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About the Journal

IIFT International Business and Management Review is a biannual peer-reviewed journal from the Indian Institute of Foreign Trade. The Indian Institute of Foreign Trade (IIFT), a deemed to be university, was set up in 1963 by the Ministry of Commerce & Industry, Government of India, as an Institution with a focus on imparting knowledge through research and training in international business and trade. It ranks among the top 10 Business Schools in the country for the past two decades and earned AACSB Accreditation.

IIFT International Business and Management Review tends to highlight the significance of emerging issues on national and international front, addressing challenges and reflecting opportunities relating to business and management. The interdependence among businesses in a liberalized world increase the intricacies of business practices and make way for a wide range of business research problems. This journal will cater to all those research questions that are arising in the new challenging business world intersected with the cross-border issues. The Covid-19 pandemic has completely changed the dynamics of international markets and how they function. This brings a turnaround in theories, models and phenomena which are obsolete and not applicable to the world hit by a pandemic. Therefore, it makes more sense now to introduce the International Business and Management Review journal as it will be addressing all the contemporary issues in International Business. It is an open access journal under a Creative Commons License (CC-BY-NC).



Aims and Scope

The journal aims at bringing together managerial issues, practices and innovations which are useful to scholars, educators, managers, consumers, other societal stakeholders and policy makers around the world. It aims to play a significant role in shaping the content and boundaries of the management discipline while simultaneously covering the international scope of businesses. With the aim of impacting the management education and industry practices, *IIFT International Business and Management Review* (IBMR) publishes innovative empirical and conceptual articles with advance knowledge of management and international business, and provides the readers with broad-spectrum of high-quality papers on evolving trends, insights and philosophies in management. All articles appearing in the journal will be peer reviewed to ensure academic rigor and practical relevance and will publish studies from all geographical regions. Discussion of newer forms of cross-border business activity, such as strategic alliances and global sourcing, is also encouraged. IBMR also aims to advance the exploration of issues that include the implications of customer orientation in multinational business, cross-cultural market segmentation and market research.

The journal welcomes submissions pertaining to various multidisciplinary studies such as –

- Accounting and Finance
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Editorial

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The world as its steps into the new era of the Global political environment, has new education, learning, and research ecosystem. The world that was and the world that will be is a conglomeration of old and new theories, perspectives towards data, its interpretation, and application. The IIFT-IBMR (*IIFT International Business and Management Review*) is a multidisciplinary journal that aims at bringing together managerial issues, practices, and innovations that are useful to scholars, educators, managers, consumers, other societal stakeholders, and policymakers around the world. It aims to play a significant role in shaping the content and boundaries of the management discipline while simultaneously covering the international scope of businesses.

Internationalization has broadened the horizons of business management, bringing in a swerve in contemporary international business activity. With the aim of imparting management education and industry practices, IBMR aims at publishing articles that will make significant contributions to empirical and theoretical advancement of all functional areas of business management, and provide the readers with broad-spectrum of high-quality papers on evolving trends, insights, and philosophies in management. All articles appearing in the journal will be peer-reviewed to ensure academic rigor and practical relevance and will publish studies from all geographical regions.

We would like to thank everyone who has helped us bring this Journal to fruition, both review board members and editorial board members. We hope you enjoy the first issue of IIFT-IBMR and look forward to a future filled with transformational research and intelligent dialogue.

Dr Sheeba Kapil
Editor-in-Chief

Assessing the Role of Cultural Intelligence and Perceived Organisational Support in Facilitating Indian Expatriates' Adjustment and Job Satisfaction

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Chhaya Mani Tripathi¹ and Tripti Singh²

Abstract

Indian expatriates form a significant portion of western countries' total immigrant population. This study aims to empirically examine the significance of cultural intelligence (CQ) and perceived organisational support (POS) in facilitating Indian expatriates' cultural adjustment and job satisfaction. We use data from 220 Indian expatriates working in 30 different foreign subsidiaries to examine the proposed hypotheses. First, we validated the collected data using confirmatory factor analysis (CFA). We then tested the hypothesised relationships through structural equation modelling (SEM). Results indicate that CQ and POS were positively and significantly associated with Indian expatriates' cultural adjustment and job satisfaction. We also found support for indirect effects where adjustment partially mediated the relationship between the predictors—CQ and POS and the criterion, that is, job satisfaction. Finally, we discuss the theoretical and practical implications of study findings and also suggest directions for future research.

Keywords

Perceived organisational support, cultural intelligence, expatriate adjustment, job satisfaction, Indian expatriates

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Introduction

The globalisation era has led to companies extending their boundaries beyond their country of origin and establishing operations overseas. With internationalisation, there comes a plethora of challenges that multinational corporations (MNCs) need to handle. These challenges range from the transfer of human resource management policies and practices (Oppong, 2018) to managing the integration and control over subsidiaries' activities and performance, especially in culturally distant nations (Colakoglu & Caligiuri, 2008). This is where the role of expatriates comes into the picture. Research shows that expatriates play a pivotal role in transferring firm-specific knowledge to subsidiaries, facilitating entry into new local markets, and keeping intact the organisational structure, culture and philosophy of MNCs (Colakoglu & Caligiuri, 2008; Kim & Slocum, 2008; Riusala & Suutari, 2004; Tripathi & Singh, 2021). Therefore, expatriates are not only the mediums to effectuate the success and growth of MNCs but also act as a guiding light for subsidiaries to realise global business objectives (Bhatti et al., 2013; Lee & Sukoco, 2010). However, in the process of ensuring better integration with subsidiaries, expatriates themselves are exposed to a variety of challenges such as adjustment issues, language barriers, lack of cultural awareness and support from the organisation. Consequently, many assignments result in failure and early repatriation causing considerable loss to organisations and expatriates (Kraimer et al., 2009; Singh & Tripathi, 2018; Tripathi & Singh, 2022). Templer (2010) argued that failed assignments may hamper an organisation in several ways. Apart from substantial financial loss, premature returns badly affect organisation productivity, sales and revenues, market size, business opportunities and reputation in the market. Furthermore, assignment failures may also have consequential impacts on employees' overall well-being and confidence (Kawai & Strange, 2014; Templer, 2010).

Difficulties arising out of living and working in a culturally distinct nation have been extensively discussed in the literature (Kawai & Strange, 2014; Selmer, 2006; Tripathi & Singh, 2022). Management scholars and practitioners have repeatedly touted the importance of cultural adjustment of expatriates and how critical it is for foreign assignments' success. In addition to this, the last two decades witnessed an increase in the studies on cultural adjustment and its impact on task and contextual performance (Bhatti et al., 2013; Jyoti & Kour, 2017; Kawai & Strange, 2014; Lee & Sukoco, 2010; Mezas & Scandura, 2005; Nunes et al., 2017; Ramalu et al., 2012). However, the topic of expatriate job satisfaction, which is established as a significant determinant of the performance and retention of employees, has often been overlooked by scholars (Bhaskar-Shrinivas et al., 2005; Froese & Peltokorpi, 2011; Tripathi & Singh, 2020). Employees' job performance and retention is very important not only from the individual but also from organisation's success point of view. From individuals' perspective, job performance leads to satisfaction on job, which is an ultimate driving factor for career satisfaction. Looking from organisations' point of view, employee retention is more crucial for organisation's success and realising overall organisational

objectives (Cerdin & Le Pargneux, 2014). Hence, employee's job satisfaction cannot be overlooked especially on foreign assignments. A satisfied employee is more likely to be motivated enough to perform well and remain on the assignment. Therefore, it would be worthwhile to study the factors that influence the job satisfaction of employees on foreign assignments.

In addition, with the increasing global competition and the dependency of MNCs on expatriates for successful business functions and growth (Bhatti et al., 2013), it is imperative to understand why some expatriates are more adjusted and satisfied than others in their international work assignments. In this regard, cultural intelligence (CQ)—a set of intelligent behaviours from the viewpoint of people in specific cultures, is believed to explain the reasons for individual differences in acclimatising to distinct cultural environments (Huff et al., 2014). Introduced by Earley and Ang (2003), this unique facet of intelligence is defined as an individual's competence to successfully adapt to new and unfamiliar cultural environments. As evident from the recent review conducted by Ott and Michailova (2018), CQ has been widely researched for its effects on cultural adjustment and performance of expatriates. However, even after two decades of its advancement, the effect of CQ on the job satisfaction of expatriates is yet to be explored.

Another important factor that is found to be related to a variety of employee work-related attitudes and outcomes is perceived organisational support (POS). POS indicates 'employees' perception of the degree to which organisations care about their well-being and value their contribution in achieving organisational goals' (Kraimer & Wayne, 2004; Riggle et al., 2009). The meta-analyses on POS and employee outcomes reveal that POS has a strong positive effect on job satisfaction (Ahmed et al., 2015; Riggle et al., 2009). However, the research results in these studies are limited to domestic employment contexts only. Additionally, the relationship of POS with expatriate-related outcomes is still under-researched (Kawai & Strange, 2014). It is important to note that the role of POS becomes even more important in cross-cultural contexts where the support from both the home and host country organisations is equally important for expatriates' psychological well-being (De Paul & Bikos, 2015).

Based on these rationales, the objective of the present research is to empirically assess the role of CQ and POS in impacting expatriate adjustment and job satisfaction. Studying adjustment and job satisfaction would also be important in understanding the extent to which CQ and POS help expatriates in getting along well in the new country and having positive attitude towards their job. In the absence of such knowledge, MNCs may have a hard time figuring out why expatriates don't feel contented and what makes them quit the assignment. This investigation is also expected to help MNCs in avoiding the cost incurred due to failed international assignments. We expect three major contributions to expatriation literature from our study. First, we attempt to investigate the effects of CQ and POS on job satisfaction with cultural adjustment as a mediator. Second, the theories of multiple intelligence and organisational support have been followed to determine how CQ and POS affect expatriates' job satisfaction. The last contribution pertains to the testing of the research model in the Indian context.

India has been a major source of expatriates as a large chunk of its population is skilled and English-speaking (Thite et al., 2009; Tripathi & Singh, 2021; Vijayakumar & Cunningham, 2016).

The following section comprises the theoretical background and how the hypotheses have been developed.

Theoretical Background and Hypotheses Development

CQ, Cultural Adjustment and Job Satisfaction

CQ was first introduced in an article by Earley (2002) and then in a book titled *Cultural Intelligence: Individual Interactions across Cultures* by Earley and Ang (2003). CQ refers to a set of capabilities that allow individuals to function effectively in not just one but a variety of cultural environments. It reflects how well a person utilises cultural cues to adapt to unfamiliar and diverse cultural situations (Ang et al., 2007; Earley & Ang, 2003). CQ is grounded in the theory of multiple intelligences by Sternberg and Detterman (1986) that contend that the concept of intelligence is multidimensional. Thus, despite focusing specifically on culture-related intelligence, CQ is multi-factor in nature (Malek & Budhwar, 2013). The different dimensions of CQ are as follows: meta-cognitive, cognitive, motivational and behavioural (Ang et al., 2007; Earley & Ang, 2003).

The meta-cognitive dimension of CQ refers to the mental processes involved in gaining and interpreting knowledge about different cultures. It makes individuals conscious of when and how to apply their cultural knowledge in cross-cultural interactions. Thus, meta-cognition is a high-order mental process that enables a person to plan and control [DEL3] on how to successfully deal with distinct cultural scenarios (Ang et al., 2007). The cognitive CQ refers to a person's knowledge structures and understanding of similarities and differences across cultures. It reflects how well a person is aware of other cultures' values, norms and practices (Ang et al., 2007; Triandis, 1994). The motivational dimension of CQ displays one's readiness to learn and understand cultural diversity and the desire to interact with people from different cultures (Earley & Peterson, 2004). Finally, the behavioural dimension of CQ refers to the capability to exhibit appropriate actions and behaviours in different cultural interactions. It includes the manifestation of suitable verbal and non-verbal behaviours while interacting with people from different cultures (Ang et al., 2007).

People with high CQ are expected to make better cultural judgements and easily assimilate into new cultures since they have the repertoire to predict the desired actions and behaviours expected in a given culture. They are mindful and conscious of the norms, practices and preferences of a culture and can make better decisions about how to respond effectively during intercultural interactions (Ang et al., 2007; Nunes et al., 2017).

Therefore, using the above arguments, we can conclude that high CQ makes a person better attuned to the nuances of distinct cultural settings and facilitates an

easy adaptation to different cultures. Previous studies on CQ have established it as a significant predictor of cultural adjustment (Lee & Sukoco, 2010; Lee et al., 2014). Researchers have also found a positive relationship between CQ and job performance (Lee & Sukoco, 2010; Ramalu et al., 2012). Using these supportive shreds of evidence, we suggest that CQ is likely to have a positive influence on job satisfaction as well. CQ's positive impact on job performance signifies that cultural knowledge and awareness assist expatriates in better understanding and conforming to the role expectations in a new culture. Likewise, a better understanding of role expectations may also lead to an increase in job satisfaction of expatriates, since they have the confidence that they can effectively respond to challenges caused by cultural differences at the workplace. Accordingly, we hypothesise that the following:

H_1 : CQ has a significant and positive effect on expatriate cultural adjustment.

H_2 : CQ has a significant and positive effect on expatriate job satisfaction.

POS, Cultural Adjustment and Job Satisfaction

The concept of POS has been deeply rooted in organisational support theory, which proposes that employees infer the sense of support and care from the organisation through various policies, procedures and treatments. If the employees believe that these policies and practices are committed to promoting their best interests, then they reciprocate this support with the socio-emotional resources that they have in the form of trust, commitment, loyalty, dedication and performance (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Rhoades & Eisenberger, 2002).

The relationship between organisational support and employees' commitment is also contained in social exchange theory (Blau, 1964), which is grounded in the norm of reciprocity (Gouldner, 1960). The concept of social exchange and reciprocity is based on the assumption that the employees feel obliged to the favourable support they receive from the organisations, and thus, reciprocate this support with increased commitment, performance and loyalty (Kawai & Strange, 2014). Thus, POS can be summed up as 'employees' global beliefs that the organisation values their contributions and cares about their well-being' (Kraimer & Wayne, 2004; Riggle et al., 2009).

POS has the following three main dimensions: career POS, finance POS and adjustment POS (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Kraimer et al., 2001). Career POS refers to the level of care and support demonstrated by organisations to develop expatriates' careers during their stay on assignment and also after their repatriation. Finance POS is described as the extent to which organisations support expatriate employees with their financial needs, such as bonuses, allowances and insurance. Finally, adjustment POS means the pre-departure training and relocation assistance provided by organisations to expatriates and their families to facilitate an easy transition after their transfer to

the foreign nation. All these kinds of support help employees deal effectively with cultural challenges, make them more committed to their organisations and also enhance their performance (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Wu & Ang, 2011).

The application of POS in cross-cultural employment contexts has given a new dimension to our understanding of how organisations can help expatriates deal with adjustment and job-related challenges (De Paul & Bikos, 2015). The significance of POS in enhancing employee outcomes is well-established in the literature. Researchers and practitioners have argued that how expatriates perceive support from organisation can largely impact their overall well-being, such as happiness, psychological satisfaction and self-realisation (De Paul & Bikos, 2015; Kraimer et al., 2001). Bader (2015) has also reported a positive influence of POS on the work attitude and well-being of expatriate employees. Empirical studies, which investigated POS in international context, found it to be a crucial determinant of adjustment, commitment towards organisation and employee turnover intentions (Kraimer et al., 2001). It has also been argued by researchers that employees who experience supporting organisational climate show greater citizenship behaviour and commitment towards their organisation (Liu & Ipe, 2010). Prior studies have also found a positive relationship between POS and expatriate adjustment. Likewise, favourable and good organisational support is believed to positively influence the job satisfaction of employees. The perceived care and support from the organisation may stimulate in expatriates a sense of being valued by the organisation making them more satisfied with their jobs. Therefore, people with good POS may feel better adjusted to cultural dissimilarities and are expected to be greatly satisfied in their work front. On the basis of these arguments, the following is proposed:

H_3 : POS has a significant and positive effect on expatriate cultural adjustment.

H_4 : POS has a significant and positive effect on expatriate job satisfaction.

Cultural Adjustment and Job Satisfaction

Cultural adjustment is well-established in the literature as a critical predictor of successful expatriate assignments (Palthe, 2004). It has been defined as 'expatriates' degree of psychological comfort and familiarity with the new culture'. Simply put, cultural adjustment reflects how comfortably expatriates imbibe the tenets of the host country while living and working there (Black, 1988; Black et al., 1991; Black & Stephens, 1989). It is conceptualised as a construct comprising the following three dimensions: general, work and interaction adjustment (Black et al., 1991).

The general adjustment refers to the extent to which expatriates are comfortable with the various aspects of general living conditions in the host country, such as food, weather and transportation system. Work adjustment signifies psychological

comfort with the demands of the new work environment, such as job tasks, responsibilities, leadership and role expectations. Interaction adjustment is the degree of comfort while interacting with locals in the host country (Black & Stephens, 1989).

Prior literature shows that cultural adjustment has a significant effect on expatriate outcomes, such as performance, turnover intentions, organisational citizenship behaviour and organisational commitment—all of which have been established as the consequence of job satisfaction (Barakat et al., 2015). Hence, cultural adjustment is expected to positively affect job satisfaction as well.

H₅: Cultural adjustment has a significant and positive effect on expatriate job satisfaction.

The Mediating Role of Cultural Adjustment

Over the years, cultural adjustment has been established as a fundamental and primary outcome that is responsible for shaping other consequences of cross-cultural assignments, such as performance, effectiveness and commitment (Bhaskar-Shrinivas et al., 2005; Kim & Slocum, 2008).

According to Kraimer et al. (2001) and Kawai and Strange (2014), positive and favourable organisational support help expatriates better adapt to cross-cultural environments. Not only this but POS has also been established as a strong contributor to the psychological well-being of expatriates (De Paul & Bikos, 2015). Psychological comfort and adjustment in the host country increase the job satisfaction of expatriates (Takeuchi et al., 2002). Thus, it can be argued that POS is an incredible assistance from organisation, helping expatriates adapt to the new culture and experience greater job satisfaction.

Similarly, the role of CQ has proved to be pivotal in determining the adjustment of expatriates (Guðmundsdóttir, 2015; Lee & Sukoco, 2010). Moreover, studies have also proposed that cultural adjustment mediates the positive impact of CQ on expatriate performance (Ramalu et al., 2012). In addition, performance being a criterion of job satisfaction gives us a base to propose that cultural adjustment will mediate the positive effect of CQ on job satisfaction as well.

We propose cultural adjustment as a mediating variable in this study. The role of a mediator is to expound on the causal relationship between the antecedent and consequence (Baron & Kenny, 1986). Accordingly, we propose that adjustment as a mediating variable will facilitate the positive association between the antecedents (i.e., CQ and POS) and the consequence (i.e., job satisfaction). The hypotheses that are formulated are as follows:

H₆: Cultural adjustment mediates the relationship between CQ and job satisfaction.

H₇: Cultural adjustment mediates the relationship between POS and job satisfaction.

Figure 1 illustrates the hypothesised path relationships.

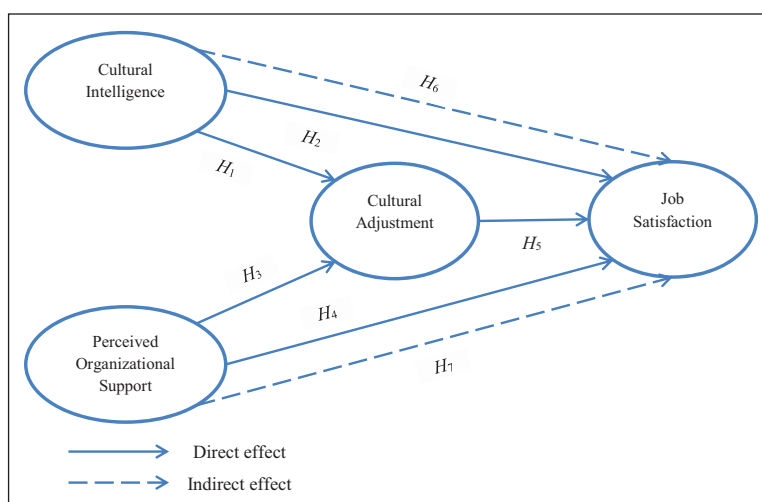


Figure 1. Hypothesised Model.

Methodology

Data Collection

To test the proposed model, we gathered data from the Indian-origin expatriates currently working in foreign countries. A questionnaire prepared in English was used to solicit the responses. The study participants were acquired through convenience and snowball sampling. Our respondents were selected from multiple sources. First, an online survey link was mailed to expatriate managers from management program alumni lists and researchers' own references, requesting them to participate in the study. We also requested these managers to send the survey to expatriates from their contact list. To collect more responses, we approached the Indian expatriates' groups and communities on the internet. In total, 234 responses were collected; however, 8 were discarded for being outliers and 6 were deleted because of unengaged responses. Finally, 220 usable questionnaires were included in the analysis.

Measurement

To measure CQ, we used items from the cultural intelligence scale (CQS) developed by Ang et al. (2007). We asked the expatriates to rate their disagreement or agreement with statements on a five-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'. The sample item is 'I am conscious of the cultural knowledge I use when interacting with people from different cultural backgrounds'.

We measured the POS with Kraimer and Wayne's (2004) scale. We asked the expatriates about their perceived degree of support from the organisation on a five-point scale, where 1 = 'strongly disagree' and 5 = 'strongly agree'. One sample question is 'The financial incentives and allowances provided to me by my organisation are good'.

To measure the degree of cultural adjustment, we adopted items from Black's (1988) scale. Sample item includes 'How adjusted are you to the weather in foreign?' A five-point scale ranging from 1 = 'not adjusted at all' to 5 = 'very well adjusted' was used.

We measured the job satisfaction of expatriates with West et al.'s (1987) scale. We asked the respondents to rate how satisfied they were with their job on a five-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'. The sample question is 'I'm satisfied with my performance in the job'.

Common Method Variance

Since all our study variables were rated by a single source, that is, expatriates, there is a potential for method bias (Podsakoff et al., 2003). To address this issue, we assured the respondents that their responses would be confidential and anonymous. Further, while designing the questionnaire, we randomly placed the items for the predictor and criterion variables. We also ensured that all questions in the questionnaire can be easily comprehended. Finally, we used Herman's single-factor test by loading each construct item on a single factor (Harman, 1976; Podsakoff et al., 2003). The un-rotated principal component analysis (PCA) resulted in the first factor explaining 42.92% of the variance, which is below 50% and does not constitute a majority of the variance (Podsakoff & Organ, 1986). Hence, it can be assumed that common method variance (CMV) is not concerning in the used data set.

Analysis and Results

We used SPSS and AMOS 22.0 to conduct the data analyses. First of all, we discussed the sample characteristics by presenting the demographic profile of respondents. The sample consisted of 220 Indian nationals expatriated to 30 foreign countries. In regards to the gender distribution, most of them were male (73.6%) and in the age bracket of 30–40 years (48.6%). 61.8% of the respondents were married and 33.1% were with kids. The participants came from multiple sectors, that is, IT, science and technology, education, media and entertainment, banking and financial services, and others. Table 1 presents the demographic profile of respondents.

Table 2 presents the descriptive statistics of variables, that is, means, standard deviations, internal consistency (Cronbach's alpha) and correlations between constructs. Alpha values ranging from 0.77 to 0.88 indicate good internal consistency reliability of study variables (Nunnally, 1978).

Table 1. Demographic Profile of Respondents.

Demographic Variables		No. of Participants	% of Total Sample
Gender	Male	162	73.60
	Female	58	26.40
Age	Below 30 years	88	40.00
	30–40 years	107	48.63
	41–50 years	21	9.54
	51 years and above	4	1.81
Marital status	Married	136	61.80
	Unmarried	84	38.20
No. of children	0	147	66.81
	1	54	24.54
	2 or more	19	8.63
Industry type	Information technology	101	45.90
	Science and technology	36	16.40
	Education	12	5.50
	Media and entertainment	4	1.80
	Banking and financial services	15	6.80
	Others	52	23.60

Table 2. Descriptive Statistics and Correlations between Constructs.

Constructs	Mean	SD	1	2	3	4
1. Cultural intelligence	4.03	0.55	(0.77)			
2. Perceived organisational support	3.81	0.59	0.61	(0.84)		
3. Cultural adjustment	4.29	0.48	0.48	0.44	(0.84)	
4. Job satisfaction	4.11	0.53	0.48	0.62	0.68	(0.88)

Notes: $N = 220$.

Correlations are significant at $p < .01$ (two-tailed).

Values within parentheses represent reliabilities.

We followed the recommendations of Anderson and Gerbing (1988) and checked the distinctiveness of constructs first. To do that, we performed confirmatory factor analysis (CFA) to assess the convergent and discriminant validity. In the next step, we used structural equation modelling (SEM) to test our hypothesised path relationships.

Confirmatory Factor Analysis

We first performed CFA to test the measurement model. Items with standardised regression weight (SRW) less than 0.50 were deleted (Hair et al., 2010). The overall model fit was assessed based on the chi-square (χ^2) value and other global fit indices such as Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Squared Error (RMR), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI). Table 3 presents the results for the overall measurement model. The statistics for global fit indices indicate that the values satisfy the relevant thresholds and the data adequately fit the model (Byrne, 2001; Chau, 1997). Furthermore, the average variance explained (AVE) greater than 0.50 and the composite reliability (CR) greater than 0.70 for all constructs establishes the convergent validity (Hair et al., 2010). In addition, the AVE values exceeding the maximum shared variance (MSV) ensure the discriminant validity (Hair et al., 2010).

Structural Equation Modelling

We used the SEM to test the hypothesised path relationships. This study examines the relationship between CQ, POS, cultural adjustment and job satisfaction using the imputation method in AMOS. We followed the recommendations of Preacher and Hayes (2004) to test the mediating effects of cultural adjustment.

