impact factors associated with brand outcomes has largely been ignored in advertising research. As a result of narrative transportation, the marketing journey as subjective and behavioural responses to ad stimuli are rarely studied in the existing narrative advertising literature (Loureiro et al., 2019). Customers are likely to be transported into a state of experience that allows them to engage in the story itself instead of focusing on any ramifications outside the story when they are given a tale about a business through one-minute video advertising (Chen & Chang, 2017, p. 28). Positive brand experiences can be produced through engaging with branded content and interacting with a brand. Despite the prior concept of narrative transportation's reliance on experience, advertising professionals have yet to connect narrative transportation with the advertising brand experience. By connecting narrative transportation with advertising experience and overall brand equity, our work could potentially bridge the traditional research areas in narrative advertising and brand management. It is also interesting to notice that the favourable impact of narrative transportation does not differ significantly between search/functional and experiential products, indicating that narrative transportation has a significant effect on branding outcomes. This study's findings can help other researchers analyse whether narrative transportation survives in high-involvement products, products consumed in public or private settings or products imported from foreign nations.

From a managerial perspective, we have shown the value of ad-evoked narrative transport as a strategic approach for both search and experience products. We further underline that advertising brand experience is crucial for enhancing perceived worth, awareness and loyalty (Ten Brug et al., 2015). In addition, this study establishes a link between narrative advertising and brand management by demonstrating that marketers can enhance the advertising experience of consumers by developing compelling brand-storytelling advertisements to construct an effective brand management plan. Advertising experiences prompted by a compelling story can be as practical as other marketing strategies in generating positive brand outcomes, particularly when a brand wants to target customers who have had one or two negative online purchase experiences. With this strategy, marketers can prevent customers from hating/disliking brands solely due to negative online purchase experiences.

Limitations and Future Directions for Research

There are various limitations associated with the interpretation of the results of this study. First, the external validity of the study's findings cannot be extrapolated to other product categories. We have confined our research to two, high and low, involvement categories. These findings should be separate from other product categories with different levels of engagement. Using a video storytelling platform to provide branded narratives to customers presents a further constraint. Previously, we emphasised that many researchers have used print or poster advertisements as experimental stimuli; nevertheless, these two-dimensional print ad stimuli are significantly limited in their ability to elicit emotions in participants, even if primed during the experiment. However, modern integrated marketing communication efforts give branded material to consumers via various touchpoints. Lastly, our reliance on the Indian management student sample will limit the applicability of our findings to other consumer sectors worldwide. Our sampling selection is based on previous story advertising research in which students were recruited for the study. However, a portion of our selection also considers the heavy video content users among the student population, whose responses will be managerially valuable.

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A Brief Review of New Neoclassical Synthesis of Monetary Policy

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Abstract

This article reviews the central tenants of the New Neoclassical Synthesis of monetary policy. Starting with the optimising behaviour of central banks, this article reviews different theoretical developments like the role of expectations, the Taylor Principle, time-inconsistency, central bank independence and the importance of financial markets for monetary policy. The article concludes by highlighting the challenges faced by policymakers.

Keywords

Monetary policy, new neoclassical synthesis, inflation, output, expectations

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Introduction

Economies are often prone to various internal and external shocks. These shocks are often, though not always, destabilising. Amid these shocks, attaining and sustaining long-term economic goals is difficult. To tackle these problems, some policies[1] are used to deal with such shocks without hampering the smooth functioning of the economy. Among the available policies, monetary policy has emerged as the most popular and effective. In this context, it may be pertinent to note that the guiding principles of monetary policy these days are largely based on the 'New Neoclassical Synthesis' and the 'New Keynesian Models'. The basic premise of these models is that monetary policy influences real economic activity better than any other policy. In academic literature, the policy prescriptions from these foundations are commonly known as 'flexible inflation targeting' (Svensson, 1997).