To test the direct relationships, we first analysed the impact of CQ on cultural adjustment and job satisfaction. The results indicated that CQ has a significant effect on both adjustment ($\beta = 0.56, p < .001$) and job satisfaction ($\beta = 0.55, p < .001$) of expatriates. Hence, hypotheses H_1 and H_2 stand accepted. Similar results were found for the effect of POS on adjustment ($\beta = 0.52, p < .001$) and job satisfaction ($\beta = 0.70, p < .001$), indicating support for hypotheses H_3 and H_4 .

Finally, the calculation for the effect of the cultural adjustment on job satisfaction was also found to be significant ($\beta = 0.76, p < .001$). Thus, H_5 was supported.

Table 3. The Measurement Model.

	Goodness-of-fit Statistics	Composite Reliability	Average Variance Extracted	Maximum Shared Variance
1. Cultural intelligence	$\chi^2/df = 1.95$, GFI = 0.91,	0.78	0.55	0.38
2. Perceived organisational support	AGFI = 0.87, RMR = 0.02, RMSEA = 0.06,	0.83	0.55	0.39
3. Cultural adjustment	CFI = 0.95, TLI = 0.94	0.84	0.58	0.46
4. Job satisfaction		0.88	0.66	0.46

Table 4. Bootstrapping Results for Mediation.

Hypothesis	Standardised Total Effect	Standardised Direct Effect	Standardised Indirect Effect	Mediation Type
CQ-CA-JS	0.55 (***)	0.18 (***)	0.36 (***)	Partial mediation
POS-CA-JS	0.69 (***)	0.42 (***)	0.27 (***)	Partial mediation

Notes: $n = 2,000$ bootstrapping resamples, 95% bias-corrected confidence interval.

*** $p < .001$.

CQ = Cultural intelligence; POS = Perceived organisational support; CA = Cultural adjustment; JS = Job satisfaction.

In order to determine the indirect effects, the mediating variable, that is, cultural adjustment was put between the independent and dependent variables. A bootstrap method was used to estimate the indirect effect. Table 4 presents the bootstrapping results which show a significant indirect effect of both CQ ($\beta = 0.36, p < .001$) and POS ($\beta = 0.27, p < .001$) on job satisfaction through cultural adjustment. Accordingly, hypotheses H_6 and H_7 were supported.

Furthermore, cultural adjustment partially mediates the relationship between the predictors, that is, CQ and POS, and the outcome variable job satisfaction, as the direct effects of both CQ ($\beta = 0.18, p < .001$) and POS ($\beta = 0.37, p < .001$) on job satisfaction remained significant in the presence of the mediator. Hence, support for all seven hypotheses was obtained in the present study.

Discussion

This study investigates how CQ and POS influence the job satisfaction of Indian expatriates directly and indirectly. Drawing on multiple intelligences theory and the theory of organisational support, we developed a model investigating relationships among CQ, POS, cultural adjustment and job satisfaction of Indian international assignees. We sought to explore the following two issues: first, the direct impact of CQ and POS on job satisfaction; and second, the indirect impact of cultural adjustment between the predictors, that is, CQ and POS, and the outcome variable job satisfaction. The results of statistical analyses revealed that both CQ and POS were positively and significantly associated with cultural adjustment and job satisfaction of Indian expatriates. CQ was found to explain 32% and 31% of the variance in cultural adjustment and job satisfaction, respectively. Similarly, POS accounted for 27% of the variance in cultural adjustment and 49% of the variance in job satisfaction. This finding helps us in concluding that Indian expatriates who have high CQ and who believe that their organisation cares about their well-being tend to demonstrate greater adjustment and are more likely to be satisfied with their job.

Moreover, the present study gathered support for the effect of the cultural adjustment on job satisfaction of Indian expatriates. Therefore, it can be concluded

that expatriates who are able to adjust and get along well in distinct cultural contexts are also satisfied with their job and work aspects.

We argue that expatriates with high CQ are better able to handle the intricacies of a new culture by utilising their cultural cues to develop an effective understanding of different cultures and exhibiting the desired responses in various cross-cultural interactions. This simplifies the overall adjustment process and also leads to more satisfaction with the job. Our findings are in line with Guðmundsdóttir (2015) and Lee et al. (2014) in demonstrating the usefulness of CQ in cross-cultural scenarios.

We also argue that expatriates' adjustment in foreign nations becomes easy if positive and favourable support is obtained from the organisation. Perception of favourable organisational support may help expatriates believe that their organisation would be there to support them in situations of need. This feeling may help them get along well with new culture and workplace environment. Our findings are consistent with the results of Caligiuri et al. (1999), and Kraimer et al. (2001) who suggested that organisational support is significantly associated with cross-cultural adjustment and job satisfaction.

The present study also calculated the effect of CQ and POS on job satisfaction when the mediator, that is, cultural adjustment was inserted. The results showed support for partial mediation of cultural adjustment on the relationship between the predictors (CQ and POS) and job satisfaction. This means that the total variance in job satisfaction accounted for by CQ and POS is partly caused by their direct influence, and partly caused by their indirect influence mediated through cultural adjustment. Simply put, an increase in CQ and POS of expatriates leads to an increase in their adjustment to the host country, which in turn leads to an increase in their job satisfaction.

Theoretical and Managerial Implications

Our research supplements the expatriation literature in four ways. First, both our predictor variables, that is, CQ and POS were drawn from relevant theories, thus providing a strong foundation to the proposed conceptual model. Second, although several studies have investigated the consequences of CQ; a few have investigated beyond adjustment and performance (Ott & Michailova, 2018). Our study examined the impact of CQ on a critical organisational outcome, that is, job satisfaction, and found positive support for its role in influencing expatriates' job satisfaction. Third, our study is among the few that investigated the cross-cultural consequences of Indian expatriates; a population that constitutes a significant portion of western countries' total immigrant population (Shah & Barker, 2017; Vijayakumar & Cunningham, 2016). Finally, our study is an addition to the limited research on expatriates from developing countries. The literature on cross-cultural assignments is dominated by MNCs from western countries (Zhao et al., 2016). Therefore, our study contributes to the extension of expatriation literature to developing countries.

The results of the study helped in suggesting some managerial implications as well that may help organisations preventing assignment failure. The positive

relationships between POS, cultural adjustment and job satisfaction suggest that organisations may devise plans on building up good and conducive relationships with expatriating employees in order to help them adapt well to distinct cultural settings and contribute towards the success of the assignment. Organisational support should be extended by both the parent country organisation as well as the subsidiary. Furthermore, organisations may also devise plans for assisting the families of expatriating employees and help them deal with logistical issues that may arise. The support for the family by organisation may help expatriates be at ease and focus more on their work duties. Improved organisational support could increase the efficiency of expatriates and result in the overall success of the assignment.

Similarly, considering the crucial role played by CQ in cross-cultural assignments, organisations should incorporate it in their selection and training criteria before sending their employees on foreign assignments. Additionally, interesting and unique facts about the host country's culture should be shared in advance with the expatriating employees to help them develop cultural awareness. In addition, organisations should strive to provide employees with all relevant information relating to the new assignment to facilitate an easy transition. Contact information of existing expatriates in the given host country can also be shared with new expatriating employees to provide them with the social support that they might need during the initial days of the assignment.

Limitations and Directions for Future Research

Like every research, this study has a few shortcomings that may impact its contributions and generalisability. However, these shortcomings open several avenues for further research. First of all, the study sample comprised Indian expatriates only, which limits the generalisability of the results. India is a highly diversified country that encompasses a variety of cultures; therefore, Indians may be comfortable understanding the nuances of different cultural settings. It would be interesting to see if the study findings hold true for expatriates of other nations and origins. Next, the study contained only one dependent variable, that is, job satisfaction. Future researchers may explore other criterion variables such as organisational commitment, engagement and knowledge transfers. Another limitation is the cross-sectional design of the study. In the future, longitudinal studies can be conducted to check how the relationship between CQ, POS, adjustment and satisfaction varies over time. Lastly, the self-reported questionnaires used in the study may pose the risk of CMV. Although we employed certain methodological remedies to alleviate its effects, the presence of method bias cannot be completely ruled out. To address this issue, future research works could use a combination of self-report and peer/spouse-report surveys to enhance the power and reliability of results.

Declaration of Conflicting Interests

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Service Quality Dimensions in AI-enabled Chatbots Leading to Customer Satisfaction: A Study from South Asia

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Abstract

The purpose of this article is to investigate the antecedents of satisfaction of consumers with chatbots using service quality (SERVQUAL) in the South Asian context. Customer satisfaction is one of the critical attitudinal variables that may influence customer behaviour and lead to greater customer loyalty. Automated query resolutions facilitated through AI chatbots are used to enhance SERVQUAL and customer satisfaction. However, it has been observed that inability to resolve queries satisfactorily results in frustration and abandonment of the channel. To address this service deficiency, the proposed study uses the SERVQUAL scale to identify antecedents of customer satisfaction. A total of 355 usable responses were collected from consumers who used chatbot services across different sectors. Confirmatory factor analysis and structural equation modelling (AMOS 26) were employed to test the proposed model. Tangibles, assurance and efficiency were significant in explaining customer satisfaction while responsiveness and privacy were insignificant. Assurance was significant and caused dissatisfaction when perceived as absent; tangibles were significant but were no longer a differentiator; efficiency was perceived as significant and can be critical in building assurance and accelerating adoption. The findings from this study provide beneficial insights to businesses who handle large volumes of service requests for instance, digital banking applications, travel sites, e-commerce sites and educational institutions. Businesses need to focus on critical service dimensions like assurance and

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efficiency rather than improving the conversational ability of chatbots. This article addresses an important paradox namely poor satisfaction with chatbot services despite demand for technology-enabled services. Theoretically speaking, easy-to-use and easy-to-access technologies should result in higher engagement among consumers. However, the rapid deployment of chatbots by businesses is met with high dropout in chatbot service channel. Technology adoption has been studied widely, but this study addresses the larger issue of what could enable better customer satisfaction in an easy-to-use technology.

Keywords

AI chatbots, customer satisfaction, service quality, service delivery

Introduction

Chatbots are computer programs that maintain a conversation with a user in natural language, understand the users' intent and send responses based on the organisation's business rules and data (Deloitte, 2017). Customers' demand for instant service resolution and increasing pressure on contact centres due to high turnover rates fuel the market forces driving chatbot implementation (Deloitte, 2018). The chatbot ecosystem is rapidly evolving through variegated offerings, including personalised restaurant recommendations, loan applications, ride-hailing, apparel recommendations and order status checks. Chatbot assistance is highly effective in routine transactions, recommendations, or complaint resolution. However, in a highly populous nation like India, transactions are still carried out in the hybrid model. A man-machine interface is standard across highway toll booths, airport check-in kiosks and kiosks at quick-service restaurants owing to the availability of a low-cost workforce.

A recent survey of consumers from around the world indicated that 86% of customers preferred interacting with a human agent to a chatbot. In contrast, only 30% stated that chatbots were more effective than human agents for query resolution (Press, 2019). While evidence from practice shows that firms in India that have deployed chatbots report better efficiency, cost savings and quicker resolution of queries for the customer, there is no explicit focus on replicating human-like experiences through chatbots. Complex service requests are resolved using a human interface, while repetitive queries are left to chatbots (Sheth, 2019).

The availability of a good quality workforce seems to provide a differentiated context to view customer satisfaction with chatbots, that is, quick and efficient service. A key differentiating factor between the technologically mature western nations vis-a-vis South Asia is the abundance of human resources and consequent human interactions. The context of western research is rooted in the customer's emotional state while interacting with humanised chatbots. Studies centred around anthropomorphism (attribution of human traits) focus on the customer's emotional state while engaging with a chatbot. The absence of extensive human interactions

in the more developed and less populated western nations makes human-like traits very desirable in chatbots. Anger (Crolic et al., 2022), trust (Mozafari et al., 2020), engaging in personal conversation, listening and displaying warmth (Soderlund, 2022) have been studied in measuring customer satisfaction. However, it is essential to understand the antecedents of customer satisfaction in a nuanced manner that centre stages the South Asian context.

The present study uses a sample size of 355 participants to identify critical service dimensions that drive customer satisfaction. It combines the Service Quality Framework (SERVQUAL) (Parasuraman et al., 1985, 1988) and E-Service Quality Framework (E-S-QUAL) (Parasuraman et al., 2005) to identify the critical service dimensions that drive customer satisfaction. Our study reveals that assurance followed by efficiency and tangibles are essential drivers of customer satisfaction with a chatbot. Customers were dissatisfied with the current levels of assurance and efficiency, indicating that inconsistent query resolution has led to a lack of trust in chatbots, thus increasing the preference for human service agents. Focusing on a consistent resolution of basic requests and queries is vital in increasing customer satisfaction compared to features such as personalisation and conversational abilities, which do not impact satisfaction.

The rest of the article is organised as follows: the literature review is followed by hypotheses, a discussion on research methods, analysis and results, discussion of results, and theoretical and managerial implications.

Literature Review and Hypotheses

E-commerce and self-service technologies, such as self-checkout counters and kiosks, face more extended adoption periods since a learning curve is associated with adapting to such technology (Meuter et al., 2005). On the other hand, interacting through chat is an intrinsic part of a customer's daily life. They spend 2 hours on average per day communicating on messaging applications such as Facebook and WhatsApp (Statista, 2018). Low usage of chatbots has less to do with chatbot ability and customer readiness and more to do with the frequent failure of chatbots to meet customers' expectations (Adam et al., 2020). 'Service encounters are critical moments of truth in which customers often develop indelible impressions of a firm' (Bitner et al., 2000, p. 139). SERVQUAL can be a crucial construct to explain customer satisfaction since it positively influences customers' behavioural intention, satisfaction and loyalty. Customer satisfaction is one of the critical attitudinal variables that may influence customer behaviour and greater customer loyalty (Lee et al., 2009).

Anthropomorphism

Anthropomorphism, or the attribution of human-like properties, characteristics, or mental states to nonhuman agents and objects (Epley et al., 2007; Waytz et al.,

2010), has dominated the discourse on chatbots in the recent literature (Crollic et al., 2022; Soderlund, 2022; Troshani et al., 2021). Some of the more apparent benefits of humanised chatbots are enjoyable customer experiences and resultant purchase intentions (Han, 2021; Holzwarth et al., 2006; Yen & Chiang, 2021), friendship with users leading to increased loyalty (Schweitzer et al., 2019), increased trust by increasing perceived competence (Waytz et al., 2014). Han and Yang (2018) have opined that the anthropomorphic characteristics add a degree of charm and affection to customer interactions, thereby leading to continued application usage. The deployment of anthropomorphic features in chatbots in critical services results in higher positive usage intentions (Blut et al., 2021). While humanised chatbots are found to result in cost reduction and control over the quality of interactions with the customer, Crollic et al. (2022) have warned against ‘unconditional deployment’, which could lead to adverse outcomes. Recent research has found that human users experience distrust and even revulsion while interacting with robots with more remarkable human resemblance (Mathur & Reichling, 2016). Yang et al. (2022) find that in situations where customers perceive low process and outcome control, AI service agents with a less anthropomorphic design might be more attractive. While anthropomorphic chatbots influence trust and can lead to a better customer experience, customers expect chatbots to perform services reliably (Troshani et al., 2021). Anthropomorphic design in branding and product design contexts may not always produce beneficial outcomes (e.g., Kim et al., 2016; Kwak et al., 2015). The degree of anthropomorphism in AI applications can be better determined by the functions they intend to perform (Troshani et al., 2021). Applications meant to support sociorelational services (healthcare, for example, where empathy is the key) may need to be designed to exhibit greater anthropomorphism levels than AI applications meant to support repetitive tasks or improve efficiency (a food delivery application, for example).

Service Quality and Customer Satisfaction

We integrate two main theories popular in the service literature—the SERVQUAL model (Parasuraman et al., 1988) and E-S-QUAL (Parasuraman et al., 2005) to identify service dimensions better to evaluate customer satisfaction. The SERVQUAL model has been widely used across different service settings and cultural contexts (Meyer-Waarden et al., 2020). Both academicians and practitioners regard the SERVQUAL model to measure the level of customer service satisfaction (Seth et al., 2006). From a customer perspective, SERVQUAL is a subjective evaluation of the service in the interactive service delivery process (Dabholkar et al., 2000; Parasuraman et al., 1988). From an organisation’s perspective, consistency with the initial design defines SERVQUAL (Golder et al., 2012). SERVQUAL can be broadly defined as a customer’s comparison of different service expectations vis-à-vis its performance. When technology adds value to the service experience, companies can increase customer

satisfaction and competitive advantage (Bitner et al., 2010). Customer satisfaction and SERVQUAL are interrelated, and in a competitive business scenario, SERVQUAL is an essential factor that impacts customer satisfaction (Adhikari & Paul, 2016; Agbor, 2011). SERVQUAL has been measured extensively in the brick and mortar businesses (Cui et al., 2003; Lai et al., 2018; Wong & Fong, 2012). However, we notice a lack of SERVQUAL studies on online businesses in emerging economies.

Cai and Jun (2003) identified shortcomings of the existing models in measuring SERVQUAL. They suggested the four-element dimension of E-S-QUAL, including website design/content, trustworthiness, prompt/reliable service and communication, with an integrated perspective of both online buyers and information searchers. While E-S-QUAL has four dimensions (efficiency, system availability, fulfilment and privacy), SERVQUAL has five dimensions of SERVQUAL (tangibles, assurance, reliability, responsiveness and empathy). Assurance has the highest impact on customer satisfaction (Ghost & Gnanadhas, 2011; Jain & Gaur, 2012). Empathy (human-like) enhances firm-customer interactions (Murtarelli et al., 2021); marks the high quality of service (Parasuraman et al., 1988); creates positive perception (Li & Sung, 2021); reduces customers' perceived risk; and enhances customers' trust and credibility in AI chatbot (Murtarelli et al., 2021). However, given the high degree of involvement of human resources and the prevalence of hybrid mode in service delivery, empathy does not resonate in the South Asian context and is not included in our framework. System availability and fulfilment (order delivery and availability of items) were not considered since chatbots are available 24 × 7, and delivery is not a functionality of chatbots. Poon and Lee (2012) suggested that efficiency and reliability overlapped, making efficiency a good measure of service dimension. *The purpose of the present study is to develop a parsimonious model of SERVQUAL for chatbots by examining the service dimensions that consumers use to evaluate both SERVQUAL and E-S-QUAL.*

The conceptual framework developed by the authors uses three dimensions from SERVQUAL: tangibles, assurance and responsiveness, and two from E-S-QUAL, namely efficiency and privacy.

Assurance

The assurance dimension indicates how competent, knowledgeable and courteous employees are during the service interaction. Further, the ability to build trust in customers is an integral part of assurance (Parasuraman et al., 1985, 1988). In sectors like banking, knowledge of personnel is extremely critical in building trust (Kant & Jaiswal, 2017), while in the case of online shopping, lack of trust is cited as a reason for not shopping online (Rasty et al., 2020). The importance of assurance varies across research. However, Gronroos (1988) opined that assurance was the most critical service dimension. In the context of chatbots, assurance implies the ability to proficiently address customers' queries with accurate answers, in the least response time and in a consistent manner, thereby building trust over time. Hence, we propose Hypothesis 1 as follows.

H_1 : Assurance (competence, knowledge) positively affects customer satisfaction with chatbots.

Tangibles

Parasuraman et al. (1985, 1988) specify tangibles as physical facilities that include equipment, personnel and materials used for communication. Customers attribute good tangibles as an indication of care and concern shown by the service provider (Fitzsimmons et al., 2008). Huang et al. (2007) E-S-QUAL framework suggest design as one of the online tangible cues that indicate visual appeal. Further, Mollen and Wilson (2010) state that in a virtual environment, the design enhances telepresence, which is defined as the psychological state of 'being there'. The use of texts, graphics and colour, ease of navigation, uncluttered interface, logical flow of the conversation and easy search path, among others, form an integral part of the tangible facets of E-S-QUAL. Hence, the second hypothesis is derived as follows.

H_2 : Tangibles (colours, visual appearance) positively affect customer satisfaction with chatbots.

Responsiveness

Responsiveness as a dimension of SERVQUAL refers to the organisation's willingness and ability to help customers and provide quick service within the stipulated time frame (Parasuraman et al., 1985, 1988). The willingness of employees to provide service irrespective of time has an impact on customer satisfaction (Parasuraman et al., 1988). The ability of the firm to respond to customers and provide individualised attention increases customer satisfaction. Notably, in sectors like banking, responsiveness directly impacts customer satisfaction (Kant & Jaiswal, 2017). In case of a breakdown in service, the ability of the organisation to recover quickly and respond to customer queries and requests has a direct impact on SERVQUAL (Hernon & Nitecki, 2001). Yarimoglu (2014) elaborated responsiveness to encompass mailing the transaction slip, calling back the customer quickly and providing prompt service. In chatbots, responsiveness implies understanding customer queries and informing customers when the required services will be performed. Hence the third hypothesis is as follows:

H_3 : Responsiveness (understanding and prompt) positively affects customer satisfaction with chatbots.

Efficiency

Efficiency and reliability of SERVQUAL in technology scenarios are closely linked (Poon & Lee, 2012). An important criterion of customers opting for technology-enabled services is the time taken for resolution (Collier & Kimes, 2013). In other words, when customers perceive that service resolution is faster due to technology than human agents, they would use technology-enabled services. Constraints due to location and time can decide which service channel a customer should opt for (Collier & Sherrell, 2010). Further, when service delivery

time is considerably reduced, customers prefer to use technology-enabled services over human interaction (Lee & Yang, 2013). Studies on self-service technologies highlight that fast service resolutions are one of the most important factors that drive customer satisfaction (e.g., Collier & Kimes, 2013; Howard & Worboys, 2003; Meuter et al., 2000). When customers perceive that their service requests would be resolved quickly, they are more likely to rate that service channel higher, leading to higher customer satisfaction (Collier & Sherrell, 2010). In chatbots, efficiency relates to the response time and accuracy with which customers' queries are resolved. We hypothesise that efficiency is an essential antecedent of customer satisfaction.

H₄: Efficiency (speed of query resolution) positively affects customer satisfaction with chatbots.

Privacy

The rise of disruptive technologies and issues regarding regulation on the internet have created challenges for firms to assure consumers regarding data sharing and privacy (Bandara et al., 2020). Privacy implies that customer data is secure and disseminated to other businesses only after obtaining customer consent. Security and confidentiality shape the usage of technology services (Lu et al., 2018). Customers are concerned with data sharing and usage through mobile applications and websites (Feng & Xie, 2019; Wottrich et al., 2018). Consumers of line banking services identified security as a critical determinant of E-S-QUAL (White & Nteli, 2004) and the most crucial factor in visiting a site and making purchases (Ranganathan & Ganapathy, 2002; Yoo & Donthu, 2001). Privacy encompasses the protection of any data shared by the customer with the chatbot during their interaction. As consumers conduct online financial transactions, the role of ethical behaviour by financial service providers is significant (Patterson & McEachern, 2018). Hence, the fifth hypothesis is as follows:

H₅: Privacy (secure and confidential interaction) positively affects customer satisfaction with chatbots.

The conceptual framework used for this study is depicted in Figure 1.

Research Methodology

We used a mixed-method consisting of qualitative and quantitative analysis. The qualitative research aims to help identify critical and redundant constructs from the existing framework. A discussion guide was used to conduct in-depth interviews among 15 participants. We recruited participants from diverse backgrounds to extract varied perspectives (4 academicians who had published research in the relevant areas; 8 industry practitioners with over 10 years of experience across financial services, consulting, information technology and supply chain; 3 senior industry professionals with more than 25 years of experience in the banking and manufacturing industries). The participants were active users

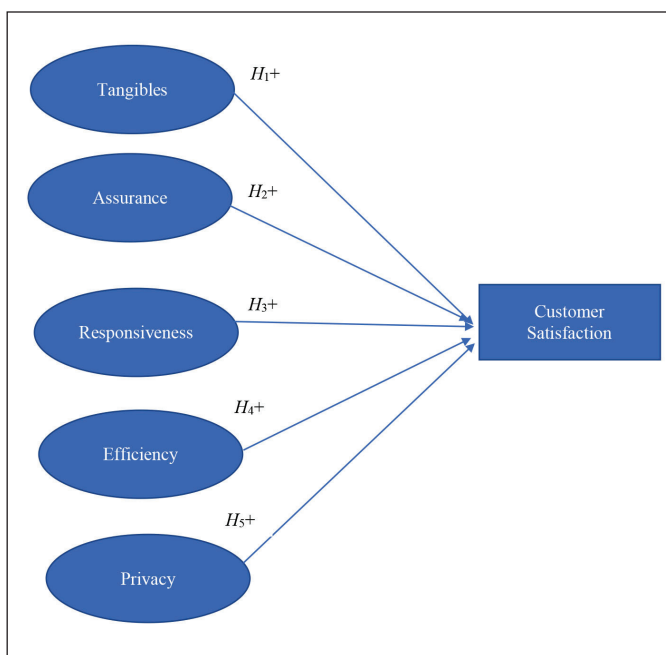


Figure 1. Framework for Customer Satisfaction with Chatbots.

of chatbot services and part of the design and solution team for various functions in business. Inputs drawn from the qualitative research were used to design the questionnaire, divided into the following three sections—demographic details, perception of different service dimensions and overall satisfaction with chatbots.

The final questionnaire measured 17 items, incorporating the SERVQUAL (Parasuraman et al., 1985, 1988) and E-S-QUAL measures (Parasuraman et al., 2005). Three items measured the following five service dimensions: tangibles, responsiveness, assurance, efficiency and privacy. ‘Customer satisfaction’ was the dependent variable consisting of the following two statements—‘I am pleased with the services offered by chatbots’ and ‘I am satisfied with the services offered by Chatbots’. A five-point Likert scale with 1 = Very Dissatisfied and 5 = Very Satisfied was used. Pilot surveys follow a subjective decision of the survey administrator regarding the sample size since there are no specific rules and formulas that indicate the adequate pretest sample size (Naumann & Giel, 1995). A group of 20 respondents was selected as part of the pilot survey to identify and eliminate potential problems and modify the questionnaire based on the feedback given by these respondents. The participants were equally divided between males and females (10, 10), used chatbots frequently, and were skewed towards the younger age group (9 respondents in the age group of 18–24, 7 in 25–34 and 4 in 35–44).