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The basic idea of optimal monetary policy is based on the optimisation of an objective function subject to constraints. The underlying objective function is a welfare function represented in terms of twin objectives of price stability and employment (or output), which are at the heart of monetary policy practised worldwide. The constraint subject to which the objective function is to be optimised represents the existing economic structure. The literature on monetary policy thoroughly discusses various dimensions of the objective function of monetary policy. The first component of this objective function is price stability. By price stability, we mean the minimum divergence of inflation from its predetermined desired level or target inflation. The second component of this objective function is output stability. This involves minimising fluctuations in output at the potential output level. The constraints subject to which the objective function is to be optimised is based on the available information about the workings of the economy. This set of information is crucial in making decisions regarding the monetary policy. Policymakers need to know whether there is a trade-off between unemployment and inflation, the role of expectations in influencing the behaviour of economic agents, the effectiveness of monetary transmission mechanisms, the degree of effectiveness of various channels of transmission and the importance of characteristic features of institutions like the independence of the central bank. All this information is necessary for policymakers to have a clear and better understanding of the workings of the economy.

This article aims to review of these basic theoretical foundations, which form the basic information set for central banking. The next sections of this article review the studies that form the basis of NNS and conclude by highlighting the recent developments and issues faced by the present state of central bank policymaking.

New Neoclassical Synthesis of Monetary Policy

The role of monetary policy in 'New Neoclassical Synthesis (hereafter NNS)' can be broadly summarised as follows:

1. NNS suggests that due to gradual adjustments in the general price level because of short-run price stickiness, real economic activity is influenced by monetary policy actions.
2. There is a limited trade-off between employment and inflation.
3. There are consequential gains in price stability.
4. Central bank credibility (or policy credibility) is pivotal for understanding the impact of monetary policy on the macroeconomy.

These conclusions about the role of monetary policy mainly stem from the main theoretical underpinnings of NNS (Goodfriend & King, 1997). We will briefly review the foundations of these theoretical developments, which are believed to be the basic guiding principles of monetary policy by academicians and policy practitioners (Mishkin, 2011).

Inflation as a Monetary Phenomenon and the Benefits of Price Stability

After the Great Depression, economists converged to a general consensus based on Keynesian theory, which reasoned the lack of aggregate demand was the source of the Great Depression and thus implied that, generally, changes in aggregate demand were the reasons for macroeconomic fluctuations. In contrast, to the classical view, this consensus argued for a greater role of fiscal policy (and thus downplayed the importance of monetary factors) in explaining the macroeconomic fluctuations. However, the monetarists contested the Keynesian explanation of the Great Depression and put the onus of the sufferings on poorly managed monetary policy during the depression (Friedman & Schwartz, 1963a, 1963b; Friedman & Meiselman, 1963). Additionally, the monetarists argued that changes significantly influence economic activity in aggregate in the money supply, and in particular, money supply growth is a key determinant of inflation.

By the end of the 1960s, 'Monetarism' became the dominant school of macroeconomics as it could explain the reason for high-interest rates and high inflation during the 1960s, which the monetarists argued was due to expansionary monetary policy at the time (Friedman, 1968). This led to the birth of the famous adage by Friedman that 'Inflation is always and everywhere a monetary phenomenon' (Friedman & Schwartz, 1963a). Thus came the belief that monetary factors play the most important role in stabilising the price level. Hence, monetary policy is pivotal in containing inflation. However, this view is valid only if there is no fiscal dominance. In the presence of fiscal dominance, governments force monetary authorities to finance their large budget deficits, usually through expansionary monetary policy. Thus monetary policy can be held responsible for stabilising price levels only as long as there is fiscal discipline on the part of the government. Fiscal dominance is usually a common phenomenon of developing countries as these countries run large deficits and central banks in these countries are not so independent in pursuing monetary policy (Hasan & Isgut, 2009; Zoli, 2005). However, recent literature points out that fiscal dominance is not only a phenomenon in developing but also developed countries as well (Mishkin, 2011).

Governments around the world and particularly in developing countries, are adopting stringent measures for fiscal discipline. Such measures give a clear mandate to the central banks to keep a check on price stability because, in the absence of fiscal dominance money, the supply is the most vital information about inflation. This puts the responsibility of keeping inflation under control on the central banks.

By the early 1960s, the case for exploiting policy trade-offs as suggested by Phillips curve (Phillips, 1958) was being advocated (Samuelson & Solow, 1960). The Phillips curve suggested that 'there was a trade-off between unemployment and inflation'. This meant that the policy objectives of monetary authorities were competing, that is, higher inflation rates meant lower unemployment and vice-versa.