All aspects of the questionnaire were tested, including question content, wording, sequence, form and layout, question difficulty and instructions. Respondents in the pretest shared similar characteristics with those in the actual survey regarding their background, familiarity with the topic and interest levels (Reynolds & Diamantopoulos, 1998).

A team of 10 interviewers collected the data. The interviewer teams were briefed about the study's objective and asked to conduct mock interviews to check their ability to probe for responses. Participants were chosen based on the frequency of usage, and the sample included demographic subsets such as age, gender, education and income. A link to the questionnaire was emailed to the participant's post confirmation of their availability for the study. The interviewers then contacted them at a pre-decided time to fill in the questionnaire. The authors ensured no abnormal skew towards a particular gender, age group, city and chatbot usage by different sectors. The authors checked the key demographic criteria and chatbot usage across sectors after every 100 interviews. This resulted in five checks, and any skew that was observed was duly corrected in the next phase. The data was collected over 3 months, from October to December 2020. A total of 500 respondents were contacted, of which 415 respondents agreed to participate in the survey. In total, 60 questionnaires with inconsistent, incomplete, spurious or erroneous responses were eliminated post back checks, and the final usable sample for the study was 355. The final achieved response rate for the survey was 71%. A response rate of 55.6% is an acceptable norm for behavioural studies (Baruch, 1999).

Results

Table 1 summarises the findings from the qualitative research. Table 2 indicates service dimensions retained and dropped post the qualitative analysis.

The results from the qualitative study imply that the respondents value efficiency and quick resolution over enhanced anthropomorphic features such as empathy or enriching conversations.

Sample characteristics were studied using univariate data analysis IBM SPSS 26. The sample demographic details are given in Table 3. The data showed higher percentage of males (58%), younger population (61% belonged to 18–34 years). The monthly household income was evenly distributed and there was slightly higher percentage of participants who used chatbots on food aggregator sites (62% preferred Food Aggregator sites such as Zomato and Swiggy).

The 17 items that measured tangibles (3 items), assurance (3 items), responsiveness (3 items), efficiency (3 items), privacy (3 items) and customer satisfaction (2 items) were tested using Confirmatory Factor Analysis (details in Table 4).

Table 1. Findings from Qualitative Research.

Nature of Tasks Performed	What do Customers Expect from Chatbot?	Which Are Critical Service Dimensions?	Which Sectors Should Deploy Chatbots?
Routine	Do what it states, timeliness, finish in a minimum number of steps, seamless	Tangibles Efficiency	Presence of large number of FAQs; educational institutions, government websites, financial services, airlines, travel aggregators, food ordering, telecom
Recovery	Assure, inspire confidence, give options, guide till the end, route to the right entity, don't take customer in circles, resolve quickly Don't require empathy, it sounds fake and phony	Assurance Efficiency Responsiveness	High order value, application, delivery issues. E-commerce, banking and finance, B2B, vendor & supplier relations
Recommendation	Relevant, personalised, unique, save time, take permissions to use data, protect data	Assurance Efficiency Privacy	Apparels, streaming platforms, beauty sites, fine dining, E-commerce, music

Table 2. Service Dimensions Retained and Dropped.

Service Dimensions Retained	Service Dimensions Dropped and Reasons for Dropping
Tangibles	Reliability – overlaps with efficiency
Responsiveness	Empathy – not an essential requirement in transactional interactions
Assurance	Availability – not applicable as chatbots are available 24 × 7
Efficiency	Fulfilment – chatbots are for query resolution and not for delivery
Privacy	

Common Method Bias Test

Common method bias (CMB) was carried out to ensure that data was 'free from bias'. This study adopted a multilevel approach. We used reversed coded items to prevent respondents from losing their attention while answering the questionnaire and used 'Harman's single factor test' to ensure that the data was free from bias.

Table 3. Demographic Profile.

Demographic	Number	Percentage
Gender		
Male	206	58
Female	149	42
Age		
18–24	100	28
25–34	118	33
35–44	76	21
>45 years	67	19
Education		
Undergraduates	71	20
Graduates	135	38
Post graduates	149	42
Profession		
Public sector/government services	71	20
Private sector service	92	26
Self employed	60	17
Students	89	25
Stay at home	43	12
Monthly household income		
Less than 1 lac (\$1338)	96	27
₹ 1 lac to ₹ 2 lac (\$1338 to \$2676)	92	26
₹ 2 lac to ₹ 3 lac (\$2676 to \$4014)	78	22
₹ 3 lac (more than \$4014)	89	25
Preference of chatbots across sectors		
Banking and financial services	135	38
Food aggregator (ordering and delivery)	220	62
Online grocery	149	42
Telecom services	124	35
E-commerce	170	48

The result indicates that the highest total variance value explained for a single factor is 37.24%, which is less than the recommended (50%) (Podsakoff et al., 2012). Therefore, the data did not find any issue related to CMB. Further, we used the marker-variable technique in confirmatory factor analysis to ensure that the data was free from CMB. The findings demonstrate that the collected data does not have a CMB problem.

Table 4. Service Dimensions and Items.

Service Dimensions	Items
Tangibles	I was able to access chatbots from my laptop, phone and other devices easily The chatbot was visually appealing The chatbots had a simple layout and were easy to use
Responsiveness	Chatbots have been prompt in resolving my queries Chatbots let me know the time within which my query will be resolved I was put in touch with a human when the chatbot was not able to resolve my query
Assurance	I feel I can trust chatbots Responses by chatbots instil confidence in me I feel assured with the responses given by chatbots
Efficiency	The entire query resolution process using a chatbot was quick Chatbots resolve my query in minimum number of steps Chatbots are able to give the right response within limited time
Privacy	I feel that my information is safe when interacting with chatbots Chatbots protect my information and past data Chatbots do not share my personal information with other sites/ entities
Customer satisfaction	I am pleased with the services offered by chatbots I am satisfied with the services offered by chatbots

CFA was used to evaluate the following six latent dimensions: tangibles, assurance, responsiveness, efficiency, privacy and customer satisfaction. Each of these latent constructs was measured by their respective observed variables. The overall fit of the model was improved by dropping one item from responsiveness. The item was dropped after studying the factor loading, which was below 0.4 (Hair et al., 2012). After the item was deleted, the new measurement model had 16 items. The final CFA model was found to be acceptable. Details of the various indices are as follows: $\chi^2/df = 1.59$ $\chi^2/df \leq 2.0$ considered acceptable; CFI = 0.955, CFI > 0.95 considered good; GFI = 0.901; GFI > 0.90 considered good; TLI = 0.94 TLI > 0.90 good, NFI = 0.891; NFI > 0.90 considered good; RMSEA = 0.062; and RMSEA ≤ 0.08 considered good. The measurement model was assessed for convergent validity by examining the factor loading, average variance extracted (AVE) and composite reliability (C.R.). Internal reliability was measured using Cronbach's alpha. Table 5 provides details of the reliability and validity measures. Discriminant validity was tested using AVE analysis (Table 6). The value of AVE for each construct should be at least 0.50 and much larger than the correlation of a specific construct with other constructs (Fornell & Larcker, 1981).

Table 5. Reliability and Validity Measures.

Measure	Composite Reliability	Average Variance Extracted	Cronbach's Alpha
Tangibles	0.67	0.41	0.67
Assurance	0.86	0.68	0.86
Responsiveness	0.66	0.51	0.62
Efficiency	0.82	0.60	0.81
Privacy	0.88	0.70	0.88
Customer satisfaction	0.85	0.73	0.85

Source: Hair et al. (2012).

Note: Composite reliability > 0.7, AVE > 0.5 and internal reliability > 0.6 .

Table 6. Average Variance Extracted Analysis.

	Tangibles	Assurance	Responsiveness	Efficiency	Privacy	Customer Satisfaction
Tan	0.44					
Assur	0.38**	0.68				
Resp	0.28**	0.50**	0.51			
Eff	0.39**	0.52**	0.44**	0.60		
Pri	0.31**	0.41**	0.26**	0.36**	0.7	
CS	0.40**	0.51**	0.41**	0.31**	0.30**	0.73

Note: The numbers in bold in the diagonal is the square root of the average variance extracted of each construct.

**Significant at 5% level of significance.

In case AVE is less than 0.5 but C.R. is higher than 0.6, the convergent validity of the construct is still adequate (Fornell & Larcker, 1981). Hence, while the AVE for Tangibles was 0.41, the C.R. was 0.67, indicating that the convergent validity of the construct is adequate.

The final CFA model was then modelled using Structural Equation Modelling. Figure 2 shows the final model with the exogenous constructs tangibles, assurance, responsiveness, efficiency and privacy, while the endogenous construct was customer satisfaction.

Structural Equation Modelling was used to test the hypotheses. The results are given in Tables 7 and 8. Regarding H_1 , the results show that assurance (competence, knowledge) positively affects customer satisfaction with chatbots. (Std $\beta = 0.44$, $p < .001$). Tangibles (colours, visual appearance) have a positive effect on customer satisfaction with chatbots (Std $\beta = 0.23$, $p < .05$). Thus, H_2 is accepted. Efficiency (speed of query resolution) has a significant positive effect on customer satisfaction (Std $\beta = 0.37$, $p < .001$). Thus, H_4 is accepted. Responsiveness (understanding and prompt) does not significantly affect customer satisfaction with chatbots (Std $\beta = 0.11$, p value = .748). Thus, H_3 is rejected. Privacy (secure and confidential interaction) does not significantly affect customer satisfaction with chatbots (Std $\beta = 0.07$, p value = .355). Thus, H_5 is rejected.

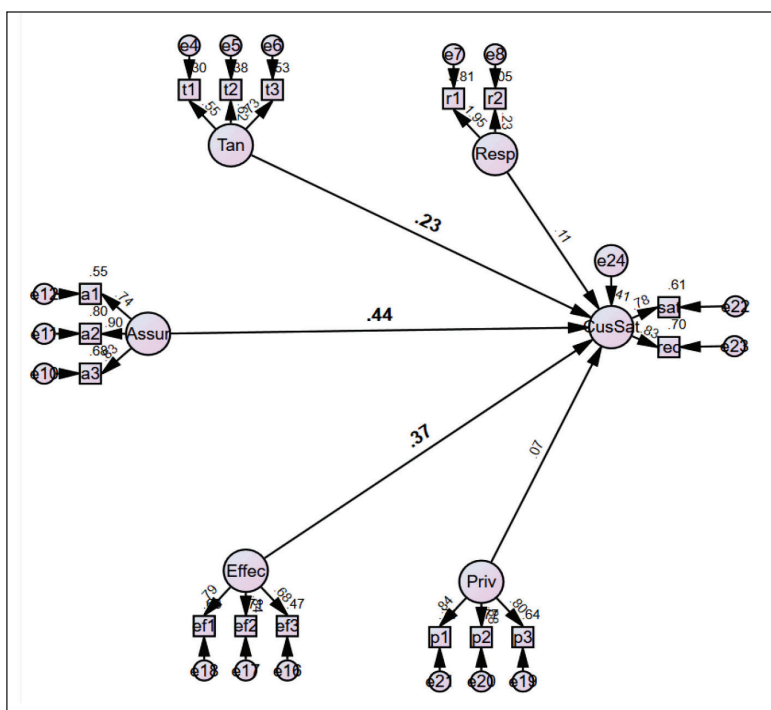


Figure 2. Structural Equation Modelling.

H_1 , H_2 and H_4 were supported, while H_3 and H_5 were not supported (see Figure 2, Tables 7 and 8).

Thus, the research revealed that assurance, efficiency and tangibles were the factors that significantly impacted customer satisfaction with chatbots. Responsiveness and privacy, which were hypothesised as significant drivers of customer satisfaction, were insignificant predictors. We explain each service dimension in the following section.

Performance of Key Service Dimensions

To understand the performance of the service dimensions (tangibles, assurance and efficiency) with respect to overall customer satisfaction, the mean scores of the responses were evaluated (see Table 9). The mean scores indicated that customer perception about SERVQUAL dimensions in chatbot services were favourable for Tangibles. Participants rated Chatbots on tangibles as a service dimension favourably with a mean score of 3.80 (80% of the customers found chatbots had a simple layout and were easy to use). Efficiency was rated moderately with a mean score of 3.37, while assurance was rated negative and found significant (mean score of 2.95). Of the insignificant factors, responsiveness

Table 7. Regression Weights.

Measure	Estimate	SE	CR	p
CusSat $\leftarrow$ Resp	0.033	0.103	0.321	.748
CusSat $\leftarrow$ Tan	0.332	0.143	2.323	.020
CusSat $\leftarrow$ Assur	0.316	0.065	4.858	***
CusSat $\leftarrow$ Effec	0.336	0.084	3.973	***
CusSat $\leftarrow$ Priv	0.056	0.061	0.925	.355

Note: ***Significant at 1% level of significance.

Table 8. Standardised Regression Weights.

Measure	Estimate
CusSat $\leftarrow$ Resp	0.107
CusSat $\leftarrow$ Tan	0.231
CusSat $\leftarrow$ Assur	0.444
CusSat $\leftarrow$ Effec	0.375
CusSat $\leftarrow$ Priv	0.074

was rated moderately (mean score = 3.43), while privacy was rated average (mean score = 3.01) (satisfaction measure on 5-point scale, 5 = Very Satisfied). Tangibles performed above average, responsiveness and efficiency had an average performance, while the least performing dimensions were assurance and privacy (see Table 7). Customer satisfaction with chatbot services received an average score of 3.37, indicating that customers did not have a favourable opinion of chatbots.

Assurance, Efficiency and Tangibles were found to be ‘must-have’ features in customer-chatbot interactions to increase satisfaction levels. Responsiveness and privacy were favourable features but did not impact customer satisfaction. Most chatbots have a well-defined user interface, and hence tangibles as a service dimension are no longer a differentiator. On the other hand, customers expect the correct responses to their queries in fewer steps and less response time. This is where chatbots across sectors differed on customer satisfaction.

Discussion

The results on assurance, efficiency and tangibles are on expected lines. However, the results on responsiveness and privacy are somewhat counter-intuitive. The ease of availability of people-powered services in India may help in explaining why responsiveness is given low priority. Data privacy in the legislative context is still in the nascent stages in India. Personal data protection has still not been legislated, nor do the Indian users report high levels of awareness as far as data protection is concerned. The lack of legal framework and lack of awareness at the individual level could explain the results of this study which finds privacy and security insignificant factors.

Table 9. Performance of Chatbots.

Dimensions	Mean Score (5 = Very Satisfied)	Dependent variable: Customer Satisfaction $R^2 = 41\%$
Customer satisfaction	3.37	
Tangibles	3.80	Significant
Assurance	2.95	Significant
Efficiency	3.37	Significant
Responsiveness	3.43	Insignificant
Privacy	3.01	Insignificant

Building robust interactive response systems through extensive machine learning is a critical part of assurance. Our results align with the literature, which states that assurance positively impacts customer satisfaction with chatbots (Li et al., 2021; Trivedi, 2019). Confirming the literature by Wang et al. (2006) finds that when service agents are perceived as credible, impartial experts, users trust chatbots, leading to greater assurance. Similarly, accuracy, credibility and competence enhance customer satisfaction in luxury brands (Chung et al., 2018). However, the low mean score indicates that chatbots were lacking in delivering the correct responses to queries and requests (refer to Table 9). Our study finds that the absence of assurance caused customer dissatisfaction.

Efficiency was the second most crucial antecedent that significantly affected customer satisfaction. In the context of chatbots, consumers expect chatbots to respond with the correct response in a minimum number of steps (Meyer-Waarden et al., 2020). However, mean scores indicate that respondents were not fully satisfied with the efficiency of chatbots (refer to Table 9). Our discussion with respondents revealed that chatbots were efficient on food delivery sites for queries related to the status of an order and the time taken for delivery. In contrast, banking sites reported a good performance on queries regarding account statements and address updates. (summary of discussions reported in Table 1). However, chatbots took respondents on an endless loop on travel sites for basic queries like flight schedules resulting in frustration and preference for human agents. The loss of time by switching from one service channel to another resulted in dissatisfaction and lower usage of chatbots over time.

Tangibles significantly impacted customer satisfaction, and customers were quite satisfied with this dimension (details in Table 9). Our study supports existing research, whereby a tangible, physical environment generates favourable customer evaluation (Wakefield & Blodgett, 1999). However, with the rapid proliferation of chatbots, the appeal of tangibles and aesthetics on product usability is strong only in the short term, either before or during the early stage of adoption of a product, and it quickly vanishes once users have become acquainted with a product (Minge & Thüning, 2018)

Users expect chatbots to respond with accurate and timely information for queries, complaints and requests. Tangibles have performed well, possibly because of the rapid digitalisation and better understanding of customer

requirements, enabling service providers to give better user interface and customer experience. Service providers need to design responsive, interactive and efficient systems while maintaining visual appeal. The lack of awareness of security issues creates the need for the service provider to provide security features on the chatbots proactively. Chopra and Ranjani (2020) recommend using cyber security tips and pointers to be built into the application itself. Customer protection cannot be left to regulatory compliance but must be integrated into the product itself.

Implications

The study has theoretical contributions and practical implications for academia, businesses and chatbot vendors.

Theoretical Implications

On a theoretical level, our study offers two main contributions. First, we have integrated two well-established theories, SERVQUAL and E-S-QUAL that would allow businesses to identify critical service dimensions that impact customer satisfaction. Most studies that focus on SERVQUAL in the online environment context such as the CiteQUAL (Yoo & Donthu, 2001), the WEBQUAL 1.0 to WEBQUAL 4.0 (Barnes & Vidgen, 2001, 2002), the eTailQ (Wolfinbarger & Gilly, 2003), the 11 dimensions of the SERVQUAL of online shopping proposed by Zeithaml et al. (2005), the four dimensions proposed by Cox and Dale (2001) and the dimension summarisation in review work (Madu & Madu, 2002) capture the views of online buyers while ignoring other perspectives such as information searchers. Our framework has an integrated perspective of measuring the impact of SERVQUAL on customer satisfaction with chatbots of both online buyers and information seekers.

Next, our study focuses on customer satisfaction with chatbot in the South Asian context. Home to 25% of the total world population (United Nations, 2021), South Asia has access to good quality and skilled workforce at a low cost. Several services are rendered exclusively by humans, and it is common to see AI services deployed along with humans rather than as stand-alone services. Therefore, our study underlines the need for a differentiated chatbot.

Practical Implications

Chatbot developers focus on bettering the conversational abilities of the bots to make them sound more natural, human-like and empathetic. Customers who interact with chatbots do not expect human-like conversations or empathy from them (Lei et al., 2021). Soderlund (2021) explains this phenomenon as 'deception'. Yu and Sangiorgi (2018) suggest that a holistic understanding of

user experiences in designing chatbots would result in wide adoption, while Dietvorst et al. (2015) propose that trust will lead to broader adoption. Our results help explain the role of *assurance*, *efficiency* and *tangibles* in the broader adoption of chatbots. Focusing on *efficiency* will build *assurance* critical for the wider adoption of chatbots. *Assurance*, which represents the trust and confidence of customers, can only be built over consistent and seamless interaction.

The respondents of this study have placed a high value on the efficiency dimension, which implies that users have made extensive use of chatbots for non-critical service contexts. We see the potential for AI chatbots to be deployed in educational institutions, government services and other organisations (where service requests are routine and repetitive) to automate the query resolution process and reduce the load on their respective contact centres. Digital banking led by mobile payment services is gaining traction in the Indian banking ecosystem (Kar, 2020). In the banking sector, for example, successful resolution of basic requests will instantly lead to customer satisfaction, which, in turn, will create a willingness to use chatbots for future service requests. As a growing base of millennials enters the workforce, many seek information to plan their future better (Barbić et al., 2019). Integrating AI chatbots with wealth advisory services would help drive cross-selling of various financial instruments among young consumers through the digital medium. Healthcare systems have undergone a transformational change aided by AI chatbots for digital health (Wamba & Queiroz, 2021). As interactions with chatbots become more frequent, data generated through these interactions will enable highly personalised conversations in the future. Recommendation functions using sophisticated AI technology can be incorporated into chatbots once customers develop a high level of trust towards the brand and show an inclination towards adopting the personalised services offered by these chatbots.

Organisations adopting AI chatbots face the dilemma of finding an optimal balance between the familiar human touch and technology's desired speed and efficiency (Solnet et al., 2019). Due consideration should be taken regarding the nature of the service task, service offering and service process before using AI to engage with customers (Huang & Rust, 2021).

Limitations and Directions for Future Research

First, the study was restricted to urban customers. Second, the study has only examined the perception of the users of chatbots. Third, the study was conducted in India and maybe more reflective of the South Asian subcontinent. The implications, therefore, may be more applicable to emerging economies. Fourth, the study has not been done sector-wise but at an aggregated level. Fifth, the study has not identified chatbot used for critical and non-critical sectors. Sixth, our study used a cross-sectional survey, which cannot be relied upon to provide causal evidence.

Studies comparing the differences between rural and urban consumers would provide valuable insights to chatbot vendors. Second, follow-up studies from the perspective of key stakeholders in different business sectors will facilitate chatbot developers and vendors to bridge the gap between business outcomes and customers' expectations. Certain innovative features, like voice ordering, are now being incorporated into chatbots in developed countries. Understanding the impact of such functionalities across the value chain can create a road map for critical stakeholders keen on regularising the use of interactive chatbot technologies. Third, given that developed countries are reporting the deployment of sophisticated chatbots, it may be worthwhile to conduct a comparative cross-national study to understand the low usage of chatbots better. Fourth, sector-specific studies on understanding customer satisfaction with chatbots would provide more nuanced implications for businesses. Next, examining the differences in expectations regarding chatbot services between critical and non-critical sectors would offer significant insights. Last, experimental methods (Crolie et al., 2022; Mozafari et al., 2020) may provide causal evidence for the impact of various dimensions on customer satisfaction with chatbots.

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Inter-linkage between FDI Outflow and Manufacturing Sector Growth in India: Role of Price and Other Selected Economic Factors

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Abstract

The manufacturing sector in India has increasingly grown over the period of last 20 years. Various factors like interest rate, inflation, government interventions, technology and finance affect the growth of a sector; but this article focuses on foreign direct investment outflow (FDI outflow), consumer price index (CPI) and real effective exchange rate (REER) to assess the impact of these factors on the growth of manufacturing sector of India in particular. This study employs a cointegration model and vector error correction model to analyse the impact and also the Granger causality test to determine causality between them over a time period of 20 years, which is from 2000 to 2019. The results indicate second-order cointegration and no short-run relationship among the variables, whereas there is existence of a long-run relationship. The findings of the article affirm the idea that FDI outflow has the potential to contribute to the growth of the manufacturing sector in India. Also, through proper management of REER and control of CPI, the impact of FDI outflow on the manufacturing sector growth can further be augmented.

Keywords

Foreign direct investment, consumer price index, manufacturing sector, growth, real effective exchange rate, cointegration, vector error correction model

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Introduction

The manufacturing sector has been a core sector for the growth of any economy. Indian government has been relaxing and introducing policies like ‘Make in India’ to channelise investments into the country to make it one of the fastest growing sectors of the Indian economy. The government back in 1990s knew in order to attain the peak of growth, there is a need to induce investments from abroad due to which the reforms in economy were made through liberalisation, privatisation and globalisation with a larger aim to erode poverty and create more employment opportunities for citizens by expanding the economy, especially manufacturing sector.

Recently, the government has eased the rules of foreign exchange management act and the measures like PM Gati Shakti have been taken to increase investments in India. The government even approved production linked incentive (PLI) scheme for auto industry and drone industry to boost manufacturing sector capacity. In only the first half of FY 2021, India received foreign direct investment (FDI) investments of US\$ 30 billion, which is 15% more than the previous year in the same period.¹ Although the service sector receives the maximum investments followed by the automobile sector, the government is promoting FDI in the manufacturing sector to emerge as a global manufacturing hub.

As seen in Figure 1, the manufacturing sector has witnessed a continuous growth since 2000 except in 2012–2014. According to the Department for Promotion of Industry and Internal Trade, FDI equity inflow in India stood at US\$ 572.81 billion between April 2000 and December 2021, indicating that the government’s efforts to improve ease of doing business and relaxing FDI norms have yielded results. However, India’s outward FDI has also increased since liberalisation, and the country is heavily investing in developing countries of the south to promote south–south cooperation. As per the Ministry of Economic Affairs, GOI; countries such as Singapore, Netherlands and USA receive maximum investments from India.

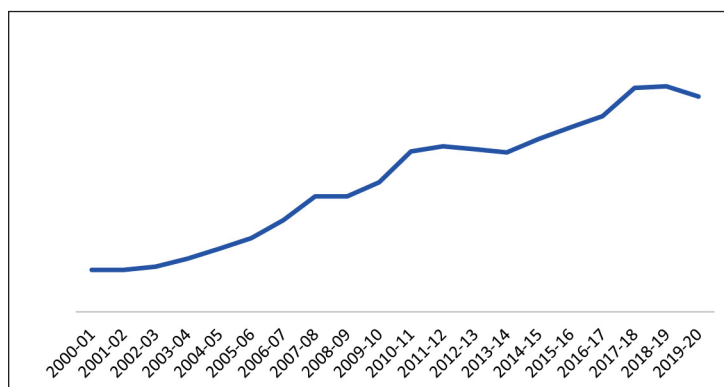


Figure 1. Trend of Growth in Manufacturing Sector from 2000–2020 in Million USD.

Source: World Bank.

Several of the studies such as Bano and Tabbada (2015), Devajit (2012) and Srikanth and Kishore (2012) have been conducted in the past that look at the impact of inflow of FDI. However, the focus of study is now increasingly shifting to finding the determinants and impact of outflow of FDI on economy of the host nation through quantitative analysis. Studies such as Imbriani et al. (2011), Nayyar and Mukherjee (2020) and Thomas and Narayanan (2017) have significantly contributed to this matter of study using panel data, difference in difference estimator, etc. However, their concern largely remains on finding the determinants of outward FDI and the relation between exports and outward FDI. Also, the studies conducted in the past have looked at a few specific developed and developing economies. It is in this context that there is a need to further expand the area and scope of the study; hence, this study is undertaken to focus on the impact of outward FDI on the manufacturing sector of the Indian economy, which is relevant and necessary due to the shift in the government policies to build India as a manufacturing hub.