However, Phelps (1968) and Friedman (1968) contested the policy trade-off proposition, arguing that no such trade-off exists between inflation and unemployment in the long run. They suggested that in the long run, irrespective of the rate

of inflation, economy converges to some natural unemployment rate. Hence, the Philips curve would be vertical in the long run. They argued that policymakers could not exploit any such trade-off because, as they suggested, the Philipp's curve, in the long run, would be vertical, so any attempts to increase employment or, in other words, attempts to decrease unemployment below the natural rate of unemployment would result only in an increase in inflation. The natural-rate hypothesis was vindicated by the economic record of the 1960s and 1970s, which was not a happy one. The inflation rates in advanced economies were very high during this time, which was known as 'The Great Inflation'.

The high inflation rates in the 1960s and 1970s brought the issue of high inflationary costs to the forefront (Anderson & Guren, 1995; Fischer, 1993). The high inflation rates acted as a tax on cash holdings and raised questions about the medium of exchange function of money. All the stakeholders—the public, businessmen, policymakers and academicians began to discuss the seriousness of the issue. In order to avoid the costs of inflation, the financial sector began to see overinvestment (English, 1996). Correspondingly, because of the uncertain environment about price levels, economic efficiency decreases because, under an uncertain environment caused by inflation about prices, firms cannot make appropriate investment decisions (Feldstein, 1997; Lucas, 1972). The high inflationary conditions distort the picture of borrowing costs and hence may boost the cost of borrowing and thus adversely affect economic efficiency. Additionally, financial planning on the part of the household becomes difficult in an inflationary environment. Because in an inflationary environment it is difficult to understand the trend in general as well as in relative price levels, there is greater possibility of suffering from 'money illusion', which adversely affects financial planning.

The overall impact of the distortionary costs of inflation during the 1970s led to a consensual view that price stability is important for increasing the overall efficiency of the economy. The pernicious effects of inflation on economic efficiency suggested that tolerating higher inflation rates does not generate higher employment, as was believed to be the case. Thus, refuting the policy trade-off between inflation and employment and leading to the possibility of complementarity between inflation and employment. Thus, the twin objectives or 'dual mandate' of monetary policy—economic growth and price stability—came to be seen as complementing each other rather than competing with each other. Coupled with Friedman-Phelps natural rate hypothesis, which suggested no long run trade-off between inflation and unemployment and the benefits of price stability in improving economic efficiency, central banks adopted the complementarity view of the 'dual mandate' in their monetary policy frameworks. For more on 'dual mandate', see Debortoli et al. (2017) and Ajello et al. (2020).

The Role of Expectations

The rational expectation theory developed by Lucas (1972, 1973, 1976) advanced the hypothesis of the natural rate proposed by Friedman and Phelps. One main aspect of natural rate hypothesis was that because of inflationary expectations,

prolonged inflation wouldn't allow for employment boosting as economic agents would gradually adjust price rises. Building on the same reasoning, the rational expectation theory argues that expectations of economic agents about policy actions have a considerable impact on the economy. Since the actions of economic agents are based on optimising behaviour, the rational expectations theory suggest that economic agents utilise all available information and make an optimal forecast about the expectations of the variables. The optimising behaviour warrants that as new information pours in, it results in a change in expectations. This immediate response of expectations to the new information suggests that any attempt to reduce unemployment below the natural rate may result in higher inflation. Thus, an important insight of the rational expectation theory is that forward-looking expectations are pivotal for economic activity. Thus, anticipated or systematic monetary policy actions are important for the optimal conduct of monetary policy. This makes the expectation management about future monetary policy actions an important part of the monetary framework, as highlighted by Woodford (2003).[2] The expectations management by monetary policy brings the issue of credibility to the forefront. Thus, consistent and systematic behaviour on the part of policymakers increases their credibility, which in turn helps manage the expectations well. The good management of expectation, in turn, is conducive to economic growth and overall macroeconomic stability, pointing to the recent evidence that central banks have started targeting inflation expectations (see Adrian et al., 2018).