Investments across the nations is one among many reasons which affect the growth of this sector. Among different factors, the exchange rate also affects the growth of this sector by influencing the trade patterns among nations. Consumer price index (CPI) as a proxy of cost/ inflationary conditions in the markets to which most of India's exports are directed also affects the growth of a nation.

FDI, real effective exchange rate (REER) and CPI are three significant parameters that serve as a vehicle for economic development and this research paper will empirically explore the influence of these parameters on the growth of the manufacturing sector in the case of the Indian economy.

The organisation of the study is as follows. The first section introduces the subject and the importance of the variables for the larger economic development and the second section introduces the literature review. The third section introduces the objectives and research questions of the study. The fourth section introduces the methodology adopted to conduct the research, the fifth section will discuss the analysis and its results, followed by the conclusion.

Literature Review

World today is characterised by global interconnectedness and dependence. Globalisation has brought together national and regional economies under one global economy, which has further opened prospects for growth and dynamic development (Surugiu & Surugiu, 2015). To realise this potential, governments around the world have deregulated trade and financial markets, which has resulted in extensive flows of goods and services among countries.

However, due to the growing complexities in the trade relations among the nations, the countries started to invest in other countries apart from importing and exporting. Eaton and Tamura (1994) found that FDI is induced by exports. However, Grosse and Trevino (1996) argue that exports are induced and established by FDI. It is well-proclaimed that foreign investments are crucial to the growth of any economy as they increase production capacity, enhance job opportunities and hence bring growth to the recipient nation (Banga, 2004). Devajit (2012) in his study says that FDI is seen as an important catalyst of

economic growth in India since it induces domestic investment and facilitates the import of technology. Srikanth and Kishore (2012) suggest that Indian policymakers should be encouraged to make policies conducive to attract huge FDI into the country because it increases industrial production. In this regard, emerging nations like India have even reformed their investment policies to attract more stable forms of foreign capital (Nanda et al., 2020). This shows that the general notion that FDI inflows play an important role in the economic growth of recipient country is supported widely.

While there is a significant literature that supports this idea, there is another argument put forth by researchers that even outward FDI allows countries to expand their operations in foreign countries, bring technological know-how and in turn achieve domestic economic growth. Joseph (2019) in his study mentions outward FDI has benefitted the manufacturing sector in India through easy access to natural resources. Sahoo and Bishnoi (2021) in their paper found that in the case of India, domestic investments are positively affected by outward FDI and it confirms its positive effect on economic growth. Bano and Tabbada (2015) found that FDI outflows are positively linked with high gross domestic product (GDP), foreign reserves, domestic savings and even on FDI inflows in the host nations, however, the necessity of each factor is found varying with development. Banga (2008) in her paper, looks at the drivers that induce outward FDI from Asian developing countries and they found that increasing competition by imports in domestic markets and bilateral investment agreements have facilitated the outward investment. Also, it was found that the capability to make outward investments improve with higher investment inflows and rising imports of technology. Costly labour and poor infrastructure have been marked as important domestic drivers of outward FDI from Asian developing countries.

Imbriani et al. (2011) in their paper analyse if outward FDI has any significant impact on job creation and productivity in the donor country and also if the impact of FDI outflow differs among different sectors like manufacturing and services in Italy employing difference-in-difference estimator. The results show that while considering the manufacturing sector, outflow of FDI is seen to have strengthened productivity and job market, however, in the service sector, a negative effect is seen on jobs; but only after 2 years of investment. Particularly, in Indian context, Pradhan (2017) reveals that outward FDI tends to enlarge market access and further contributes to technological upgrading through the acquisition of strategic assets or overseas research and development (R&D). On the flip side, Tolentino (2010) in his paper suggest the level of outward FDI do not Granger cause home country-specific macroeconomic factors neither in China nor India.

Several others like Thomas and Narayanan (2017) in their paper find the determinants of outward FDI with reference to Indian manufacturing firms using dynamic random-effects models and the results showed a significant impact of exports–imports of technology, R&D intensity on the outward FDI of firms. It also revealed a complementary relationship between outward FDI (OFDI) and exports by Indian firms. Yang et al. (2013) in their paper use panel data to investigate the impact of OFDI on the technical efficiency of the OFDI firms, and the study suggests a positive relation between them. Likewise, Nayyar and

Mukherjee (2020) suggest the government should increase its efforts on sharing of knowledge and technology to induce the flow of FDI. The paper indicated the existence of long-run relationship among the explanatory variable, that is, FDI and dependent variable, that is, macroeconomic policies in the host nation. Contrarily, Bhasin and Kapoor (2019) in their paper say that FDI outflow negatively impacts the exports in the donor country, and also there is no long-run relationship among the variables.

The impact of outward FDI is perhaps also influenced by the type of economy investment is made into and in this regard, study by Liu et al. (2015) explores how the outward FDI by manufacturing firms in Taiwan affects their job market, domestic productivity, and it was found that outward FDI from Taiwan to high-wage countries has a positive impact on these variables, that is, productivity and employment generation.

Substantial studies have been carried out specifically to find out the possible determinants of growth. Majority of the studies concluded that possible determinants of growth are FDI, market size, trade openness, exchange rate, CPI, etc., and the influence of exchange rate on growth has increased post-deregulation of the economy. Drawing from history, competitive and stable exchange rates are taken as crucial indicators for industrialisation. Koirala (2018) in his paper examines if REER has any impact on growth in Nepal. The Engle-Granger cointegration test and error correction model have been employed in the study using independent variables such as REER, money supply, trade, and capital formation and dependent variable is the GDP of Nepal. The results of the study reveal that there is a positive and significant relationship among the variables.

Vorlak et al. (2019) in their research paper examine the impact of exchange rate on the growth of Cambodia which is measured through GDP. The study used somewhat similar explanatory variables such as exchange rate, money supply, trade, inflation and FDI. Using ordinary least squares regression model, it was found that except trade openness all other factors have a positive correlation with GDP. Likewise, there is a study conducted by Kogid et al. (2012), which attempts to examine the impact of the exchange rate on growth in Malaysia using time series. Through the auto-regressive distributed lag (ARDL) test, it is suggested that there exists long-run cointegration between exchange rate and economic growth. Meanwhile, Korkmaz (2013) in her paper found that foreign exchange is perhaps also impacted by political factors besides economic factors like inflation or unemployment.

Another major determinant of growth is CPI, which measures the average price changes in goods and services purchased by consumers over a period. It is generally denoted as a proxy of inflation and to general understanding, we know that a high level of inflation negatively affects the GDP of a country. Aboobucker and Jahufer (2018) in their paper look at the impact of CPI and gross domestic savings on the GDP of Sri Lanka and their results show that there exists a long-run causality significantly from economic growth to CPI. Also, Gumbe and Kaseke (2009) in their paper found that CPI negatively impacts productivity and job opportunities and in turn negatively affects the manufacturing output.

Through the literature considered, it is clear that the impact of FDI on the economy is a major area of discussion and study. However, in view of the uncertainty and the contrasting opinions about role and impact of FDI, this present study is undertaken with the aim to contribute to the mainstream literature by investigating the impact of FDI outflow and other necessary/controlling factors in the case of India. Also, as seen the economic landscape is changing significantly, hence, there emerges a need to re-examine these relationships in the case of emerging economies (Sahoo & Bishnoi, 2021). Thereby, this study tries to look at the relationship between outward FDI and the growth of the manufacturing sector in particular and to explain this relationship, three sets of explanatory factors are considered as follows: (1) FDI outflow; (2) exchange rate and (3) CPI.

In the following section, research questions and hypothesis are framed and the methodology adopted to carry the analysis is illustrated.

Objective and Research Questions

The general objective of this study is to find out the relationship between manufacturing sector growth and the different identified macroeconomic variables, while the specific objectives are as follows:

1. To identify and measure the impact of FDI outflow on manufacturing sector growth.
2. To identify and measure the impact of CPI on manufacturing sector growth.
3. To identify and measure the impact of REER on manufacturing sector growth.

Framing Hypothesis

H_1 : Value added of the manufacturing sector is positively affected by FDI outflow.

H_2 : CPI will negatively influence the manufacturing sector's value added.

H_3 : REER will have a positive influence on the value added of the manufacturing sector.

Methodology

The article analysed the time series data of India for the period 2000–2019 to measure the impact of FDI Outflow on the growth of the manufacturing sector. The article has also identified the impact of other controlled variables on the value added of the manufacturing sector through the literature review and the analysis, that is, REER and CPI. The efficiency of the model is checked through the normality of the variables and stationarity test of the time series data. Then, the cointegration test is applied to observe the existence of either a short-run or long-run relationship in the time series variables. After conducted cointegration test only, decision is made on using the vector error correction model (VECM) model.

Last but not least, the Granger causality test is performed to examine the causality of the variables used in this article.

To examine how net FDI outflows, REER, CPI from the years 2000–2020 affect the value added to the manufacturing sector in India, the model below is used:

$$GVA_t = \alpha_0 + \alpha_1 FDI_{t-1} + \alpha_2 REER_{t-1} + \alpha_3 CPI_{t-1}$$

where GVA: gross value added to the manufacturing sector

FDI: foreign direct investment outflows

REER: real effective exchange rate

CPI: consumer price index

However, if there is non-stationarity/unit root presence and also cointegration in the variables of our model, then we will take the course to usage of VECM in order to capture the long-run relationship between variables. The model then used will be as follows:

$$\Delta GVA_t = \alpha_0 + \alpha_1 \Delta FDI_{t-1} + \alpha_2 \Delta REER_{t-1} + \alpha_3 \Delta CPI_{t-1} + \beta ECT_{t-1}$$

Data Source

The data are collected for the period 2000–2019. The data for CPI² and REER at 36 currency index have been taken from the RBI Bulletin.³ Overall FDI outflow data are taken from UNCTAD Stat, whereas value added of the manufacturing sector, that is, GVA at current prices has been retrieved from World Bank. The relevant data is collated in Appendix.

Key Analysis and Results

Performing Some Diagnostic Tests

Normality Test

Prior, the efficiency of the model is checked through the normality of the variables, stationarity test or unit root test, autocorrelation and multicollinearity of the time series data. Jarque–Bera test is used to see the normality of the variables. The summary statistic of the same is mentioned in Table 1.

Stationarity Test

Since it is time series data, there is a need to check stationarity of the series using the unit root test. The augmented Dickey–Fuller test is used to see the stationarity

Table 1. Jarque–Bera Test Results.

Variable	PValue	Result
GVA	.765	Normally distributed
FDI outflow	.508	Normally distributed
CPI	.164	Normally distributed
REER	.392	Normally distributed

Table 2. P Value Estimates for Level and First Difference.

Variable	PValue (Level)	PValue (1st Difference)
gva	.87	.0189
fdi	.33	.0002
cpi	.53	.0003
reer	.72	.0000

Table 3. Selection Order Criterion.

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-725.646				4.8e+34	91.2058	91.2157	91.399
1	-686.488	78.317	16	.000	2.9e+33	88.311	88.3604	89.2767
2	-667.824	37.328*	16	.002	3.4e+33	87.978	88.067	89.7163
3	—	—	16	—	-2.3e+17*	—	—	—
4	1252.6	—	16	—	—	-148.575*	-148.416*	-145.484*

of the variables in the model knowing the usage of non-stationary variables can lead to spurious and non-reliable results. Using Stata, Mackinnon approximate p value for level and first difference equation is presented in Table 2.

Since all the variables or the entire series are non-stationary at level and as the trend of the series is stochastic, therefore differencing helps remove the problem of non-stationarity. So, I adopt the same process to run the augmented Dickey-Fuller (ADF) test at first difference with trend. As seen through the table, the p value of GVA, FDI, REER and CPI are stationary at first difference form by rejecting the null hypothesis at 5% significant level. Based on ADF test results, it can be concluded that all variables in the model have reached stationarity in first difference instead of level form. It also implies that the whole series have integrated of order one [I (1)]. Therefore, cointegration test analysis is applicable for further approach. Before checking for cointegration, it is necessary to find the optimal lag for our model and also perform the causality test.

Optimal Lag Selection

Table 3 provides the summary statistics of the lag selection order criterion using 'Varsoc' command in Stata.

The optimal lag is determined by the Akaike Information Criteria since the sample size of the data is small, that is, just 20 observations. From Table 3, the least value obtained is -148.57. Thus, the optimal lag that can be used for our model is 4.

Granger Causality Test

Granger causality test is used to test for short-run relationship and for that matter, the series have been converted to make it trend stationary. The results of the Wald test are presented in Table 4.

It is evident that fdi, cpi and reer Granger cause gva and also reer granger causes fdi. There is unidirectional causality from the independent variables to the dependent variables chosen in the model. In other words, the Wald test supports

Table 4. Granger Wald Test.

Equation	Excluded	Chi ²	df	Prob > Chi ²
gva	fdi	5.3e+26	4	.000
gva	cpi	4.3e+26	4	.000
gva	reer	6.6e+26	4	.000
gva	ALL	2.4e+27	12	.000
fdi	gva	—	0	—
fdi	cpi	—	0	—
fdi	reer	5.7e+23	1	.000
fdi	ALL	5.7e+23	1	.000
cpi	gva	—	0	—
cpi	fdi	—	0	—
cpi	reer	—	0	—
cpi	ALL	—	0	—
reer	gva	—	0	—
reer	fdi	—	0	—
reer	cpi	—	0	—
reer	ALL	—	0	—

the model chosen in this article. Hence, FDI outflow, CPI and REER are all imperative for manufacturing sector growth in our country.

Cointegration Test

At max rank 0:

The trace statistic is 90.72 and 5% critical value is 29.68 (as indicated in Table 5). Now, since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 48.79 and 5% critical value is 20.97. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is cointegration in the model.

At max rank 1:

The trace statistic is 41.93 and 5% critical value is 15.41. Now since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 38.04 and 5% critical value is 14.07. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is a cointegration of Equation 1 in the model.

Table 5. Results of Johansen's Test for Cointegration.

Maximum Rank	Parms	LL	Eigenvalue	Trace Statistic	5% Critical Value
0	30	−283.22382	—	90.72	29.68
1	35	−258.82778	.95262	41.93	15.41
2	38	−239.80373	.90726	3.88	3.76
3	39	−237.86275	.2154	—	—

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1	35	−258.82778	.95262	38.04	14.07
2	38	−239.80373	.90726	3.88	3.76
3	39	−237.86275	.2154	—	—

Table 6. Results of Vector Error Correction Model.

Beta	Coef.	SE	z	$p > z $	{95% Conf.	Interval}
_cel						
Gva	1	—	—	—	—	—
fdi	−1.86e + 07	510331.1	−36.37	.000	−1.96e + 07	−1.76e + 07
cpi	2.028065	1.53e + 07	.00	1.000	−3.00e + 07	3.00e + 07
reer	−1.17e + 10	2.26e + 08	−51.75	.000	−1.21e + 10	−1.12e + 10
_cons	1.05e + 12	—	—	—	—	—

Note: Johansen's normalization restriction imposed.

At max rank 2:

The trace statistic is 3.88 and 5% critical value is 3.76. Now since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 3.88 and 5% critical value is 3.76. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is cointegration of Equation 2 in the model.

Now, since there is cointegration in the model, we will now proceed estimating the long-run behaviour of the model using VECM.

Vector Error Correction Model

The *long-run behaviour* between the dependent variable and independent variables:

1. The value of the dependent variable GVA is 1.05e + 12 (as indicated in Table 6), that is, intercept, when the level of FDI, REER and CPI is equal to zero.
2. The value of independent/controlled variable FDI is −1.86e + 07, which implies that the level of value added to the manufacturing sector increases

- by 1.86% on average for every 1 percentage change in the level of FDI, *ceteris paribus*.
3. The value of the independent variable REER is $-1.17e + 10$, which implied that the level of value added to the manufacturing sector increases by 1.17% on average for each 1 index point change in the level of REER, *ceteris paribus*.
 4. The value of the estimate of CPI is 2.028, which implied that the level of value added to the manufacturing sector decreases by 2.028% on average for each 1 index point change in the level of CPI, *ceteris paribus*.

Putting together, fdi and reer has a positive impact on gva, whereas cpi has a negative effect on gva. The coefficients, that is, fdi and reer are statistically significant at 1% level referring the *p* value, whereas cpi is not. Concluding, it can be said that all the independent variables have an asymmetric effect on the gva, that is, the dependent variable in the long run, on average, *ceteris paribus*.

Error Correction	D_gva	D_fdi	D_cpi	D_reer
Coint. eq.1	-1.57	-1.63e-06	5.01e-08	4.38e-10
standard error	3.56	3.32e-07	2.40e-08	6.17e-10
<i>p</i> value	(.65)	(.00)	(.03)	(.478)
gva (L1)	-1.64	-2.56e-06	8.16e-08	7.83e-10
standard error	5.62	5.23e-07	3.79e-08	9.74e-10
<i>p</i> value	(.77)	(.00)	(.03)	(.42)
fdi (L1)	-1.30e+07	-9.748194	.3036817	.0016515
standard error	2.35e+07	2.183531	.158108	.0040639
<i>p</i> value	(.57)	(.00)	(.05)	(.68)
cpi (L1)	2.53e+08	393.4781	-11.8227	-.1392997
standard error	7.92e+08	73.68212	5.335273	.1371355
<i>p</i> value	(.74)	(.00)	(.02)	(.31)
reer (L1)	-5.05e+09	-3760.925	93.5598	-.038891
standard error	7.40e+09	688.717	49.86953	1.281824
<i>p</i> value	(.49)	(.00)	(.06)	(.97)

Note: The values here are represented only till lag 1 since the values at further lags were found insignificant.

The negative error correction term in gva and fdi equations is good since it shows convergence to the long-run equilibrium. Hence, there is long-run causality in gva and fdi equations, among which fdi is statistically significant at 1% level.

The *short-run behaviour* between the dependent variable and independent variables:

In the short run, gva, cpi and reer are seen to have a significant effect on fdi at 1% level. Fdi and gva also have a significant effect on cpi at 5% level whereas reer have a significant impact on cpi at 10% level. However, there is no causality from fdi, reer and cpi to gva in short run. Concluding, we cannot infer strong causality from independent to dependent variables in the short run.

Conclusion

The study has explored the inter linkage between FDI outflow and manufacturing sector growth in India and measured the role of selected economic factors such as CPI and REER. The empirical analysis is based on the long-term cointegration model using the last two decades data (2000–2019). The study finds out that FDI outflow has direct significant effect on manufacturing sector growth in India. Moreover, the analysis also revealed that the price level and foreign exchange influence the relationship between FDI outflow and growth of the manufacturing sector. While CPI has an adverse impact on manufacturing sector growth, REER has a positive influence on the relation.

Despite theoretical evidence of bidirectional relationship between the factors, this study only confirms (through Granger causality) uni-directional relationship for the period 2000–2019. However, the results are largely in line with the literature. The positive impact of outward FDI on domestic growth of the manufacturing sector in India can be explained through the supply of important raw materials at affordable costs. This also ensures reliable supply of those raw materials for indigenous production. This allows the domestic manufacturing sector to produce goods at affordable cost in India. Owing to the affordability, the demand of goods increases leading to an increase in output and hence overall growth of the investing country. However, FDI outflows also instigate economic growth of investing/source country because investing in other countries allows the domestic firms to expand its operations in the foreign market in turn contributing to domestic growth. The returns on investment in terms of high foreign exchange inflow are also very crucial for the economic growth of a country.

The findings of this article have significant policy implications. To promote economic growth especially growth of the manufacturing sector, FDI outflow may be the alternative tool as the country can decide on it unlike FDI inflow on which there is relatively less control. Investment on FDI outflow can stimulate the growth of the manufacturing sector in the host country through the channels described in the previous paragraph. Moreover, through proper management of REER and control of CPI, the impact of FDI outflow on the manufacturing sector growth can be augmented. As CPI has an inverse relationship, policymakers can choose to reduce it through various policy measures to stimulate manufacturing sector growth. Similarly, REER can be modified through trade policies to influence manufacturing sector growth and, in turn, promote economic growth in the host country.

However, the destination of FDI outflow may have a significant effect but that needs to be confirmed with further analysis. Moreover, the result is not significant for the relation between CPI and manufacturing sector growth, probably due to the change in the methodology of the data collection pre- and post-2012 as referred by the RBI Bulletin.

Appendix

Years	gva	fdi	cpi	reer	gvad (1st diff)	fdid (1st diff)	cpid (1st diff)	reerd (1st diff)
2000	7.50E + 10	514	444	100.09				
2001	7.40E + 10	1,397	463	100.86	-2.95E + 08	883	19	.770004
2002	8.00E + 10	1,678	482	98.18	5.81E + 09	281	19	-2.68
2003	9.50E + 10	1,876	500	99.56	1.46E + 10	198	18	1.379997
2004	1.10E + 11	2,175	520	100	1.75E + 10	299	20	.440002
2005	1.30E + 11	2,985	540	103.1	1.88E + 10	810	20	3.099998
2006	1.60E + 11	14,285	125	101.29	3.17E + 10	11,300	-415	-1.81
2007	2.10E + 11	17,234	133	108.52	4.25E + 10	2,949	8	7.229996
2008	2.00E + 11	21,142	145	97.8	-2.02E + 08	3,908	12	-10.72
2009	2.30E + 11	16,058	163	94.74	2.51E + 10	-5,084	18	-3.06001
2010	2.90E + 11	15,947	180	102.25	5.53E + 10	-111	17	7.510002
2011	2.90E + 11	12,456	195	99.15	8.87E + 09	-3,491	15	-3.1
2012	2.90E + 11	8,486	123.3	105.57	-5.15E + 09	-3,970	-71.7	6.419998
2013	2.80E + 11	1,679	135	103.27	-5.87E + 09	-6,807	11.7	-2.3
2014	3.10E + 11	11,783	118.9	108.96	2.40E + 10	10,104	-16.1	5.690002
2015	3.30E + 11	7,572	124.7	112.07	2.06E + 10	-4,211	5.799995	3.110001
2016	3.50E + 11	5,072	130.3	114.51	2.01E + 10	-2,500	5.600006	2.440002
2017	4.00E + 11	11,141	135	119.71	5.03E + 10	6,069	4.699997	5.199997
2018	4.00E + 11	11,447	139.6	114.01	3.00E + 09	306	4.600006	-5.7
2019	3.80E + 11	13,144	146.3	116.75	-1.86E + 10	1,697	6.699997	2.739998

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Notes

1. <https://www.ibef.org/economy/foreign-direct-investment>
2. Data for CPI are taken for industrial workers till 2012, whereas post-2012, it has been taken as a combined general index for both rural and urban regions owing to the change in the methodology of the data collection and reporting.
3. For symmetrical data analysis, the data for financial years have been used as a proxy for calendar years for the variables CPI and REER (for instance: data for the year 2001–2002 is taken as data for the year 2001) due to the unavailability of data in calendar years for these variables.

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Evolving Trends and Patterns in the Indian Textile Industry: A Critical Evaluation

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Abstract

This perspective seeks to unearth the crucial trends and patterns of manufacturing, employment and exports in the socio-economically critical Indian textile industry. The period of analysis is broadly from 2000–01 to 2015–16, 2017–18 and 2020–21. Using available empirical and literary evidence, the viewpoint tries to elicit the causes, consequences and future policy implications of the study for the sector. All in all, given the stagnant and even declining trends on manufacturing, employment and export fronts, it is suggested that the industry stakeholders ranging from textile firm owners to policymakers adopt suitable and structurally superior digital technologies of production such as Artificial Intelligence, Internet of Things and 3D while also balancing with the prevalent welfarist objectives of employment and equity. The sector is vital for many other sections (such as women) and sectors (such as environment), which makes it all the more imperative to have suitable policies and incentive structures in place that could ensure a high growth and sustainable textile development pattern in the coming future.

Keywords

Indian textile industry, manufacturing, employment, environment, exports, women, digitalisation

Introduction

The Indian textile sector occupies a pre-eminent position within India's socio-economic landscape. It is one of the largest in the world with a huge raw material base and manufacturing strength across the value chain. To support the fact of

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importance of this sector for India, the textile industries contribute 2%–3% to India's gross domestic product (GDP) and accounts for 14%–15% of industrial production, 27% of the foreign exchange inflows and 13%–15% of the export earnings. Also, the sector is a major employment generator and is second only to the agricultural sector in terms of the same. It gives direct employment to 45 million people and most of these employees are women. As per several informed estimates, almost 60%–70% of the total workforce in this sector is accounted for by women, who with their knowledge of the traditional textile craftsmanship and dexterity of hands are more suited for employment in the textile industry. In line with the above argument, it is also to be mentioned that the textile industry, until recent years, has relied heavily upon traditional and labour-intensive production processes. Of late, thanks to the increasing weight attached to quality, the demand for skilled labour too has risen (Kanupriya, 2020a, 2021; Ministry of Textiles, n.d.). This raises the profile of the sector both in terms of its current contributions to the Indian socio-economic landscape as well as its future implications for the country, given its significance for employment, manufacturing, exports and by that very fact, GDP.

It is in this context that this article seeks to expound and critique the evolving trends and patterns within the Indian textile landscape. The primary objective of this perspective piece is, therefore, to elucidate on the dynamism of developments in the areas of textile manufacturing, employment and trade (both exports and imports) using both secondary data-dependent empirical tools as well as existent literature on the subject. Databases of the likes of the Annual Survey of Industries (ASI), National Accounts Statistics (NAS), Trade Map and the World Integrated Trade Solution (WITS) are used for the purpose of analysis in this article.

The article is divided into the following sections. The first section explains the purpose and methodology followed in this article, after giving a brief background to the theme. The second section seeks to illustrate the contributions, trends and patterns of the textile sector towards manufacturing, employment and trade in India using a review of the literature. The third section explores the existing literary evidence within a secondary data analysis framework using available databases. The next section seeks to explain the underlying causes, consequences and lessons drawn from these trends and patterns. The last but one section concludes the study. The final section educes the future policy implications of this analysis. The next segment reviews the existing literature on the significance of the Indian textile sector for the country's economy.