The Taylor Principle and Monetary Policy

The rational expectations theory highlights the importance of expectations about monetary policy for the outcome of economic variables. This warrants the evaluation of monetary policy as gauged by economic performance. However, different monetary policy rules can capture the stance of monetary policy. One such rule is the Taylor rule (Taylor, 1993), some form of which is used by central banks around the world. The Taylor rule simply says that short-term or policy interest rates should be related to deviations of output their potential levels and deviations of inflation from their present target levels. The Taylor rule suggests that monetary authorities should 'lean against the wind' or, to put it simply, the rule suggests that when output is higher than its potential level, the central bank should raise the interest rate. The rule suggests a same response to increasing inflation that is central bank should increase the policy rates in response to an increase in actual inflation rate than its target level. However, if inflation is higher than the target level, simply leaning against the wind does not give the desired results. Therefore, Taylor rule suggests that monetary authorities must raise the real short-term interest rate (policy rate) to reduce inflation. Which, in other words, means a more-than-proportional increase in the nominal policy rate. This policy of increasing nominal policy interest rate more than proportionally in response to an increase in inflation is known as the 'Taylor principle'.

The empirical evidence accentuated the importance of the Taylor principle for price stability. The estimates of the Taylor principle by Clarida et al. (2000)

suggested that 'The Great Inflation' during the 1970s was due to the violation of this principle by the central banks of advanced economies. Further evidence on the importance of the Taylor principle for monetary policy can be seen in recent literature such as Angeletos & Lian (2021); Cornand & Heinemann (2022).

Time Inconsistency and Central Bank Independence

Time inconsistency problem (Calvo, 1978; Barro & Gordan, 1983; Kydland & Prescott, 1977) is an important concept stemming from rational expectation theory. The problem of time inconsistency suggests that rule-based monetary policy leads to better outcomes in the long run as compared to discretionary monetary policy. In other words, discretionary monetary policy leads to sub-optimal economic outcomes. The discretionary monetary policy tries to exploit the policy trade-off between inflation and unemployment, as suggested by the short-run Phillips curve. But as the rational expectation theory suggests that economic agents adjust their expectations to the anticipated policy changes and hence render any attempts on part of policymakers in vain that is attempts on part of policymakers to boost employment or lower inflation in short-run will only result in higher inflation or no increase in employment. Thus discretionary monetary policy doesn't allow policymakers to follow an optimal plan consistently over time; hence, the plan becomes time-inconsistent. The problem of time inconsistency has led to a number of developments in the design of the optimal monetary policy. One such development is 'reputational equilibria'—the importance of central bank reputation on policy outcomes.

The other development stemming from the time inconsistency problem is that it has propelled the importance of institutional design. The main feature of the institutional design is the provision of a commitment mechanism to the central banks by the government, which helps them pursue a monetary policy with greater degrees of freedom. Research on institution design has shown that central bank independence favours overall macroeconomic stability, particularly because it helps the central bank maintain price stability. One important feature of central bank independence is that central banks become instrument independent—'control the setting of monetary policy instruments'. This instrument independence allows central banks to adopt a rule-based monetary policy and avoid discretionary policy actions, which lead to time inconsistency problems. Hence, central banks can avoid sub-optimal economic outcomes from discretionary monetary policy (Mishkin & Westelius, 2008). There is ample evidence to support the conjecture that more independent central banks improve macroeconomic performance. In particular, countries with more independent central banks have a good record of maintaining price stability (Alesina & Summers, 1993; Cukierman, 1993, 2006; Fischer, 1994; Forder, 2000).

All the above-mentioned theoretical developments of monetary policy, like gains of price stability, the role of rational expectations, time inconsistency problem, institutional design, and so on, requires that there should be a nominal anchor for better monetary policy outcomes. And central banks should be committed to stabilising

such anchors while pursuing their monetary policy. There are various nominal anchors like management of money supply, price stability, exchange rate management, and so on. The most widely acknowledged and pursued nominal anchor is price stability or pursuing an inflation target. Committing to nominal anchors, like price stability, helps central banks avoid the time inconsistency problem and forces the government to take measures for fiscal discipline. Fiscal discipline on the part of the government is necessary for price stability. Evidence from the literature shows that in absence of a commitment to a nominal anchor by a central bank, governments force central banks to pursue the irresponsible monetary policy. For example, governments call for expansionary monetary policy in prolonged deficits, mainly through issuing or printing new money to monetise the deficits that result in more inflation. There are other benefits of nominal anchoring, like successful expectation management (Goodfriend, 1993), which leads to more price stability and less output volatility (Fatás et al., 2007; Mishkin & Schmidt, 2002, 2007).

The Importance of the Financial Sector for Monetary Policy

The link between the financial system and economic activity is widely acknowledged as the jugular vein of an efficient economic system. Research suggests that information asymmetry hinders the proper functioning of the financial system which has an adverse impact on overall economic performance (Akerlof, 1970, Mishkin, 1978; Myers & Majluf, 1984). The basis of this devastating impact of financial instability on economic activity stems from Fisher (1933), which highlighted the role of financial instability in the Great Depression. Although the importance of financial stability on overall macroeconomic performance and in particular over business cycles is widely acknowledged (Bernanke & Gertler, 1999, 2001; Mishkin, 1978), however, the financial frictions did not find a place in models used for policymaking at central banks until recently (Mishkin, 2011). This led to what has been dubbed as 'policy dichotomy' where monetary policy is directed to stabilise inflation and output volatility and macroprudential policies and regulation are directed to ensure financial stability.

However, the recent financial crisis (2007) brought the issue of the costs of financial distortions to the forefront, and central bankers around the world started taking financial stability more seriously and hence adopting it into the monetary policy framework.

Conclusion

All the above-mentioned theoretical underpinnings of monetary policy form the basis of the 'New Neoclassical Synthesis' of monetary policy. These theoretical developments have stood the test of time. Mishkin (2011) points out that 'None of the lessons from the financial crisis in any way undermines or invalidates the basic principles of the science of monetary policy developed from New Neoclassical Synthesis'. However, the changing economic structures coupled with external

shocks and new developments, in theory, make it imperative to revisit and modify the policy framework as necessitated. For example, price stability is widely considered as primary objective of monetary policy, but questions can be raised about its feasibility and practicality.

Some important theoretical advancements raised some important concerns regarding the use of 'New Neoclassical Synthesis' in monetary policy frameworks. First, the Keynesians brought up the issue of shocks, particularly supply-side shocks.[3] These shocks are out of the control of monetary authorities; hence, stabilising in such an environment may not yield desired results. Since these shocks are temporary and out of the control of policymakers, the question is how monetary policy accommodates such shocks.

Second, the monetarists question the inflation-targeting framework of central banks based on leads and lag in the transmission mechanism. Milton Friedman and others from the US monetary history provide evidence of this.

Third, the New Keynesian School suggests a trade-off between inflation and output variability (Taylor, 1993). This contrasts one of the basic tenets of 'New Neoclassical Synthesis', which is based on the premise of the non-existence of any such trade-off.

Fourth, there are debates over the preference for various policy instruments central banks use in conducting the monetary policy. The ambiguity around a standard policy instrument affects the overall transmission mechanism. For example, price-based and quantity-based monetary policy instruments yield different policy outcomes.

Fifth, the importance of market rigidities on monetary policy transmission-like interest rate rigidities, price rigidities, imperfect competition, etc. These factors have important implications for the overall performance of monetary policy, and hence, warrants for an in-depth investigation.

Finally, the limited scope of monetary policy to have a meaningful impact on the supply side has again been accentuated by COVID-19.

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1. Here policies refer to macroeconomic, trade and overall regulatory policies used during disturbances.
2. However, under flexible prices and wages, one main implication of rational expectations theory is what has been dubbed as 'Policy Ineffectiveness Proposition'. According to it, 'if monetary policy was anticipated, it would have no real effect on output;

only unanticipated monetary policy could have a significant impact'. But there is weak empirical evidence for this proposition (Barro, 1977; Mishkin, 1982, 1983).

3. Like, oil price shocks, COVID-19, etc.

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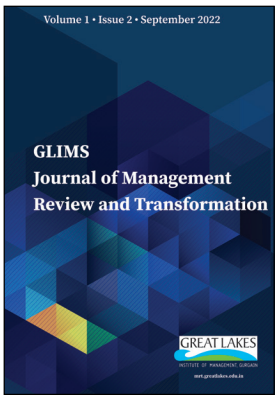

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