Significance of Textiles for the Indian Economy: A Review of the Literature

The textile industry contributes 2%–3% to India's GDP, 13%–14% to her export earnings, and as much towards her organised manufacturing GDP. Besides, the sector provides employment to an estimated 45–60 million people both directly as well as indirectly. A major proportion of these employees are women and by that

very fact, the sector holds primacy when it comes to its socio-economic pre-eminence in India, second only to agriculture (Kanupriya, 2021, 2022; Ministry of Textiles, n.d.; Oberoi, 2017; Papola, 2012).

There has been an improvement in the Indian textile exports and imports, employment and manufacturing output after the phase-out of the Multi-Fibre Agreement (MFA) framework phase. Thus, the post-2004–05 time period witnessed a non-uniform improvement in the textile industrial conditions. The reasons for this non-uniform improvement and not a secular increase are inadequate support in the form of unfavourable interest rates, untimely industrial packages, inopportune release of export incentives and inverted duty structures on textile inputs. Another reason has been the lack of adequate market access of Indian textile products in the developed country markets on account of India not being a least developed country but an emerging market economy, thereby it not being offered preferential tariff treatment unlike its competitors such as Bangladesh and Vietnam (Kanupriya, 2020b; Oberoi, 2017).

The next segment studies the contributions, trends and patterns of the Indian textile sector towards manufacturing, employment and trade in India using secondary databases.

Contributions of the Indian Textile Industry: Evolving Trends and Patterns

This section details the contributions, trends and patterns of the Indian textile industry towards the country's manufacturing, employment and trade. Table 1 presents the share of textiles in India's manufacturing GDP.

As evident from Table 1, the Indian textile sector contributed 11.69–13.87% towards India's manufacturing GDP between the period 2000–01 and 2015–16 as per the NAS data. It is to be noted that the method of calculating GDP is gross value added (GVA) at constant basic prices, for the base period 2011–12. This is a noteworthy contribution to the manufacturing of the country as almost one-tenth of the manufacturing is accounted for by the textile sector.

Total GVA for each year is calculated by summing up the contributions of agriculture, forestry and fishing; mining and quarrying; manufacturing; electricity, gas, water supply and other utility services; construction; trade, repair, hotels and restaurants; transport, storage, communication and services related to broadcasting; financial services; real estate, ownership of dwelling and professional services; public administration and defence; and other services in line with the value-added method of calculating GDP.

Table 2 presents the share of textiles in total industrial employment of the country.

As evident from Table 2, the textile sector accounts for anywhere between 15.25% and 20.83% of the total industrial employment.¹ This is almost one-fifth of the entire industrial employment in the organised sector, as measured by the ASI data.

Table 1. Share of Textiles in India's Manufacturing GDP.

Year	Textiles and Apparels GVA	Total Manufacturing GVA	Share of Textiles and Apparels in Total Manufacturing GVA (%)
2000–01	743,240.00	6,356,680.00	11.69%
2001–02	731,280.00	6,501,000.00	11.25%
2002–03	783,060.00	6,947,410.00	11.27%
2003–04	769,190.00	7,387,640.00	10.41%
2004–05	816,120.00	7,933,080.00	10.29%
2005–06	950,170.00	8,674,750.00	10.95%
2006–07	1,134,750.00	10,217,800.00	11.11%
2007–08	1,101,470.00	10,931,060.00	10.08%
2008–09	1,246,030.00	11,440,850.00	10.89%
2009–10	1,418,760.00	12,695,640.00	11.18%
2010–11	1,513,210.00	13,672,580.00	11.07%
2011–12	1,532,380.00	14,099,860.00	10.87%
2012–13	1,773,980.00	14,868,730.00	11.93%
2013–14	2,164,110.00	15,607,090.00	13.87%
2014–15	2,164,290.00	16,839,380.00	12.85%
2015–16	2,589,360.00	19,038,500.00	13.60%

Method: Gross value added at constant basic prices, base year 2011–12.

Source: National Accounts Statistics.

Table 2. Share of Textiles in Total Industrial Employment.

Year	Total Direct Employment	Textiles Direct Employment	Share of Textiles Employment in Total Industrial Employment
2000–01	4,882,143	994,683	20.37%
2001–02	4,660,496	915,327	19.64%
2002–03	4,739,339	897,820	18.94%
2003–04	4,591,237	908,135	19.78%
2004–05	4,851,233	950,306	19.59%
2005–06	5,099,750	998,503	19.58%
2006–07	5,516,703	1,149,108	20.83%
2007–08	5,659,750	1,075,035	18.99%
2008–09	5,977,328	1,011,886	16.93%
2009–10	6,153,723	1,004,819	16.33%
2010–11	6,541,222	1,052,353	16.09%
2011–12	6,828,309	1,052,522	15.41%
2012–13	6,608,207	1,030,555	15.60%
2013–14	6,934,221	1,057,405	15.25%
2014–15	6,953,177	1,109,598	15.96%
2015–16	7,177,708	1,121,290	15.62%
2016–17	7,463,498	1,127,894	15.11%
2017–18	7,777,197	1,213,136	15.60%

Source: ASI-based calculations.

Continuing with the description of the employment conditions in the Indian textile sector viz-a-viz the entire Indian economy, Table 3 gives the employment elasticities of textile output as computed from the ASI data and comparable with the entire organised industrial sector.

Table 3 depicts the employment generation potential in the Indian textile sector with regard to all the industries. The computations are done for the period 2000–01 to 2017–18 on the double logarithmic form of direct employment and output for both the textile and the overall organised industrial sectors. This gives the employment elasticities with regard to output in the Indian textile and the overall industrial sectors.

As evident from this table, the employment elasticity of the Indian textile sector is 0.14, viz., for a percentage point increase in textiles output, employment

Table 3. Employment Elasticities in the Organised Sector.

Sector	Employment Elasticity Coefficients
Textiles	0.14
All industries ²	0.22

Source: ASI-based calculations.

Table 4. Employment Coefficients in the Organised Sector.

Year	Employment Coefficients for All Industries (Employment/Output)	Employment Coefficients for the Textile Sector (Employment/Output)
2000–01	0.53	1.42
2001–02	0.48	1.44
2002–03	0.42	1.34
2003–04	0.36	1.25
2004–05	0.29	1.14
2005–06	0.27	1.04
2006–07	0.23	1.07
2007–08	0.20	0.87
2008–09	0.18	0.81
2009–10	0.16	0.70
2010–11	0.14	0.53
2011–12	0.12	0.49
2012–13	0.11	0.45
2013–14	0.11	0.40
2014–15	0.10	0.40
2015–16	0.10	0.42
2016–17	0.07	0.43
2017–18	0.06	0.43

Source: ASI-based calculations.

in the sector goes up by 0.14 percentage points. This can be compared to all the industries. As far as the employment elasticity for the entire industrial sector is concerned, it is 0.22, viz., for a percentage point increase in the overall industrial output, total industrial employment goes up by 0.22 percentage points in the organised sector (Arora, 2015; Papola, 2012).

Thus, the employment-generating potential for the Indian textile sector is comfortable when placed within the overall industrial economy.

Continuing with the description of the employment conditions in the Indian textile sector viz-a-viz the entire Indian economy, Table 4 gives the employment coefficients of textiles and the overall industrial economy as computed from the ASI data.

Table 4 gives another measure of employment generating potential for the Indian textile sector viz-a-viz the entire industrial economy. Employment coefficients are defined as the ratio of total employment generated per unit of output.

As evident from the calculations, the employment coefficients for the entire industrial economy hover between 0.06 and 0.53 for the period under study. At the same time, those for the Indian textiles sector are much higher at 0.40 to 1.44, implying that total employment generated per unit of textiles output is more than the employment generated per unit of total industrial output (Arora, 2015; Papola, 2012).

This places the Indian textile sector in a commanding position as far as its contribution to employment generation in the Indian organised industrial sector is concerned.

Table 5 describes the employment scenario in the unorganised textile sector as placed within the overall industrial segment using the National Sample Survey Organisation (NSSO) data.

Table 5 studies the employment scenario in the unorganised textile sector within the overall industrial economy. In this regard, the concepts of principal status (PS) and subsidiary status (SS) are important to be noted. First, PS employment refers to the status of activity on which a person has spent a relatively longer time of the preceding 365 days prior to the date of the survey. Second, SS employment refers to the status of activity on which a person has spent a minor period of not less than 30 days prior to the date of the survey (Oberoi, 2017).

As evident from Table 5, employment in the unorganised segment of the industrial economy for the Indian textile sector is high to the tune of 9.7, 8.4 and 9.2 million for the years 2004–05, 2009–10 and 2011–12 as per the NSSO data. As a share of manufacturing in the unorganised sector, this accounts for 17.99%, 16.57% and 15.38%, respectively (Mehrotra et al., 2014).

Furthermore, some of the employment figures from Oberoi (2017) help to supplement this trend even better and also explicate the duration and nature (PS or SS) of employment in the sector.

As Table 6 depicts, there is an unclear trend of declining usual status employment for the Indian textile and garment sectors (combined) from 1999–2000 to 2009–10. For the years 1999–2000, the usual status employment in the Indian textile and garment sectors (combined) stood at 51.17 lakhs. This number

Table 5. Employment (PS + SS) in the Unorganised Manufacturing Sector.

Manufacturing Sector	2004–05	2009–10	2011–12
Food products and beverages	5.5	5.5	6.4
Tobacco products	4.7	4.1	4.9
Textiles	9.7	8.4	9.2
Wearing apparel	7.2	7.3	9.6
Leather products	1.3	0.9	1.3
Wood and wood products	5.2	3.6	3.9
Paper and printing, etc.	1.5	1.6	1.1
Rubber and petroleum products	0.9	0.8	1.3
Chemical products	2	1.7	2
Non-metallic mineral products	4.5	4.3	5
Machinery and metal products	6	6.6	6.9
Transport equipment	1	1.5	1.5
Furniture manufacturing	4.4	4.3	6.6
Unorganised manufacturing (total)	53.9	50.7	59.8

Source: Adapted from Mehrotra et al. (2014).

Table 6. Usual Status Employment in the Textile and Garment Sectors (Combined).

Years	Principal Status (PS)	Subsidiary Status (SS)	Usual Status (PS + SS)
1999–2000	29.25	2.01	31.26
2004–05	29.54	2.63	32.17
2009–10	26.58	1.95	28.55

Source: Adapted from Oberoi (2017).

Table 7. Average Male-to-Female Employment Ratios by Industry and its Size.

Industry	Small Scale	Medium Scale	Large Scale
Textiles	2.3	3.9	27.6
Apparels	4.0	6.4	5.2
All other industries	2.7	5.6	19.5

Source: Adapted from World Bank calculations in Lopez-Acevedo and Robertson (2016).

saw successive, yet asymmetrical patterns of decline over the next few years. For the period 2004–05 and 2009–10, these figures become 60.56 and 41.95 lakhs, respectively. Also, as depicted in the table, the share of PS employment is higher than the share of SS employment, implying that the status of activity on which a person has spent a relatively longer time of the preceding 365 days prior to the date of the survey or the PS employment is higher than the SS employment as defined by the workers having worked for a minor period of not less than 30 days. It could thus be safely stated that long-duration employment in the sector outshines shorter period employment for the time period under study (Oberoi, 2017).

Table 7 educes the male-to-female employment ratio using the ASI data to gauge the female-intensive nature of textile employment.

Table 7 elicits the male-to-female employment ratios for the Indian textile sector to gauge whether or not the sector is female-labour intensive compared to apparel and all other industrial categories. This links the selection of the textile sector in the thesis topic owing to its role in providing employment to women over any other labour-intensive sector.

Clearly, the male-to-female employment ratios are favourable for females in the Indian textile sector for both small and medium-scale sectors, as compared to the other industrial categories. As the majority of firms in the sector are of medium and small-scale nature, these results are quite telling (Lopez-Acevedo & Robertson, 2016).

Thus, the importance of the industry for the female employment generation cannot be overlooked.

The ratios are calculated using ASI establishment-level data for 2000–01 to 2014–15 by the World Bank in Lopez-Acevedo and Robertson (2016).

Next, Figures 1–3 assess the trade performance of the Indian textile sector within the overall Indian economy.

Given the centrality of trade (exports and imports) in the thesis topic, it is prudent to assess the relative importance of the textile sector in the country's overall trade scenario.

For the purpose, Figure 1 graphs trade in textiles as a share of India's total trade for the period 2000–18 using data from WITS.

As evident from Figure 1, textile exports as a share of India's total exports hover between 12.97% and 4.69% for the period under study, indicating significance of the sector for India's exports. Also, the sector's imports account for 0.75% to 1.60% of its total imports for the period under study. Clearly, exports are more pronounced for the sector as compared to imports in their trade composition.



Figure 1. Textile Trade as Share of India's Total Trade.

Source: WITS.

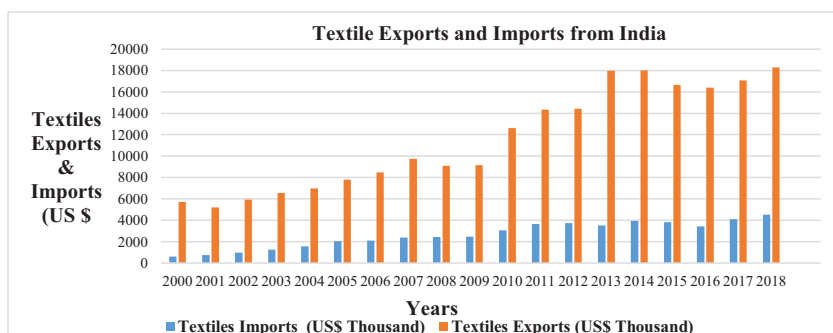


Figure 2. Textile Exports and Imports from India.

Source: WITS.

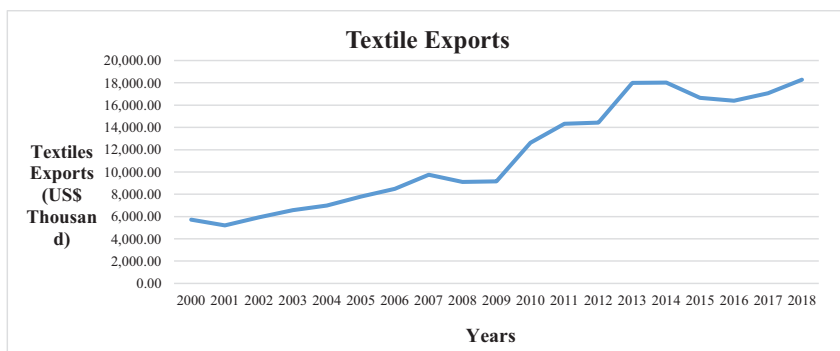


Figure 3. Textile Exports from India.

Source: WITS.

Given the centrality of trade in the subject matter of this article and to have an understanding of the trade scenario in the Indian textile industry, a graphical description (Figure 2) of exports and imports of the Indian textile sector is given on the basis of WITS database for the period 2000–2018 with their values having been expressed in US\$ thousands.

As Figure 2 depicts, the value of textile exports from India witnesses an upward trend for most of the years under study, especially after the post-MFA period from 2004–05 onwards. The imports too, see an increasing trend over the period under study, albeit at a pace slower than the value of exports. This corroborates the trends of Figure 1 such that textile exports corner a more prominent position than imports in the Indian trade scenario.

To further gauge the trade conditions in the Indian textile sector, a disaggregated analysis of exports and imports of the Indian textile industry is depicted in Figure 3.

As Figure 3 depicts, the average value of textiles exports from India records a rising trend for the period under study till 2013–14, especially after the post-MFA period from 2004–05 onwards. The period from 2013–14 onwards witnesses a declining trend in textiles exports owing to the industry not receiving adequate support in the form of favourable interest rates, timely industrial support and opportune release of export incentives.

In general, though exports see an uptrend for the period under study.

Figure 4 depicts the trend for the value of textile imports for the period under evaluation.

As per the depictions, in general, the values of textile imports witness an uptrend for the period 2000–2018, especially after the post-MFA period from 2004–05 onwards.

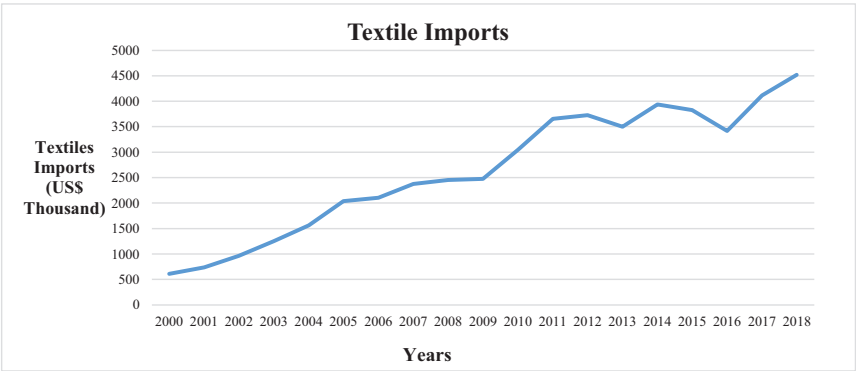


Figure 4. Textile Imports from India.

Source: WITS.

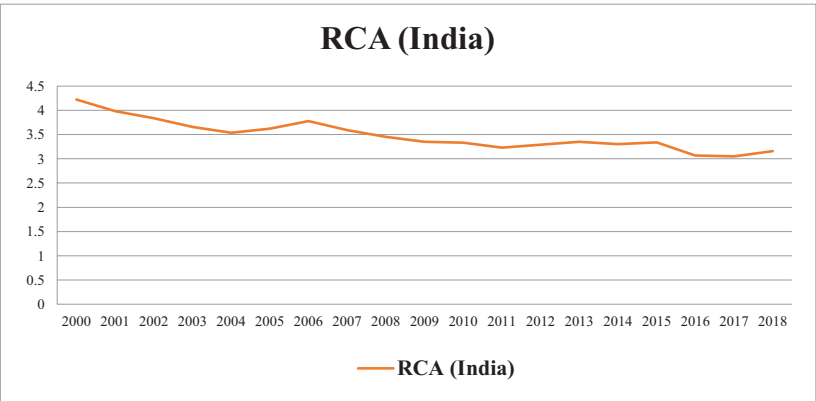


Figure 5. Revealed Comparative Advantage of the Indian Textile Sector.

Source: WITS.

The following depiction of revealed comparative advantage (RCA) expounds the desirability and suitability of Indian textile exports in the global markets.

As evident from Figure 5, the RCA as defined by Balassa and Noland (1989) relates to the relative advantage or disadvantage of a certain country in a certain class of goods or services as evidenced by trade flows. It is based on the Ricardian concept of comparative advantage. For RCA values more than unity or 1, the nation has an RCA in the concerned class of goods, in other words, that economy should continue to export that class of goods to the rest of the world. Henceforth, that economy shall continue to export those goods and services in which it has a RCA. The class of goods for which the value is less than unity should be discontinued as exports. Since the WITS database contains values only till 2018, the chart too depicts the trend up to 2018.

Deducing from the chart, the RCA values for the textile sector for the years 2000–2018 lie between 3.05 (the value for 2017) and 4.22 (the value for 2000). Also, using Trade Map, the values for 2019, 2020 and 2021 come to be 2.03, 2.50 and 2.14, respectively—values not pointing towards competitiveness in the Indian textile sector.

There is, thus, a declining RCA for the Indian textile sector for the period under study. It could imply that India is ceding its textile exports' space to other competitors in the world, on account of their better exports performance viz-à-viz India.

Similar results are obtained for another vital trade index, namely the export similarity index for India viz-a-viz her top textile export competitors (Kanupriya, 2020b).

Based on the results and trends arrived in this section, the next segment discusses the causes, consequences and lessons derived from the same.

Causes, Consequences and Lessons for the Indian Textile Industry

As described in the preceding section, despite the centrality of textiles in the Indian socio-economic landscape, the same cannot be thought of as a 'top performer' within the Indian economy, when it comes to its shares, contributions and relative competitiveness in terms of manufacturing, employment (mainly organised sector employment) and trade.

There are a number of causes that could be offered as an explanation of the lack of meritorious performance by the Indian textile industry. Corruption and leakages at the foreign borders (Kanupriya, 2020b; Kapoor, 2019), high costs and delays caused by domestic transportation, burdensome customs procedures, problems in meeting quality/quantity requirements of buyers (both domestic and foreign), challenges in accurate identification of the potential buyers and markets, lack of access to imported inputs at competitive prices, lack of easy access to output and trade finance, lack of seamless transportation (both domestic and international), tough technical requirements and standards abroad, tariff barriers abroad, lack of

appropriateness of the production technology and skills, Rules of Origin (RoOs) abroad, lack of availability of cheaper production inputs like skilled labour, capital, land, and so on (Kanupriya, 2020b; Kapoor, 2019).

There is, thus, a pressing need to enhance textile production, employment and export competitiveness by way of successful negotiation of ongoing preferential trade agreements and improving the logistical performance of the Indian textile industry, as also reaping the benefits of scale economies through technological upgradation of small and medium enterprises (Kanupriya, 2020b).

The only noteworthy consequences of a less than remarkable performance of the Indian textile sector are the lagging of the sector in terms of its manufacturing and exports competitiveness while also not being able to catch up with an ever-rising labour force, thereby being a letdown in terms of its demographic dividend potential for India's youth.

As an upshot of the discussion thus far, the only feasible option for the Indian textile industry is to upgrade itself structurally in terms of the latest technologies of production, better adherence to production targets and standards, reducing corruption, procuring cheaper inputs of production and adopting digital technologies as part of the Industry 4.0 initiatives. Not only would it act as the saviour for the distressed sector but also ensure that the future generations do not bear the consequences of the human action today, for textiles is one of the most polluting sectors, especially the colouring and dyeing businesses (Kanupriya, 2022). For effecting this transformation, both the private and the public sectors must work together. Only then can a truly lasting and sustainable 'digital circular' transformation be realised for this sector (Kanupriya, 2022).

Conclusion

The article educes major contributions, trends and patterns in the Indian textile industry in terms of manufacturing, employment and trade. The same points at a worrying trend of stagnant and even declining textile relevance and competitiveness when it comes to its contributions to manufacturing, employment and trade. That the trend must be immediately arrested and major course corrections should be done have been emphasised. The study advocates undertaking drastic structural transformations in order to keep the industry competitive, both domestically as well as globally. The last section lists the future policy implications of this perspective.

Future Policy Implications

This perspective is an attempt at summarising and analysing the dynamic trends and patterns of manufacturing, employment and trade in the Indian textile sector. Studies and opinion pieces on the Indian textile industry often overlook the dynamics of the changes in the country's textile landscape both in the present and in the years to come.

As elucidated in this article, while it is all too important for the industry managers and practitioners to transform themselves structurally for survival, embracing new currents in textile technology in line with Industry 4.0 is imperative for any future welfarist manager/textile producer. This is especially so in a sector that employs several marginalised communities, including women and can take the initiative to introduce new techniques and processes to bring them within the fold of a productive and competitive textile economy (Kanupriya, 2020a, 2022). The ecological ramifications for a digital circular textiles economy too are profound, as discussed in the previous sections of this article.

Adopting the latest digital technologies such as 3D, Internet of Things and Artificial Intelligence and simultaneously reskilling and upskilling the existent and incoming workforce in the sector shall almost uncover new insights about not just their consumers but also of their internal business models, competitors and demand–supply dynamics (Kanupriya, 2020a). In line with the same, digitalisation could be a game-changer for the Indian textile sector, if implemented with sufficient pro-poor checks and balances.

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Notes

1. The industries included in the data are crop and animal production, hunting and related service activities, other mining and quarrying, manufacture of food products, manufacture of beverages, manufacture of tobacco products, manufacture of textiles, manufacture of wearing apparel, manufacture of leather and related products, manufacture of wood & wood products, manufacture of paper and paper products, printing and reproduction of recorded media (excluding publishing activities, manufacture of coke and refined petroleum products, manufacture of chemical and chemical products, manufacture of pharmaceuticals, medicinal chemical and botanical products, manufacture of rubber and plastic products, manufacture of other non-metallic mineral products, manufacture of basic metals, manufacture of fabricated metal products, manufacture of computer, electronic and optical products, manufacture of electrical equipment, manufacture of machinery and equipment n.e.s., manufacture of motor vehicles, trailers and semi-trailers, manufacture of other transport equipment, manufacture of furniture, manufacture of other manufacturing, repair and installation of machinery and equipment, electricity, gas, steam and air-condition supply, waste collection, treatment and disposal activities; materials recovery, wholesale and retail trade and repair of motor vehicles and motorcycles, warehousing and support activities for transportation, publishing activities, repair of computers and personal and household goods, and others.
2. All industries are as specified in the first footnote of this article.

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An Empirical Analysis on International Trade between India and the ASEAN

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Abstract

India and the Association of South East Asian Nations (ASEAN) regional grouping had completed three decades of diplomatic relations during this year 2022 and the year has been designated as ASEAN–India Friendship Year. As India initiated its ‘Look East Policy Strategy’ in the year 1991, the trade ties progressed between India and the ASEAN from a sectoral dialogue partnership in 1992 to dialogue and summit-level partnerships during the years 1996 and 2002, respectively. Commemorating the two decades of India–ASEAN relations the trade ties elevated to the strategic partnership between them during the year 2012. It was in the year 2009 India-ASEAN Free Trade Agreement got signed, and India–ASEAN Services Agreement was signed in the year 2014. ASEAN views India as the most dynamic and trusted partner of East Asia and is keen to accelerate the trade and investment relations with the new Asian tiger. ASEAN also recognises India’s huge trade potential and views it as a strong balancing and stabilising partner in the Asian region. The bilateral trade between the economies has grown exponentially and reached over US\$ 79 billion during the year 2020–2021. India’s investment in ASEAN has been growing and reached US\$2012 billion during the year 2020, and ASEAN investment has also been growing in India. Despite an impressive trajectory of trade between India and the ASEAN, there is room for further growth through the integration of India into the Asian value chains. In this background, the study would assess the commodity trade patterns between India and ASEAN by observing the extent of India’s trade intensity

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and revealed comparative advantage (RCA) advantage and trade competitiveness between India and the ASEAN, the stability of these different indices of RCA were tested, in the light of the analysis few policy suggestions were drawn for future trade between India and the ASEAN.

Keywords

ASEAN, Look East Policy, regional trade, Act East Policy, India, East Asia, Myanmar, ASEAN, Thailand and Singapore

Introduction

India and the Association of South East Asian Nations (ASEAN) are bounded together by their shared culture, history and civilisation. A relation with the ASEAN economies has always been in the forefront of the India's foreign policy. India and ASEAN relations have passed through a dynamic journey with several achievements to reach the year 2022. India is one of the top trading and investment partner with the ASEAN economies and also both the nations closely cooperate on political and security matters. India's relationship with the ASEAN has been a key pillar of its foreign policy, and the Indo-Pacific has obtained renewed vibrancy with the signing of Indo-Pacific vision agreements by ASEAN-10 countries and India. The ASEAN-India together form a prominent economic grouping. Today when ASEAN and India are facing common challenges to safeguard their economies from the COVID-19 pandemic, there is a need for stronger multilateral co-operation to contain the post-pandemic challenges and bring back the economy on the growth trajectory. ASEAN-India together constitutes for 30% of the world population, and India remained ASEAN's largest trade partner as well as FDI investor with \$2.1 billion in 2020. ASEAN has emerged as the fifth largest trade partner to India, and the bilateral trade between India and the ASEAN would reach nearly \$300 billion by 2025. Despite an impressive trajectory of economic relations between the two nations, still, there is enough room for expanding the trade relations through India's integration into the value chains of ASEAN. Asia-Pacific region is among the most progressive regions of the globe today, and both ASEAN and India have a central role in shaping the so-called 'Asian Century', especially when India entered the 'Amrit Kal', after completing the 75 years of independence, and this also completes the India-ASEAN 30 years of dialogue partnership too, with the ASEAN countries. Considering such turn of events, the current article intends to analyse the intensity and potential of India's trade with the ASEAN trade and assess the future commodity trade potential among identified commodity groups between India and the ASEAN by exploring the complementarities between the two.

Review of the Earlier Literature

Several studies have explored the nature and extent of the trade between India and ASEAN countries and found a greater potential for mutual co-operation and also

a larger role of India and ASEAN in the post-COVID-19 geopolitical environment. As deeper integration of India and the ASEAN would help in deriving collective solutions to deal with common challenges and design a common path for resilience (De, 2021). India's exports to ASEAN have increased by 11x, while total Indian exports have risen only 6x during the past 10 years (2003–2013) and predicts that Indian exports to ASEAN are likely to reach \$280 billion by 2023, and India has an advantage in the exports of chemicals, pharmaceuticals, gems and jewellery, iron and steel and other services, whereas ASEAN has advantage in the export of natural resources and electronics projecting the right space for the two-way trade between the countries (Bhagal, 2018). The trade intensity between India and the ASEAN has not only increased but India's exports to and imports from ASEAN countries have been on rise compared to the total trade pattern with the rest of the world. The values of greater complementarities between exports of India and the ASEAN countries were reflected through the RCA index (revealed the comparative advantage index) presenting larger potential for trade between India and the ASEAN (Raghuramapatruni, 2012). India could actually import many products that are currently being imported from China from the ASEAN countries. By doing so, India can reduce its bilateral trade deficit with China, which can result in an equal trading relation. According to UN data, India currently imports more than 50% of its imports in 36 product categories from China. India needs to find more sources for these products for trade security and also for diversification. India is also heavily dependent on chemical imports from China, which are essential to make fertilisers and these could be replaced with ASEAN markets in the near future (Morgan, 2012). Free Trade Agreements (FTAs) are often signed by the developing economies to improve their balance of payments (BOP) situation but the Regional Comprehensive Economic Partnership Agreement (RCEP) has forecasted to be having an adverse impact on the ASEAN's countries BOP situation thereby deteriorating the existing BOP situation of the ASEAN economies by 6%. The literature finds that maximum gains of the RCEP would go to Japan, followed by New Zealand. Post RCEP, the BOP situation will worsen for Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam, in this situation, accelerating ASEAN's trade with India could be seen as a win-win situation for both economies (Banga et al., 2021).

Importance of the Study

The growth in India's economy is the outcome of the deliberate changes of its approach to economic policy, especially from the 1991 macroeconomic crisis. The country has moved from 'inward-looking strategy' to an 'outward-looking strategy' and the initiative of its 'Look East Policy' has a significant bearing on the integration of its domestic economy with the external world especially the East Asian countries which had resulted in sizeable outcome thereby increasing its trade volumes. India had started its journey of accelerating its reforms through the 'Look East Policy'. With the success of Look East Policy (1992), country has

reincarnated it to Act-East Policy in 2018, to accelerate the economic, strategic and cultural linkages with the ASEAN. In the post-COVID-19 environment when the geopolitical spectrum of the world is completely at change, and countries are looking at near shoring their investments and sourcing intensifying and integrating with the Association of South East ASEAN Nations economies would be beneficial for both India and the ASEAN nations. The earlier literature on India–ASEAN relations also focuses at the importance of more responsible role that could be played by the Asian region and most importantly India and the ASEAN-10. This becomes much more crucial with the 30 years of dialogue partnership of India with the ASEAN neighbours. Such kinds of relations are also important to keep the China factor away for India and also ASEAN to ensure a stable and peaceful Asian region. Hence, identifying the commodity trade potential and complementarity between India and the ASEAN would be useful to assess the future trade potential between them. In this background the current study would be helpful for professionals, practitioners and the business community to understand the growth trajectory of trade between India and the ASEAN of and assess the potential for economic linkages between the two.

Objectives of the Study

- To analyse the extent of India's trade with the ASEAN nations and observe the intensity between the two.
- To identify the trade pattern and potential between the two, which could enhance the trade.
- To further identify the sectors/commodity groups with emerging trade potential and explore the opportunities, the trade between India and the ASEAN taken for the study.

Database and Methodology

The researcher employs a combination of descriptive and explorative research design to study the objectives framed. The secondary data sources used for the research are collected from various trade data sites of the World Trade Organization, International Monetary Fund, Asian Development Bank, and United Nations commodity trade data bases. The data are analysed using SPSS and advanced excel tools. The values of correlation for India's exports and imports were calculated along with the Gravity Coefficient (GC) values to estimate India's trade with the ASEAN countries. To understand the intensity of trade relations, the export intensity and import intensity of trade between India and the ASEAN were calculated. The export intensity is calculated as a measure of exports of India, exported to the ASEAN partners divided by the total exports of India with the imports of the ASEAN partners from the world divided by the total imports of the ASEAN countries. Similarly, the Import Intensity Index (III) is also calculated

as imports of India from the ASEAN divided by the total imports of India with the imports of ASEAN countries with the world to the total imports of the world.

Measuring Revealed Comparative Advantage

The RCA (Balassa, 1979) 'B' value is calculated to observe the commodity trade potential. Further the Relative Trade Advantage (RTA) (Vollrath, 1991), comprising the difference between the Relative Export Advantage (RXA) and Relative Import Advantage (RMA) were assessed under the competitiveness:

$$RTA = RXA - RMA$$

Further, the second measure as defined by Vollrath is the logarithm of RXA (In RXA) and finally, the RC (Revealed Competitiveness) is calculated by the difference of the logarithms of RXA and RMA. It can be defined that when the indices of RXA and RMA are presented through the logarithmic form they become symmetric through the origin:

$$RC = \ln RXA - \ln RMA$$

A positive value of Vollrath's 3 measures (RTA, In RXA and RC) reveals a comparative/competitive advantage of the product of the domestic country.

Results and Analysis

Correlation Analysis

The results of Pearson's correlation between India's exports and imports with ASEAN nations present that India's export–import correlation coefficient (r) with the ASEAN nations registered the significant value of ' r ' with almost all the eight economies of the ASEAN with respect to export to and imports from them, except in the case of Brunei, Laos and Myanmar (Figure 1, Table A1). However, in the case of the variable total trade and trade balance, the correlation valuation presents a negative correlation with seven of the ASEAN economies, presenting the untapped trade potential of India with the ASEAN nations. The analysis of Philippines presents a higher value of integration with India and with Singapore and Vietnam presenting the nominal positive values.

Intensity Analysis

Before making an analysis study on the RCA index to understand the trade potential between the ASEAN economies and India, it would be in the fitness of

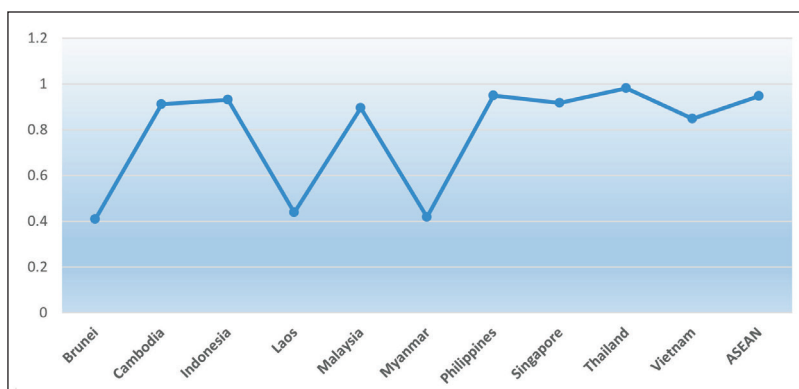


Figure 1. India's Exports and Imports (Value of 'r').

Source: Table A1.

things to make a careful analysis on the growth of the intensity of trade between the two. According to the 'natural trading partner theory' trade between countries who are neighbours and proximity to each other benefit from the FTAs (Krugman & Obstfeld, 2021). Hence, ASEAN countries being closer to India from a distance point of view tend to trade more with their partners. The values of export intensity index (EII) and the III present a greater value of intensity of both export and import relations of India with the ASEAN during the period 1995–2000 (Table 1).

The average values of the EII and III of India with the ASEAN present that among the ASEAN-10, the EII and III average values of India's export and import potential with Myanmar has been high, where the average EII is at 3.867 for the whole period and average III stood at 13.714, the geographical proximity of the nation with India and sharing the same land border are some of the reasons of growing proximity of trade between the two. This is followed by Malaysia with an average EII value at 1.367 and average III value at 2.210, in the whole period of study, the values of EII & III of India and Malaysia were higher than 1, which has been an important trade partner to India, who has an FTA with India. Singapore is also among the top-10 trade partners with India and a major entrepot hub, the average EII (1.760) value and III (1.707) value have been greater than 1 for the whole period. India has an FTA with Singapore. Thailand also registered values higher than 1 on an average for the whole period, with EII value at 1.062 and III value at 1.030. The average EII of the Philippines has been closer to 1 at 0.985, the III is at 0.322. In the case of Laos and Cambodia both, the average intensity index values have been low, EII and III of Laos were at 0.492 and 0.484, respectively, and of Cambodia were at 0.387 and 0.098, respectively. The export bank of India (EXIM bank) also adopted the Cambodia, Laos, Myanmar, Vietnam (CLMV) strategy towards accelerating the trade with the countries of Cambodia, Laos, Myanmar and Vietnam and to encourage the prospective traders in India to trade with the ASEAN neighbours, which could enhance the trade value between them.

Table I. Export Intensity Index and the Import Intensity of India with ASEAN Countries.

Year	ASEAN		Brunei		Cambodia		Indonesia		Laos		Malaysia		Myanmar		Philippines		Singapore		Thailand		Vietnam	
	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III
1995	1.299	1.585	0.584	0.003	0.304	0.066			0.089		0.853	1.935	3.809	31.496	0.857	0.197	1.220	1.911	1.126	0.674	2.569	0.469
1996	1.262	1.749	0.395	0.002	0.242				0.089		1.107	2.438	5.439	39.267	0.879	0.215	1.216	1.930	1.010	0.653	1.732	0.039
1997	1.033	1.752	0.164	0.002	0.443	0.318		0.006	0.070		0.992	2.316	3.872	39.978	0.989	0.177	0.936	1.995	0.873	0.714	1.747	0.185
1998	0.935	2.148	0.346	0.011	0.807	0.441			0.369		0.909	3.297	1.861	23.607	0.621	0.184	0.838	2.514	1.230	0.738	1.797	1.052
1999	1.153	2.087	0.155	0.006	0.791	0.029			0.425		1.095	3.253	2.376	20.677	0.706	0.181	0.965	2.387	1.431	0.811	2.108	0.168
2000	1.067	2.106	0.420	0.008	0.620	0.085			0.997		0.986	2.727	2.773	18.248	0.716	0.288	0.891	2.515	1.291	0.998	1.902	0.347
2001	1.366	2.304	0.272	1.160	0.052	0.065			1.614		1.527	2.587	2.891	24.780	0.948	0.386	1.141	2.791	1.380	1.164	1.920	0.348
2002	1.621	2.167	0.394	0.015	0.033	0.035			0.597	0.035	1.229	2.541	4.199	18.099	1.501	0.488	1.565	2.453	1.513	0.884	2.035	0.371
2003	1.585	1.851	0.472	1.373	0.011		3.172	4.071	0.144	0.090	1.226	3.047	4.765	21.113	0.981	0.425	1.608	0.849	1.242	1.058	1.931	0.235
2004	1.769	2.191	0.419	3.622	0.010	0.009	2.644	4.114	0.161	0.032	1.190	2.614	6.239	22.079	0.947	0.431	2.368	2.125	1.092	1.093	2.013	0.363
2005	1.799	2.056	0.311	0.014	0.012	0.011	1.935	3.571	0.782	0.014	1.055	2.393	6.478	13.647	1.027	0.369	2.861	2.084	0.945	1.290	1.817	0.366
2006	3.099	1.925	2.641	3.246	1.004	0.023	2.308	2.788	0.222	0.035	1.016	2.508	4.868	12.762	1.099	0.286	2.556	1.999	1.045	1.068	1.933	0.308
2007	3.016	1.795	0.392	1.783	0.770	0.018	1.884	2.724	0.257	0.006	1.182	2.167	4.681	8.501	0.920	0.272	2.268	1.982	1.116	1.077	1.849	0.225
2008	2.916	1.712	0.553	1.849	0.686	0.052	1.728	2.799	0.271	0.028	1.609	2.143	4.622	7.569	1.036	0.247	2.295	1.766	0.927	0.975	1.862	0.349
2009	2.917	1.689	0.787	4.107	0.543	0.055	2.438	3.370	1.403	0.010	2.169	1.675	3.647	9.518	1.157	0.379	2.115	1.542	0.974	1.056	1.996	0.405
2010	2.605	1.541	0.566	1.913	0.608	0.074	2.276	3.007	0.268	0.280	1.460	1.527	3.871	5.822	0.927	0.379	1.972	1.424	0.791	1.045	1.972	0.666
2011	1.810	1.564	###	3.084	0.076	0.069	2.184	3.014	0.352	0.721	1.227	1.804	3.061	5.330	0.957	0.390	2.587	1.233	0.733	1.033	1.966	0.721
2012	1.646	1.487	0.583	3.414	0.057	0.051	1.959	2.959	0.557	1.340	1.204	1.859	3.570	9.799	1.068	0.334	2.226	1.016	0.865	1.014	2.005	0.689
2013	1.836	1.586	0.671	3.395	0.073	0.071	1.793	3.658	1.198	1.180	1.607	1.826	3.713	4.622	1.346	0.297	2.290	1.074	1.011	1.112	2.730	0.935
2014	1.482	1.568	0.695	4.170	0.075	0.082	1.470	3.589	0.877	0.542	1.310	2.039	3.109	4.488	1.232	0.260	1.509	1.031	0.889	1.145	2.601	0.813
2015	1.488	1.645	0.582	4.356	0.136	0.145	1.242	3.987	0.558	1.127	1.718	2.069	3.147	4.041	1.078	0.354	1.623	1.223	0.949	1.195	1.999	0.743
2016	1.479	1.606	0.848	4.565	0.536	0.158	1.400	3.739	0.270	1.484	1.506	2.092	4.407	4.351	1.000	0.334	1.574	1.229	0.925	1.179	2.067	0.795
2017	1.668	1.497	0.923	4.447	0.500	0.161	1.422	3.902	0.247	1.835	1.683	1.688	3.274	2.264	0.922	0.407	2.091	1.062	0.961	1.188	2.260	0.798
2018	1.524	1.570	0.959	2.953	0.617	0.162	1.529	3.467	0.358	0.563	1.814	1.644	3.865	1.292	0.881	0.365	1.697	1.360	1.064	1.265	1.704	1.185
2019	1.442	1.583	0.653	3.609	0.590	0.161	1.546	3.505	0.274	0.345	1.793	1.754	3.019	1.362	0.817	0.334	1.753	1.446	1.075	1.228	1.276	1.147
2020	1.488	1.458	0.717	3.098	0.480	0.107	1.965	3.325	0.331	0.016	2.080	1.516	2.976	1.843	0.996	0.401	1.604	1.438	1.164	1.119	1.093	0.924

Source: Authors' calculation based on data from unctad.org

Gravity Coefficient Analysis

To further understand gravity of trade between India and the ASEAN region, The GC values for the period of 1995–2020 were analysed to observe the trade dependency situation between them. The values of GC (Table 2) present a greater degree of trade gravity between India and the ASEAN nations during the period of study. The GC value for the whole period (1995–2020) presents a greater than one presents a higher trade integration of India with the ASEAN-10 nations. The average GC value for the entire period of India and the ASEAN is at 1.755 presenting higher integration of the trade among them. Among the countries taken for the study, the GC value between India and Myanmar is the highest with a two-digit value registered for total 9 years, these values reconfirm greater trade integration of India and Myanmar and further this potential can be tapped between the two, the average GC value is at 8.429. Indonesia registered the average GC values at 2.899 followed by Brunei where the average for the period 1995–2020 is at 2.063. Thailand and Vietnam also have presented greater gravity of trade integration with India with average GC values higher than one. Among the ASEAN-10, Philippines (0.629 average GC value), Laos (0.419 GC value) and Cambodia (0.239 GC value) have been low.

Revealed Comparative Advantage of India with ASEAN-10

The various RCA indices as presented in the research methodology computed for India's trade with ASEAN economies for a period 2016–2020, for commodities belonging to 10 categories and 50 products at Standard International Trade Classification-3 (SITC-3), following the Lemer's Aggregation scheme, from the data extracted from the Unctad database (Table 3) (see Tables A2 and A3).

The mean and the CV from the summary statistics of the 4 RCA indices—B (Balassa Index, RTA, RXA, and RMA) are calculated that present a similar pattern, with all the four revealing a comparative advantage: B; for 23 distinct products (Table A2) classified under the 10 distinct categories. The RXA index of 'B' could be observed with respect to all the 10 distinct commodity groups. Under the classification of petro, 1 commodity, raw materials, 1 product, 3 products under the forest product group, followed by 4 commodities under the animal product group, 3 products under cereals group classification, 2 under the labour intensive classification, cap intensive products, 3 and 2 in machinery classifications, respectively. Under the chemicals group, the 'B' value presents the largest number of products with RCA (4 commodities) where India's Relative Export Advantage (REA) has been greater than 1. This is quite evident that over a period India's commodity export basket has shifted from offering low technological labour-intensive commodity exports to high-end, technological manufacturing sector goods.

The Relative Trade Advantage (RTA), which also takes Revealed Import Advantage (RMA) into consideration, finds that RTA could be observed in 17 commodities (Table A2), where the RTA value > 0 . A list of 4 commodities under

Table 2. Gravity Coefficient of India with ASEAN Countries.

Year	ASEAN	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1995	1.438	0.257	0.196	–	–	1.408	15.151	0.579	1.574	0.906	1.651
1996	1.503	0.187	–	–	–	1.812	18.055	0.602	1.583	0.837	1.001
1997	1.403	0.072	0.381	–	0.045	1.702	15.339	0.630	1.486	0.788	0.988
1998	1.664	0.139	0.623	–	–	2.399	8.675	0.383	1.809	0.939	1.402
1999	1.728	0.050	0.418	–	–	2.479	9.024	0.398	1.778	1.068	1.022
2000	1.667	0.092	0.369	–	–	2.018	9.516	0.481	1.779	1.128	1.086
2001	1.892	0.992	0.057	–	–	2.143	13.348	0.660	2.034	1.263	1.115
2002	1.928	0.121	0.034	–	0.351	1.983	12.512	1.000	2.052	1.173	1.219
2003	1.749	1.250	0.011	–	0.117	2.342	14.471	0.694	1.172	1.141	1.089
2004	2.024	3.235	0.009	3.805	0.106	2.070	15.450	0.671	2.238	1.092	1.154
2005	1.964	0.063	0.011	3.300	0.406	1.933	12.357	0.662	2.404	1.132	1.003
2006	2.395	3.524	0.475	2.937	0.118	2.003	11.069	0.637	2.232	1.057	1.011
2007	2.273	1.747	0.360	2.672	0.113	1.848	7.989	0.544	2.111	1.101	0.949
2008	2.166	1.909	0.330	2.646	0.131	2.020	7.112	0.572	1.970	0.954	0.987
2009	2.163	3.872	0.276	2.864	0.646	1.887	8.112	0.704	1.770	1.039	1.084
2010	1.954	1.901	0.311	3.208	0.270	1.532	5.628	0.603	1.644	0.953	1.210
2011	1.668	5.476	0.070	3.121	0.561	1.634	4.452	0.634	1.753	0.909	1.230
2012	1.549	3.416	0.051	2.484	0.951	1.660	7.344	0.634	1.466	0.944	1.186
2013	1.689	3.207	0.070	2.831	1.153	1.760	4.211	0.748	1.551	1.059	1.660
2014	1.539	3.802	0.076	2.662	0.690	1.776	3.675	0.678	1.226	1.040	1.543
2015	1.591	3.580	0.134	2.678	0.799	1.958	3.459	0.676	1.390	1.103	1.257
2016	1.559	3.641	0.333	2.735	0.881	1.874	4.283	0.667	1.378	1.085	1.333
2017	1.569	3.680	0.309	3.203	1.119	1.702	2.662	0.639	1.461	1.105	1.383
2018	1.552	2.491	0.362	2.756	0.467	1.727	2.346	0.598	1.498	1.188	1.386
2019	1.528	2.713	0.356	2.599	0.312	1.792	2.034	0.560	1.574	1.171	1.201
2020	1.478	2.231	0.274	2.775	0.143	1.754	2.335	0.690	1.514	1.145	0.998

Source: Authors' calculations based on data extracted from unctad.org

Table 3. Revealed Comparative Advantage of India's Trade with Other ASEAN-10, by Product Group.

2016–2020									
Classification	Commodities (SITC Classification)	B >1	RTA >0	ln RXA >0	RC >0	B	RTA Coefficient of Variation	ln RXA	RC
1. Petro	Petroleum, petroleum products and related materials (33)	1.128	-2.065	0.051	-0.450	0.123	-0.260	1.068	-0.049
2. Raw materials	Crude fertilisers other than division 56, and crude minerals (27)	3.231	-1.676	0.508	-0.180	0.031	-0.554	0.027	-0.454
	Metalliferous ores, metal scrap (28)	0.696	-0.741	-0.177	-0.332	0.533	-0.804	-1.139	-0.816
	Coal, coke and briquettes (32)	0.015	-12.389	-1.833	-2.919	0.233	-0.453	-0.053	-0.085
3. Forest products	Wood, lumber, cork (24)	0.169	-1.424	-0.777	-0.978	0.146	-0.099	-0.072	-0.089
	Paper, paperboard (64)	0.513	-1.359	-0.301	-0.567	0.384	-0.598	-0.611	-0.587
	Fruit, vegetables (5)	2.923	1.402	0.465	0.286	0.042	0.122	0.038	0.105
	Sugar, sugar preparations, honey (6)	1.134	0.142	0.003	0.022	0.812	7.339	77.215	14.450
	Coffee, tea, cocoa, spices, etc (7)	14.188	10.343	1.148	0.567	0.028	0.046	0.010	0.032
	Beverages (11)	0.425	0.309	-0.373	0.571	0.019	0.137	-0.021	0.208
	Crude rubber (23)	0.034	-1.460	-1.468	-1.641	0.046	0.002	-0.013	-0.045
5. Animal products	Live animals (0)	2.616	11.898	2.027	2.186	0.252	0.252	0.061	0.002
	Meat, meat preparations (01)	2.758	2.745	0.433	2.321	0.284	0.283	0.278	0.041
	Dairy products, eggs (2)	0.701	0.651	-0.160	1.149	0.058	0.086	-0.183	0.134
	Fish, fish Preparations (3)	0.894	0.818	-0.049	1.079	0.015	0.037	-0.136	0.084
	Hides, skins, furskins, undressed (21)	0.023	-0.182	-1.712	-0.935	1.231	-1.225	-0.318	-0.176
	Crude animal, vegetable minerals (29)	3.231	2.031	0.508	0.505	0.031	0.632	0.027	0.683
	Animal vegetable oils, processed (43)	0.101	-9.375	-0.999	-1.973	0.303	-0.209	-0.132	-0.109
	Animal not elsewhere specified (94)	16.081	10.811	1.189	0.471	0.107	0.074	0.056	0.016

(Table 3 continued)

(Table 3 continued)

2016–2020									
Classification	Commodities (SITC Classification)	B	RTA	ln RXA	RC	B	RTA	ln RXA	RC
6. Cereals	Cereals, cereal preparations (4)	1.875	1.642	0.268	1.080	0.301	0.468	0.447	0.553
	Feeding stuff for animals (8)		-0.517						
	Miscellaneous food preparations (9)	0.017	-0.500	-1.769	-1.769	0.165		-0.041	-0.041
	Tobacco, tobacco manufactures (12)	0.866	0.745	-0.064	0.852	0.006	0.013	-0.039	0.020
	Oil seeds, oil nuts, oil kernels (22)	6.038	5.581	0.780	1.188	0.110	0.187	0.061	0.291
	Textile fibres (26)	0.192	-0.957	-0.723	-0.780	0.271	-0.160	-0.169	-1.535
	Animal oils, fats (41)	0.003	-0.122	-2.723	-1.691	0.176	-0.055	-0.035	-0.038
	Fixed vegetable oils (42)	5.618	-13.364	0.873	-0.533	0.537	-0.927	2.726	-2.464
7. Labour intensive manufactures	Non-metallic mineral manufactures (66)	5.731	-176.311	1.724	-0.635	0.821	-0.639	0.432	-0.103
	Furniture (82)	0.292	-1.195	-0.536	-0.041	141.790	-149.532	-2.807	-0.036
	Travel good, handbags, etc (83)	0.649	-0.109	-0.192	-0.064	0.255	-0.621	-0.585	-0.634
	Clothing (84)				-0.540			-0.318	
	Footwear (85)	0.321	-0.780	-0.500		0.356	-0.072	0.029	-0.168
	Miscellaneous manufactures articles, n.e.s (89)	6.181		0.790	-1.228	0.050	-0.252		-0.068
	Coin nongold, noncurrent (96)								
8. Capital intensive manufactures	Leather, dressed furskins (61)	1.455	0.374	0.152	0.122	0.341	0.657	0.919	0.337

(Table 3 continued)

(Table 3 continued)

2016–2020									
Classification	Commodities (SITC Classification)	B	RTA	ln RXA	RC	B	RTA	ln RXA	RC
9. Machinery	Rubber manufactures, n.e.s (62)	0.621	-0.584	-0.207	-0.287	0.024	-0.375	-0.049	#DIV/0!
	Textile yarn, fabrics, n.e.s (65)	0.827	-0.894	-0.086	-0.318	0.190	-0.594	-0.987	-0.535
	Iron and steel (67)	2.001	0.880	0.287	0.239	0.339	0.546	0.527	0.310
	Manufactures of metal (69)	1.221	0.080	0.087	0.030	0.028	0.477	0.140	0.465
	Sanitary, fixtures, fittings (81)	0.887	-0.923	-0.052	-0.296	0.020	-0.742	-0.166	-0.568
	Machinery, other than electrical (71)	1.017	-4.837	0.001	-0.765	0.018	-0.064	8.940	-0.038
	Electrical machinery (72)	0.089	-6.602	-1.052	-1.875	0.006	-0.164	-0.003	-0.040
	Transport equipment (73)	10.935	9.797	1.034	0.978	0.310	0.351	0.130	0.158
10. Chemicals	Professional goods, instruments, watches (86)	0.579	-1.000	-0.241	-0.439	0.261	-0.256	-0.446	-0.307
	Chemical elements, compounds (51)	1.176	-13.943	0.067	-1.112	0.238	-0.057	1.448	-0.100
	Mineral tar and crude chemicals from coal petroleum, natural gas (52)	0.051	-27.218	-1.291	-2.726	0.084	-0.114	-0.032	-0.003
	Dyeing, tanning, colouring materials (53)	0.072	-0.050	-1.143	-0.226	0.227	-0.526	-0.090	-0.601
	Medicinal, pharmaceutical products (54)	0.551	-0.560	-0.264	-0.308	0.222	-0.433	-0.326	-0.421
	Essential oils, perfume materials (55)	1.385	0.396	0.140	0.150	0.024	0.155	0.078	0.166
	Fertilisers, manufactures (56)	0.175	-5.083	-0.760	-1.464	0.098	-0.448	-0.056	-0.136
	Plastics materials, cellulose, etc (58)	1.732	-0.249	0.235	-0.061	0.160	-1.568	0.314	-1.595
Chemical materials n.e.s (59)		7.622	-2.065	1.855	1.682	0.071	0.072	0.017	0.029

Source: Authors' calculations based on data extracted from unctad.org

the forest product group, 5 commodities under the animal product group, 3 under the cereals category, 3 under the capital intensive category, 1 under the machinery group and 1 under the chemicals category could be found to have RTA. These products could provide a major export potential for India and the ASEAN countries trading with each other. As the RTA observed, India's trade potential is in tune with the import requirements of the ASEAN-10 (see Table A3).

A total of 21 commodities present have shown In RXA values greater than 0 present India's greater integration with the ASEAN-10. (Table A3). The value of In RXA could be observed in 1 product under petro, 1 for raw material sector, 3 commodities under the forest product group, 4 commodities under the animal product group, 2 under the cereals category, 1 under the labour intensive category, 3 under the capital intensive category, 2 under the machinery group and also 4 under the chemicals category could be found to be having significant value of log RXA, which is >0 . In total, 19 commodities were present in the RC, where the $RC > 0$ (Table 3). The RC could be observed in 4 commodities under the forest product group, 6 commodities under the animal product group, 3 under the cereals category, 3 under the capital intensive category, 1 under the machinery group and 2 under the chemicals category could be found to be having significant RC values. The low CV values for all the product groups present the indices that were fairly stable during the period taken for study and across all the RCA variables (see Table A3). This presents the commodity trade potential of the ASEAN-10 economies and huge untapped potential that could be carefully channelised to cater the needs of the region towards achieving millennium development goals and accelerate the economic growth of India and the ASEAN as a whole.

Consistency Test of the Indices

The consistency and the dichotomous measures are used to reveal the stability of the above RCA values calculated. The correlation coefficient between the pair of indices of each of RCA for the 5 years is calculated as a cardinal measure of RCA. Out of the possible 6 pairs, 2 pairs (the B and the RTA) and (the InRXA and the RC) were shown to have a higher degree of correlation value which is ≥ 0.72 . This explains that the indices are not consistent as a cardinal measure of RCA. The ordinal measures for the consistency test are calculated by taking the rank correlation coefficients of the RCA pairs, 6 pairings of the indices * 5 years taken for the study, presenting more consistency with 24 pairs out of 30 correlation coefficients, which were >0.72 . The dichotomous measure reveals that all four indices, with 26 pairs out of the 30 pairs taken for study, were fairly consistent with $>70\%$ (Table 4).

These simple tests confirm that the indices are less consistent as cardinal measures, in accordance with the findings of Balassa. However, the results obtained from these test confirm and offer with the results and offer more support for the use of the indices as binary measures of comparative advantage. Hence, we can conclude that the RCA index measures are useful proxies in determining whether or not India has a comparative advantage in a particular product group or not, though they might not be indicating the extent of such type of comparative advantage.

Table 4. Dichotomous Consistency Test: Shares (%) of Matching Indices.

Year	2016	2017	2018	2019	2020
B					
RTA	66	72	72	72	71
In RXA*	100	100	100	100	100
RC	80	82	83	82	81
RTA					
In RXA	66	72	72	72	71
RC	80	84	83	85	81
In RXA					
RC	80	82	83	82	81

Source: Authors’ calculation based on SITC data from unctad.org

Note: *By definition, B and In RXA are perfectly consistent.

Stability of Revealed Comparative Advantage

To further understand the stability of the RCA values during the period 2016–2020, the various measures of stability are applied to the results of the RCA indices. The percentages of the products groups were calculated, which have RCA during the year ‘2016’ but seem to have an Revealed Comparative Disadvantage (RCD) during the period ‘2020’. In addition, similarly, the percentages of the product groups that seem to have RCD in the year ‘2016’ but an RCA during the year ‘2020’ (Hoekman & Djankov, 1997). The product groups after analysis present that India had an RCA during the year 2016 but presents an RCD in 2020, such products accounted between 1% and 10% of the total value of the commodity trade during the period 2016 and less than 1% in 2020. Such products, which reveal an opposite situation, that is, an RCD during the year 2016 but an RCA by the year 2020, were comparatively little higher, which makes up between 7 and 10% (see Table 5), presenting not much change in the RCA during the period of the study. The final values of the ‘B’ and In RXA are usually identical as their perfect match that could be obtained under the dichotomous consistency test.

Distribution of the ‘B’ Value

The changes in the distribution of the ‘B’ Balassa values (Table 6) over the period, as suggested by Hinloopen and Marrewijk (2001), reveals India’s RCA has been consistent with the ASEAN economies—the mean value calculated during the period 2016 is 8.829 this had registered at 8.227 during the period 2018 and after that there was a slight decline to 7.46 during the period 2020. The maximum value also gradually increased from 66.19 from the year 2016 to 73.38 by the year 2020. In the year 2016, 42.66% of the ‘B’ values were greater than 1 and this gradually increased to 46.23 during the year 2020, and 38.77% of the ‘B’ registered greater

Table 5. Stability of Revealed Comparative Advantage Index. (Percentage Share of Product Groups).

Index	RCA2016	RCD2020	RCD2016	RCA2020
B	10.33	0.19	7.142	10.714
RTA	3.84	0.38	0.77	0.94
In RXA	10.33	0.19	7.142	10.714
RC	3.83	0.38	0.77	0.96

Source: Authors' calculations based on Table 2 SITC Rev. 3 data, unctad.org

Table 6. The Distribution of Balassa Index, 'B' Value.

Summary Statistics	2016	2017	2018	2019	2020
Mean	8.829991	12.1047	8.227212	7.6115	7.4626
Maximum	66.19338	70.5765	75.66178	72.2994	73.38
Percent of B Index					
<1	42.66	44.89	42.31	46.21	46.23
<2	38.77	40.81	36.16	26.31	28.22
<3	34.69	38.77	36.12	24.22	16.28
<4	20.4	18.4	16.02	20.44	14.22

Source: Authors' calculations based on Table 2 SITC Rev.3 data, unctad.org

than 2 and this halved to 28.22 during the end of the year 2020. In addition, 34.69 of the 'B' values could be found to have value which is greater than 3, this gradually declined to 16.28% in the year 2020. The products with 'B' values which were >4 were 20% in the year 2016 and this significantly reduced to 14% by the end of the period of the study. This presents that the distribution of 'B' value over the period was largely consistent during the whole period of the study.

Conclusion

India's RCA with the ASEAN is presented for 23 distinct commodity groups taken for the study. This reveals the potential for India's trade with the ASEAN and the presence of complementarity in the product category. The analysis of the stability index and the Coefficient of Variation values also presents a fairly stable situation of the commodity category taken for the study. The revealed trade potential can be taken to tap the untapped trade potential with the ASEAN partners. ASEAN has been one of the four among the focus regions for India. Sharing the same culture and rituals, the eastern part of India has been the gateway for trade with the ASEAN countries. India shares maritime borders with Indonesia and Thailand and a land border with Myanmar. With the strengthening of infrastructure and logistics in the Eastern states, the trade potential with the

ASEAN partners can be accelerated. India and ASEAN has signed some important agreements as Comprehensive Economic Cooperation Agreement in 2010 with the ASEAN, where both the regions agreed to reduce and eliminate duties from both sides significantly on 76.5% of goods and liberate the tariffs for more than 90% of goods, trade has increased for exports for over 23% and imports by 55% during the past decade. Similarly, India–Singapore FTA, India–Malaysia FTA and India–Thailand Early Harvest Scheme have all acted towards integrating India's trade with the ASEAN partners. The analysis from the current study also confirms a growing intensity of India's trade with the ASEAN partners.

After nearly 8 years of negotiations, the 15 Asia-Pacific economies such as Japan, China, South Korea, Australia, New Zealand and the ASEAN have concluded the world's largest FTA the 'RCEP' during 2020. India, which was one of the major economies and part of major negotiations for RCEP, chooses to stay away from the RCEP agreement. The major reasons are to protect the domestic industries and correct the deficit situation with the majority of the RCEP countries. Also, India is the only Asian economy to be a part of South Asian Free Trade Area and has an FTA with the ASEAN economies too, India would have been the gateway for the rest of the RCEP countries in the South Asian region through this agreement. With the increasing competitiveness of the Indian exports and growth in the manufacturing sector, and right initiatives of 'Atmanirbhar' and 'Make in India' programmes along with significant agreements with the ASEAN group the complete potential of India–ASEAN India trade could be achieved in the near future, when India–ASEAN completing 30 years of their integration and India is celebrating its 'Azadi ka Amrit Mahotsav'.

Appendix A

Table A1. Results of Correlation Analysis of India with the ASEAN (1995–2020).

Variables/Countries	Exports and Imports Value of r
Brunei	0.408214421
Cambodia	0.911401951
Indonesia	0.931294854
Laos	0.43810864
Malaysia	0.895089208
Myanmar	0.418334871
Philippines	0.948997985
Singapore	0.916893919
Thailand	0.981085777
Vietnam	0.847887699
ASEAN	0.947015373

Source: Authors' calculations based on data extracted from unctad.org

Table A2. List of Commodities Presenting RCA Index.

Commodities Where B > I	Commodities Where RTA > 0	Commodities Where In RXA > 0	Commodities Where RC > 0
1. Petro	–	1. Petro	–
2. Raw materials: Crude fertilisers other than division 56, and crude minerals (27)	–	2. Raw materials: Crude fertilisers other than division 56, and crude min- erals (27)	–
3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, veget)
Coffee, tea, cocoa, spices, etc (7)	Sugar, sugar prepa- rations, honey (6)	Sugar, sugar prepa- rations, honey (6)	Sugar, sugar prepa- rations, honey (6)
Sugar, sugar prepa- rations, honey (6)	Coffee, tea, cocoa, spices, etc (7)	Coffee, tea, cocoa, spices, etc (7)	Coffee, tea, cocoa, spices, etc (7)
	Beverages (11)	4. Animal products	Beverages (11)
4. Animal products Meat, meat preparations (01)	4. Animal products Live animals (0)	Live animals (0)	
Live animals (0)	Meat, meat preparations (01)	Meat, meat preparations (01)	4. Animal products
		Crude animal, vegetable minerals (29)	Live animals (0)
Crude animal, vegetable minerals (29)	Dairy products, eggs (2)	Animal not else- where specified (94)	Meat, meat preparations (01)
Animal not elsewhere specified (94)	Fish, fish prepara- tions (3)		Crude animal, veg- etable minerals (29)
	Animal not else- where specified (94)	5. Cereals	Animal not elsewhere specified (94)
	Crude animal, vegetable minerals (29)	Miscellaneous food preparations (9)	Dairy Products, eggs (2)
5. Cereals		Oil seeds, oil nuts, oil kernels (22)	Fish, fish Preparations (3)
Cereals, cereal preparations (4)	5. Cereals	Animal oils, fats (41)	
Oil seeds, oil nuts, oil kernels (22)	Cereals, cereal preparations (4)	Fixed vegetable oils (42)	5. Cereals
Fixed vegetable oils (42)	Oil seeds, oil nuts, oil kernels (22)		Cereals, cereal preparations (4)
	Tobacco, tobacco manufactures (12)	6. Labour intensive manufactures	Tobacco, tobacco manufactures (12)

(Table A2 continued)

(Table A2 continued)

Commodities Where B > I	Commodities Where RTA > 0	Commodities Where In RXA > 0	Commodities Where RC > 0
		Non-metallic mineral manufactures (66)	Animal oils, fats (41)
6. Labour intensive manufactures	7. Capital intensive manufactures		
Non-metallic mineral manufactures (66)	Iron and steel (67)	7. Capital intensive manufactures	7. Capital intensive manufactures
	Manufactures of metal (69)	Iron and steel (67)	Textile yarn, fabrics, n.e.s (65)
7. Capital intensive manufactures	Sanitary, fixtures, fittings (81)	Manufactures of metal (69)	Iron and steel (67)
Iron and steel (67)	8. Machinery	Leather, dressed furskins (61)	Manufactures of metal (69)
Manufactures of metal (69)	Machinery, other than electrical (71)		Sanitary, fixtures, fittings (81)
Leather, dressed furskins (61)		8.Machinery	
	9. Chemicals	Machinery, other than electrical (71)	8.Machinery
8.Machinery	Essential oils, per- fume materials (55)	Transport equipment (73)	Transport equipment (73)
Machinery, other than electrical (71)			
		9. Chemicals	9. Chemicals
9. Chemicals		Chemical elements, compounds (51)	Essential oils, per- fume materials (55)
Essential oils, per- fume materials (55)		Essential oils, per- fume materials (55)	Chemical materials n.e.s (59)
Plastics materials, cellulose, etc (58)		Fertilisers, manufac- tures (56)	
Chemical materials n.e.s (59)		Plastics materials, cellulose, etc (58)	

Source: Authors' calculations based on data from Table 3.

Table A3. List of Commodities Which Have Shown RCA in 2016 and RCD in 2020.

Commodities Which Have Shown RCA in 2016 and RCD in 2020			
'B'	RTA	Log RXA	RC
Cereals, cereal preparations (4)	Fruit, vegetables (5)	Cereals, cereal preparations (4)	Fruit, vegetables (5)

(Table A3 continued)

(Table A3 continued)

Commodities Which Have Shown RCA in 2016 and RCD in 2020			
'B'	RTA	Log RXA	RC
Oil seeds, oil nuts, oil kernels (22)	Dairy products, eggs (2)	Oil seeds, oil nuts, oil kernels (22)	Dairy products, eggs (2)
Fixed vegetable oils (42)		Fixed vegetable oils (42)	
Commodities Which Have Shown RCD in 2016 and RCA in 2020			
'B'	RTA	Log RXA	RC
Oil seeds, oil nuts, oil kernels (22) (28)	Cereals, cereal preparations (4)	Oil seeds, oil nuts, oil kernels (22)	Transport equipment (73)
Dairy products, eggs (2)		Dairy products, eggs (2)	Cereals, cereal preparations (4)

Source: Authors' calculations based on data from Table 3.

List of Abbreviations

B: Balassa's Index

RC: Revealed Competitiveness

RCA: Revealed Comparative Advantage

RTA: Relative Trade Advantage

REA: Relative Export Advantage

RCD: Revealed Comparative Disadvantage

BIMSTEC: Bay of Bengal Initiative for Multi-Sectoral Technical Economic Co-operation

ASEAN: Association of South East Asian Nations

RCEP: Regional Comprehensive Economic Partnership Agreement

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Growth of Modern Retail and Its Impact on Innovation of Small and Medium Enterprises/ Suppliers: A Study with Special Reference to India

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Abstract

Retailer is the last channel partner of any distribution chain. Retailer plays a very important role in the sale of manufactured goods or service. The customer provides a lot of insights at the retail point on the products and services sold by different manufacturers. These insights are very essential in the development of new products. In the case of large manufacturers, they have different sources of customer insights and product strategies to come out with new innovative products and move up in the market. But for small and medium suppliers/manufacturers, with limited resources and information, it is not easy. In such situations, retailers play a very important role in providing insights to these small and medium suppliers/manufacturers and help them in making alterations to the existing products, developing new products or introducing their existing products in new markets. This brings in the need for exploration and validation of various parameters that define efficiency in modern retail. The modern retailer can always pose challenges to small and medium industries/suppliers in making onerous trade agreements, including credit limit, credit period and sale-or-return, which squarely place the burden of funding the retailer's business on the small and medium enterprises (SME)/supplier, and so on. Unless there is a mandate of better payment terms, the evolution of modern retail can spell an end to barely alive Indian SMEs. As part of this study, small and medium suppliers/manufacturers were interviewed for various parameters that would have an impact on their innovation capabilities. With the help of analysis, it is proved that there is a significant impact created by these large companies on their innovation capacities. Unless there is a mandate of better payment terms and knowledge sharing system, the evolution of modern retail can spell an end to barely alive Indian SMEs.

Keywords

Modern retail, suppliers, innovation, channel partners, manufacturers, enterprises

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Introduction

Over the last 20 years there is a rapid transformation in the ecosystem of Indian retailing. Retail business is passing through a transitional phase, and emerging markets like India are witnessing a major change and consequentially there is a growth in organised retail. The Indian retail segment is predominantly unorganised with a minor component of organised retailing, which also constitutes online retail. Growth of online retail has contributed a lot to the overall growth of organised retailing in India. Till mid-90s, the retail sector in our country was typically unorganised, evolved consumerism and with the evolution of preferences and tastes, resulted in the modernisation of retail business and which resulted in the industry getting more prevalent and organised.

Logistics, storage infrastructure and sophisticated distribution process are very critical for the success of the retail business. These key elements help retailers to gain a competitive advantage over the other retailers. The Indian food retailing, which contributes to around 90% of the trade, is been driven by small and independent sellers. It is very important to note that these traders are highly heterogeneous, fragmented and run their businesses with moderate or little technology. The growth of modern/organised retailing had brought with it some of the innovative procurement systems, stock/inventory management tools and right delivery of efficient client response system and other innovations in the field of product development as well. In the last two decades, the evolution of modern retailing in India has brought a considerable surge in the level of investment in the supply chain and logistics dynamics and that cascaded effort could have a significant influence on the total transportation cost suffered in the economy. In the existing literature, here are research studies which have revealed that an efficient supply chain helps in adding 20%–25% additional advantage to buyers and 24%–48% additional savings to producers. As per the previous studies, it is also proved that the collaboration between native producers/manufacturers and modern retailer's buying strategies is expected to help the country's economy and also benefit them to the advantage of the association with local suppliers. However, some of the studies that were conducted in 10 nations categorically defined as developing nations show that the advantage of decreased cost will occur over a long period of time when the modern/organised retailer ultimately hit the efficacy with central controlling system, new and innovative techniques and modern technology implementation (Minot & Roy, 2007; Reardon & Timmer, 2007).

Organised retailers pursue to the extent possible to positively impact the consumer buying decision-making process by giving the consumers competing good quality goods at reasonable prices. Private brands or store labels are becoming strategically important parts of big modern retailers' product assortment to increase the walk ins. Even though the store brand concept is not very prominent in the Indian markets, it is growing at a rapid pace. Non-food retailers, mainly electronics and electrical appliances and clothing tend to manage a good number of private-label product categories to offer a wide variety. Private labels are one area where modern retailers depend on micro small and medium enterprises (MSMEs) for their production. In order to have successful private labels, retail

brands are required to put a lot of effort in establishing product specifications, quality parameters, branding, and so on. In some of the cases, private labels would be having head-on competition from the established brands. Innovation is very important to have successful private labels.

Modern retailing is considerably a large sector with multiple business prospects to budding entrepreneurs and investors. Apart from that, in developing countries like India, modern retailing is highly relevant in offering an all-round experience to the consumers keeping in view their ever-changing needs and demands. The broader benefits of modern retail can be seen in terms of improved supply chain efficiency, enhanced output of agriculture producers and it is also clear that it will assist in uplifting economic activity.

In the literature available, it can be inferred that there is a considerable impact of power of one of the associates on the buyer–supplier relationship. It is evident from the previous studies that the power is not balanced and it is mostly asymmetric (Hingley, 2005), anyway, Hingley's observation about imbalance of power is not always undesirable in the context of having long-term association. As argued by Blois (1999), it is legitimacy and prestige that play a very important role in balancing the shift of power in the association. It is also very important to understand whether the part will really use the power and if so for what purpose the company will use it.

Buyer–supplier association exists in many ways, with different levels of commitment and collaboration. In the case of organised food retailers, supplier associations are highly inclined by the fact that they are inclined to be a few leading food retailers, holding as the 'gate-keeper' between consumer and producer (Robson & Rawnsley, 2001). When it comes to food retailing, food retailers depend on a large number of suppliers and most of these suppliers depend on these retailers for their existence. Organised food retailers have been pushing huge investments into supporting and sustaining enduring supplier relations with the fundamental goal of accomplishing optimum efficiency.

Krishnan et al. (2006) have argued that the imbalance of power and dependency of one player on another may not result in the dominancy of more power players on the other. One of the challenges with the understanding of the kind of trust that goes in seller–buyer association is the amount of trust. This trust is mostly dependent on the viewpoint (Nielson, 1998). Sutton-Brady (2008) and Reitz et al. (1979) have argued that the dependence when viewed in the backdrop of essential resources is very simple to understand that the organisation that has essential and important resources will have the power over the other party which is lacking the resources. Emerson (1962) believes that the power and dependence are intrinsically interwoven; 'power resides implicitly in the other's dependency'. Dependency is influenced by two variables—the motivational investment of one party's goals influenced by the other party, and the availability of those goals outside this relationship.

Duffy and Fearn (2004) are of the opinion that both supplier organisation and customers try to have association that is of collaborative nature with the partnering organisations to improve efficiency. Kalwani and Narayandas (1995) state that the supplier organisations can attain good sales volumes and make higher earnings

from investments invested in partnering long-term associations with their clients. Lee and Whang (2001) study conducted in collaboration with Stanford University and Accenture on hundred manufacturing organisations along with hundred modern retailers in the consumer and food sector disclosed the facts that establishments which have reported returns that are greater than average returns are the entities that were having higher collaboration with reference to information sharing with the one another. Duffy and Fearne (2004) and Mohr and Spekman (1994) are of the opinion that the higher the level of interdependence (i.e., higher level of collaboration) in a relationship the better the firm performance.

In terms of foreign direct investment (FDI), India is one among the top destinations in the world, garnering inflows of \$49 billion in calendar 2019, according to United Nations Conference on Trade and Development (UNCTAD). In total, 85% of all the FDI that comes into South Asia flows into Indian business. One of the important identified results was to rise the proportion of the core manufacturing segment to 25% of GDP.

According to the study that was conducted by Chawla et al. (2018) with the title 'A Critical study of FDI in Indian Retail Sector: An Analysis of Impact on Stakeholders', it was found that the retailing is playing a pivotal role in the supply chain management of the country. Retailers are the people who are having connections with consumers as a result of which it is playing a key role in the manufacturer's end too.

Methodology

The present research study has primarily used primary data and the data is collected from small and medium suppliers supplying various products to organised retailers in Hyderabad. As per the interactions with the modern retail managers, any supplier supplying less than 10 lakhs worth of goods to the retailer they are termed as small supplier and if the value ranges from 10 lakhs to 20 lakhs, they are termed as medium suppliers. These small-scale vendors are either manufacturers or traders of the products that they supply. The sample considered for the research include suppliers of different types of products like disposables, plastic, foods, foot ware, garments, home decors, and so on.

As part of primary data collection from small and medium suppliers to large modern retailers, big brands in the retail business are identified (list as shown in Table 1). Upon interaction with the brands, suppliers to these brands are listed. As per the understanding, a supplier with annual turnover of less than 5 lakhs in a financial year is considered as small-scale supplier. Suppliers with annual turnover of less than 20 lakhs are termed as medium supplier. By applying appropriate filters, for each brand list of small and medium suppliers are identified (as shown in Table 1).

As shown in Table 1, a total of 30% of the population from the entire population with representation of 30% from each retailer is taken for the study. Apart from primary data, secondary data is also collected from numerous sources is been used. Important retrieved sources for this study contain business reports and

Table 1. Sampling.

S. No	Name of Company	No. of Small/ Medium Scale Suppliers	Respondents (Sample Size 30%)
1	D Mart	45	11
2	More supermarkets	38	10
3	Big Bazaar	48	11
4	Spencers Retail	42	10
5	Reliance Mart	48	12
6	Spar Retail	27	7
7	Heritage Retail	32	8
8	Wal Mart	22	6
	Total	254	75

articles from renowned academic journals and renowned studies on the topic. EBSCO host's Business Source Premier, Emerald Insight and EconLit, JSTOR (online periodical databases) were also used as the primary information sources in obtaining peer-reviewed academic and practitioners' journals. The popular studies on the topic have been obtained from the websites of Asian Development Bank (ADB), A. T. Kearney, The World Bank, National Bank for Agriculture and Rural Development (NABARD), Central Statistical Organisation, and so on, in each company is considered as sample size and same has been contacted by using Stratified random sampling technique. Data are collected through the well-framed questionnaire, which covers all the objectives of the present research.

As per the available literature review in the first part of the article, the following parameters are tested in order to understand the influence and support system created by modern retailers in building the innovation capabilities of small and medium scale suppliers supplying products to retailers.

1. Engaged with the key account managers in the development and improvement of new products.
2. Implementation of a comprehensive supplier monitoring process.
3. Worked on pricing bureaucracy/paperwork.
4. Regular focus on Just-in-time (JIT) delivery.
5. Ensure the effective use of enterprise resource planning (ERP) & maximum retail price (MRP) systems.

Hypothesis

A hypothesis is designed to examine if there are significant problems that are hampering the innovation abilities of small suppliers by the modern retailers. Independence *t*-test has to be done and descriptive statistics has also to be done to assess the sanity of the data. Some of the identified variables in the area of innovation are identified as follows: engaged with the key account managers in

the development and improvement of new products; implementation of a comprehensive supplier monitoring process; worked on pricing bureaucracy/paperwork; regular focus on JIT delivery; and ensure the effective use of ERP & MRP systems.

H_0 : It is proposed that there is no significant problem that hampers the growth of small suppliers in the areas of innovation.

vs.

H_a : It is proposed that there is a significant problem that hampers the growth of small suppliers in the areas of innovation.

Analysis

Reliability Test

Further to the calculation of Cronbach's alpha in line with all the calculated factors will result in average scale or results. For the present data Cronbach's alpha value is 0.699, which is below accepted level of 0.70. It can now be concluded that the data is fit and the same can be used for further analysis.

It is also important to note that the mean score of each of the parameter is close to 2.66 and for the 75 respondents the calculated standard deviation is 0.687.

The calculated Cronbach alpha value for all the attributes used in the study is greater than .70, with these results, it can be concluded that apart from overall alpha value being in the acceptable level, the individual alpha value is also reliable to carry out the further analysis.

Analysis of variance (ANOVA) with Cochran's test has resulted in p value < .05, as the p value is less than .05, which means it is significant, at 95% confidence level it can be assumed that the data used in the research is consistent and it can be used for further analysis. Analysis has resulted in the mean of 5.33 and a standard deviation of 1.212.

Table 2. Reliability Test.

Case Processing Summary			
		N	%
Cases	Valid	75	100.0
	Excluded ^a	0	0.0
	Total	75	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	No. of Items
0.699	2

Table 3. Item Statistics.

Item Statistics	Mean	Std. Deviation	N
Performance of suppliers and organised retailer relation depends on the following factors	2.73	0.759	75
Problem that hampers the growth of small suppliers in the areas of	2.60	0.615	75

Table 4. Item-Total Statistics.

Item-Total Statistics	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Performance of suppliers and organised retailer relation depends on the following factors	0.550	0.701
Problem that hampers the growth of small suppliers in the areas of	0.550	0.695

Table 5. ANOVA with Cochran's Test.

Scale Statistics						
Mean		Variance	Std. Deviation		No. of Items	
5.33		1.468	1.212		2	
ANOVA with Cochran's Test						
		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		54.333	74	0.734		
Within people	Between items	0.667	1	0.667	2.941	0.009
	Residual	16.333	74	0.221		
	Total	17.000	75	0.227		
Total		71.333	149	0.479		
Grand mean = 2.67						

In continuation with the data reliability tests indicated in Table 1–4 and Analysis of variance (ANOVA) with Cochran's test (shown in Table 5) indicate p value $< .05$, as the p value is less than $.05$, which means it is significant, at 95% confidence level it can be assumed that the data used in the research is consistent and it can be used for further analysis. Analysis has resulted in the mean of 5.33 and a standard deviation of 1.212.

Hypothesis

Null Hypothesis (H_0): There is no significant problem that hampers the growth of small suppliers in the areas of innovation (Tables 3 and 4).

vs.

Alternate Hypothesis (H_a): There is a significant problem that hampers the growth of small suppliers in the areas of innovation.

To examine the significant problems that hamper the growth of small suppliers in the areas of innovation independence t -test has been done at the gender level as shown in Table 6. Descriptive statistics have also been done to assess the sanity of the data. As per the results at a 95% confidence level, in regards with problems that hamper the growth of small suppliers in the areas of innovation, the mean value of the data is 2.56 and the standard deviation is 0.282. In the data, not much deviation has been seen in the variables as compared with mean.

Concluding Remarks: The independence t -test table contains inferential t -test statistics. Table 7 significantly tells whether there is any statistical difference between equal variances assumed and equal variances not assumed. This table also helps in understanding whether the null hypothesis is in favour or not in favour of the research hypothesis. The most important columns in the above table are as follows:

Levine's test for equal variance, this is the first section of the Independent Samples Test. If the probability level or significance level is higher than .05 then that means there is equal variance between the variables. Here, in the study on problems that hamper the growth of small suppliers in the areas of revenue generation probability value is less than .05 for all the variables or factors; hence, the second row has been used for the results.

Therefore, at a 95% confidence level, it can be concluded that there are problems hampering the growth of small suppliers in the areas of innovation. H_a is accepted.

Table 6. Independence t -Test at Gender Level.

Group Statistics						
Statements		N	Mean	Std. Deviation	Std. Error Mean	
Engaged with the key account managers in the development and improvement of new products	Male	41	2.88	0.288	0.201	
	Female	34	2.85	0.209	0.207	
Implementation of a comprehensive supplier monitoring process	Male	41	2.41	0.414	0.221	
	Female	34	2.47	0.212	0.208	
Worked on pricing bureaucracy/paperwork	Male	41	2.17	0.138	0.178	
	Female	34	2.41	0.184	0.203	
Regular focus on just-in-time (JIT) delivery	Male	41	2.44	0.361	0.213	
	Female	34	2.76	0.35	0.231	
Ensure the effective use of ERP & MRP systems	Male	41	2.66	0.315	0.205	
	Female	34	2.59	0.351	0.232	

Table 7. Independent Sample Test.

Independent Samples Test								
		Levene's Test for Equality of Variances		t-Test for Equality of Means				
						Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	T	df		Lower	Upper
Engaged with the key account managers in the development and improvement of new products	Equal variances assumed	0.24	0.01	0.09	73	0.291	-0.55	0.6
	Equal variances not assumed			0.09	72	0.289	-0.55	0.6
Implementation of a comprehensive supplier monitoring process	Equal variances assumed	3.99	0.05	-0.18	73	0.308	-0.67	0.56
	Equal variances not assumed			-0.18	73	0.303	-0.66	0.55
Worked on pricing bureaucracy/ paperwork	Equal variances assumed	0	0.01	-0.9	73	0.269	-0.78	0.29
	Equal variances not assumed			-0.89	69	0.27	-0.78	0.3
Regular focus on just-in-time (JIT) delivery	Equal variances assumed	0.38	0.05	-1.04	73	0.315	-0.95	0.3
	Equal variances not assumed			-1.04	71	0.314	-0.95	0.3
Ensure the effective use of ERP & MRP systems	Equal variances assumed	0.01	0.01	0.23	73	0.309	-0.55	0.69
	Equal variances not assumed			0.23	70	0.31	-0.55	0.69

Conclusion

Some of the major long-term hurdles that Indian small-scale industries are facing include adequate infrastructure, compliances that can hold SME operations hostage under outdated laws, inadequate funding, innovations, patents, and so on. Growth of modern retail is built on the pillars of efficient small industries. This brings in the need for exploration and validation of various parameters that define

the efficiency in modern retail. A modern retailer can always pose challenges to small industries/suppliers in making onerous trade agreements, including credit limit, credit period and sale-or-return, which squarely place the burden of funding the retailer's business on the SME/supplier, and so on. Unless if there is a mandate of better payment terms, the evolution of modern retail can spell an end to barely alive Indian SMEs.

Annexure

Questionnaire

Growth of Modern Retail and Its Impact on Innovation of Small and Medium Enterprises/Suppliers: A Study with Special Reference to India

Dear Respondents,

My research topic falls within the organised retailers. In this regard, I am approaching you with a request to fill in the questionnaire, which will take about 15 minutes. Data collected through this questionnaire will be used strictly for academic purposes only. This questionnaire aims to understand the performance of organised retailers and sustainability of small and medium suppliers. This survey is purely conducted for academic purpose only. Responses to this questionnaire will be kept strictly confidential.

A. Please answer a few questions based on students profiling

1. Please specify your age (Years):

- 21 to 30 years
- 31 to 40 years
- 41 to 50 years
- >50 years

2. Please specify your gender:

- Male
- Female

3. Please specify your qualification:

- High school
- Intermediate
- Graduate
- MBA
- Others

4. Which categories of the product do you sell to the organised retailers?

- Grocery/FMCG
- Apparel
- Toys

- Cosmetics
 - Electronic/electrical goods
 - Books, music and gifts
 - Footwear
 - Furniture
 - Kitchen appliances
 - Other
5. **How long are you associated with organised retail?**
 - <1 year
 - 2 to 5 years
 - >5 years
 6. **How many organised retail you are associated with?**
 - 1
 - 2
 - 3
 - 4
 - More than 4
 7. **Are you satisfied with your association with organised retail?**
 - Yes
 - No
 8. **How you faced any problem with your relationship with any of the organised retail?**
 - <1 year
 - 2 to 5 years
 - >5 years

B. Please specify the extent of supply chain integration between organised retailer and supplier. Please indicate the extent you agree or disagree with each statement as it pertains to the terms and conditions of the organised retailer.

(Strongly agree = 1, agree = 2, neither agree nor disagree = 3, disagree = 4, strongly disagree = 5)

Problem that hampers the growth of small suppliers in the area of areas of innovation.		1	2	3	4	5
9.	Engaged with key account managers in the development and improvement of new products.					
10.	Implementation of a comprehensive supplier monitoring process					
11.	Worked on pricing bureaucracy/paperwork					
12.	Regular focus on Just-in-time (JIT) delivery					
13.	Ensure the effective use of ERP & MRP systems					

Thank you for your valuable feedback

Declaration of Conflicting Interests

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Editorial

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Dr Sheeba Kapil
Editor-in-Chief

Assessing the Role of Cultural Intelligence and Perceived Organisational Support in Facilitating Indian Expatriates' Adjustment and Job Satisfaction

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Abstract

Indian expatriates form a significant portion of western countries' total immigrant population. This study aims to empirically examine the significance of cultural intelligence (CQ) and perceived organisational support (POS) in facilitating Indian expatriates' cultural adjustment and job satisfaction. We use data from 220 Indian expatriates working in 30 different foreign subsidiaries to examine the proposed hypotheses. First, we validated the collected data using confirmatory factor analysis (CFA). We then tested the hypothesised relationships through structural equation modelling (SEM). Results indicate that CQ and POS were positively and significantly associated with Indian expatriates' cultural adjustment and job satisfaction. We also found support for indirect effects where adjustment partially mediated the relationship between the predictors—CQ and POS and the criterion, that is, job satisfaction. Finally, we discuss the theoretical and practical implications of study findings and also suggest directions for future research.

Keywords

Perceived organisational support, cultural intelligence, expatriate adjustment, job satisfaction, Indian expatriates

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Introduction

The globalisation era has led to companies extending their boundaries beyond their country of origin and establishing operations overseas. With internationalisation, there comes a plethora of challenges that multinational corporations (MNCs) need to handle. These challenges range from the transfer of human resource management policies and practices (Oppong, 2018) to managing the integration and control over subsidiaries' activities and performance, especially in culturally distant nations (Colakoglu & Caligiuri, 2008). This is where the role of expatriates comes into the picture. Research shows that expatriates play a pivotal role in transferring firm-specific knowledge to subsidiaries, facilitating entry into new local markets, and keeping intact the organisational structure, culture and philosophy of MNCs (Colakoglu & Caligiuri, 2008; Kim & Slocum, 2008; Riusala & Suutari, 2004; Tripathi & Singh, 2021). Therefore, expatriates are not only the mediums to effectuate the success and growth of MNCs but also act as a guiding light for subsidiaries to realise global business objectives (Bhatti et al., 2013; Lee & Sukoco, 2010). However, in the process of ensuring better integration with subsidiaries, expatriates themselves are exposed to a variety of challenges such as adjustment issues, language barriers, lack of cultural awareness and support from the organisation. Consequently, many assignments result in failure and early repatriation causing considerable loss to organisations and expatriates (Kraimer et al., 2009; Singh & Tripathi, 2018; Tripathi & Singh, 2022). Templer (2010) argued that failed assignments may hamper an organisation in several ways. Apart from substantial financial loss, premature returns badly affect organisation productivity, sales and revenues, market size, business opportunities and reputation in the market. Furthermore, assignment failures may also have consequential impacts on employees' overall well-being and confidence (Kawai & Strange, 2014; Templer, 2010).

Difficulties arising out of living and working in a culturally distinct nation have been extensively discussed in the literature (Kawai & Strange, 2014; Selmer, 2006; Tripathi & Singh, 2022). Management scholars and practitioners have repeatedly touted the importance of cultural adjustment of expatriates and how critical it is for foreign assignments' success. In addition to this, the last two decades witnessed an increase in the studies on cultural adjustment and its impact on task and contextual performance (Bhatti et al., 2013; Jyoti & Kour, 2017; Kawai & Strange, 2014; Lee & Sukoco, 2010; Mezas & Scandura, 2005; Nunes et al., 2017; Ramalu et al., 2012). However, the topic of expatriate job satisfaction, which is established as a significant determinant of the performance and retention of employees, has often been overlooked by scholars (Bhaskar-Shrinivas et al., 2005; Froese & Peltokorpi, 2011; Tripathi & Singh, 2020). Employees' job performance and retention is very important not only from the individual but also from organisation's success point of view. From individuals' perspective, job performance leads to satisfaction on job, which is an ultimate driving factor for career satisfaction. Looking from organisations' point of view, employee retention is more crucial for organisation's success and realising overall organisational

objectives (Cerdin & Le Pargneux, 2014). Hence, employee's job satisfaction cannot be overlooked especially on foreign assignments. A satisfied employee is more likely to be motivated enough to perform well and remain on the assignment. Therefore, it would be worthwhile to study the factors that influence the job satisfaction of employees on foreign assignments.

In addition, with the increasing global competition and the dependency of MNCs on expatriates for successful business functions and growth (Bhatti et al., 2013), it is imperative to understand why some expatriates are more adjusted and satisfied than others in their international work assignments. In this regard, cultural intelligence (CQ)—a set of intelligent behaviours from the viewpoint of people in specific cultures, is believed to explain the reasons for individual differences in acclimatising to distinct cultural environments (Huff et al., 2014). Introduced by Earley and Ang (2003), this unique facet of intelligence is defined as an individual's competence to successfully adapt to new and unfamiliar cultural environments. As evident from the recent review conducted by Ott and Michailova (2018), CQ has been widely researched for its effects on cultural adjustment and performance of expatriates. However, even after two decades of its advancement, the effect of CQ on the job satisfaction of expatriates is yet to be explored.

Another important factor that is found to be related to a variety of employee work-related attitudes and outcomes is perceived organisational support (POS). POS indicates 'employees' perception of the degree to which organisations care about their well-being and value their contribution in achieving organisational goals' (Kraimer & Wayne, 2004; Riggle et al., 2009). The meta-analyses on POS and employee outcomes reveal that POS has a strong positive effect on job satisfaction (Ahmed et al., 2015; Riggle et al., 2009). However, the research results in these studies are limited to domestic employment contexts only. Additionally, the relationship of POS with expatriate-related outcomes is still under-researched (Kawai & Strange, 2014). It is important to note that the role of POS becomes even more important in cross-cultural contexts where the support from both the home and host country organisations is equally important for expatriates' psychological well-being (De Paul & Bikos, 2015).

Based on these rationales, the objective of the present research is to empirically assess the role of CQ and POS in impacting expatriate adjustment and job satisfaction. Studying adjustment and job satisfaction would also be important in understanding the extent to which CQ and POS help expatriates in getting along well in the new country and having positive attitude towards their job. In the absence of such knowledge, MNCs may have a hard time figuring out why expatriates don't feel contented and what makes them quit the assignment. This investigation is also expected to help MNCs in avoiding the cost incurred due to failed international assignments. We expect three major contributions to expatriation literature from our study. First, we attempt to investigate the effects of CQ and POS on job satisfaction with cultural adjustment as a mediator. Second, the theories of multiple intelligence and organisational support have been followed to determine how CQ and POS affect expatriates' job satisfaction. The last contribution pertains to the testing of the research model in the Indian context.

India has been a major source of expatriates as a large chunk of its population is skilled and English-speaking (Thite et al., 2009; Tripathi & Singh, 2021; Vijayakumar & Cunningham, 2016).

The following section comprises the theoretical background and how the hypotheses have been developed.

Theoretical Background and Hypotheses Development

CQ, Cultural Adjustment and Job Satisfaction

CQ was first introduced in an article by Earley (2002) and then in a book titled *Cultural Intelligence: Individual Interactions across Cultures* by Earley and Ang (2003). CQ refers to a set of capabilities that allow individuals to function effectively in not just one but a variety of cultural environments. It reflects how well a person utilises cultural cues to adapt to unfamiliar and diverse cultural situations (Ang et al., 2007; Earley & Ang, 2003). CQ is grounded in the theory of multiple intelligences by Sternberg and Detterman (1986) that contend that the concept of intelligence is multidimensional. Thus, despite focusing specifically on culture-related intelligence, CQ is multi-factor in nature (Malek & Budhwar, 2013). The different dimensions of CQ are as follows: meta-cognitive, cognitive, motivational and behavioural (Ang et al., 2007; Earley & Ang, 2003).

The meta-cognitive dimension of CQ refers to the mental processes involved in gaining and interpreting knowledge about different cultures. It makes individuals conscious of when and how to apply their cultural knowledge in cross-cultural interactions. Thus, meta-cognition is a high-order mental process that enables a person to plan and control [DEL3] on how to successfully deal with distinct cultural scenarios (Ang et al., 2007). The cognitive CQ refers to a person's knowledge structures and understanding of similarities and differences across cultures. It reflects how well a person is aware of other cultures' values, norms and practices (Ang et al., 2007; Triandis, 1994). The motivational dimension of CQ displays one's readiness to learn and understand cultural diversity and the desire to interact with people from different cultures (Earley & Peterson, 2004). Finally, the behavioural dimension of CQ refers to the capability to exhibit appropriate actions and behaviours in different cultural interactions. It includes the manifestation of suitable verbal and normal verbal behaviours while interacting with people from different cultures (Ang et al., 2007).

People with high CQ are expected to make better cultural judgements and easily assimilate into new cultures since they have the repertoire to predict the desired actions and behaviours expected in a given culture. They are mindful and conscious of the norms, practices and preferences of a culture and can make better decisions about how to respond effectively during intercultural interactions (Ang et al., 2007; Nunes et al., 2017).

Therefore, using the above arguments, we can conclude that high CQ makes a person better attuned to the nuances of distinct cultural settings and facilitates an

easy adaptation to different cultures. Previous studies on CQ have established it as a significant predictor of cultural adjustment (Lee & Sukoco, 2010; Lee et al., 2014). Researchers have also found a positive relationship between CQ and job performance (Lee & Sukoco, 2010; Ramalu et al., 2012). Using these supportive shreds of evidence, we suggest that CQ is likely to have a positive influence on job satisfaction as well. CQ's positive impact on job performance signifies that cultural knowledge and awareness assist expatriates in better understanding and conforming to the role expectations in a new culture. Likewise, a better understanding of role expectations may also lead to an increase in job satisfaction of expatriates, since they have the confidence that they can effectively respond to challenges caused by cultural differences at the workplace. Accordingly, we hypothesise that the following:

H_1 : CQ has a significant and positive effect on expatriate cultural adjustment.

H_2 : CQ has a significant and positive effect on expatriate job satisfaction.

POS, Cultural Adjustment and Job Satisfaction

The concept of POS has been deeply rooted in organisational support theory, which proposes that employees infer the sense of support and care from the organisation through various policies, procedures and treatments. If the employees believe that these policies and practices are committed to promoting their best interests, then they reciprocate this support with the socio-emotional resources that they have in the form of trust, commitment, loyalty, dedication and performance (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Rhoades & Eisenberger, 2002).

The relationship between organisational support and employees' commitment is also contained in social exchange theory (Blau, 1964), which is grounded in the norm of reciprocity (Gouldner, 1960). The concept of social exchange and reciprocity is based on the assumption that the employees feel obliged to the favourable support they receive from the organisations, and thus, reciprocate this support with increased commitment, performance and loyalty (Kawai & Strange, 2014). Thus, POS can be summed up as 'employees' global beliefs that the organisation values their contributions and cares about their well-being' (Kraimer & Wayne, 2004; Riggle et al., 2009).

POS has the following three main dimensions: career POS, finance POS and adjustment POS (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Kraimer et al., 2001). Career POS refers to the level of care and support demonstrated by organisations to develop expatriates' careers during their stay on assignment and also after their repatriation. Finance POS is described as the extent to which organisations support expatriate employees with their financial needs, such as bonuses, allowances and insurance. Finally, adjustment POS means the pre-departure training and relocation assistance provided by organisations to expatriates and their families to facilitate an easy transition after their transfer to

the foreign nation. All these kinds of support help employees deal effectively with cultural challenges, make them more committed to their organisations and also enhance their performance (Kawai & Strange, 2014; Kraimer & Wayne, 2004; Wu & Ang, 2011).

The application of POS in cross-cultural employment contexts has given a new dimension to our understanding of how organisations can help expatriates deal with adjustment and job-related challenges (De Paul & Bikos, 2015). The significance of POS in enhancing employee outcomes is well-established in the literature. Researchers and practitioners have argued that how expatriates perceive support from organisation can largely impact their overall well-being, such as happiness, psychological satisfaction and self-realisation (De Paul & Bikos, 2015; Kraimer et al., 2001). Bader (2015) has also reported a positive influence of POS on the work attitude and well-being of expatriate employees. Empirical studies, which investigated POS in international context, found it to be a crucial determinant of adjustment, commitment towards organisation and employee turnover intentions (Kraimer et al., 2001). It has also been argued by researchers that employees who experience supporting organisational climate show greater citizenship behaviour and commitment towards their organisation (Liu & Ipe, 2010). Prior studies have also found a positive relationship between POS and expatriate adjustment. Likewise, favourable and good organisational support is believed to positively influence the job satisfaction of employees. The perceived care and support from the organisation may stimulate in expatriates a sense of being valued by the organisation making them more satisfied with their jobs. Therefore, people with good POS may feel better adjusted to cultural dissimilarities and are expected to be greatly satisfied in their work front. On the basis of these arguments, the following is proposed:

H_3 : POS has a significant and positive effect on expatriate cultural adjustment.

H_4 : POS has a significant and positive effect on expatriate job satisfaction.

Cultural Adjustment and Job Satisfaction

Cultural adjustment is well-established in the literature as a critical predictor of successful expatriate assignments (Palthe, 2004). It has been defined as 'expatriates' degree of psychological comfort and familiarity with the new culture'. Simply put, cultural adjustment reflects how comfortably expatriates imbibe the tenets of the host country while living and working there (Black, 1988; Black et al., 1991; Black & Stephens, 1989). It is conceptualised as a construct comprising the following three dimensions: general, work and interaction adjustment (Black et al., 1991).

The general adjustment refers to the extent to which expatriates are comfortable with the various aspects of general living conditions in the host country, such as food, weather and transportation system. Work adjustment signifies psychological

comfort with the demands of the new work environment, such as job tasks, responsibilities, leadership and role expectations. Interaction adjustment is the degree of comfort while interacting with locals in the host country (Black & Stephens, 1989).

Prior literature shows that cultural adjustment has a significant effect on expatriate outcomes, such as performance, turnover intentions, organisational citizenship behaviour and organisational commitment—all of which have been established as the consequence of job satisfaction (Barakat et al., 2015). Hence, cultural adjustment is expected to positively affect job satisfaction as well.

H₅: Cultural adjustment has a significant and positive effect on expatriate job satisfaction.

The Mediating Role of Cultural Adjustment

Over the years, cultural adjustment has been established as a fundamental and primary outcome that is responsible for shaping other consequences of cross-cultural assignments, such as performance, effectiveness and commitment (Bhaskar-Shrinivas et al., 2005; Kim & Slocum, 2008).

According to Kraimer et al. (2001) and Kawai and Strange (2014), positive and favourable organisational support help expatriates better adapt to cross-cultural environments. Not only this but POS has also been established as a strong contributor to the psychological well-being of expatriates (De Paul & Bikos, 2015). Psychological comfort and adjustment in the host country increase the job satisfaction of expatriates (Takeuchi et al., 2002). Thus, it can be argued that POS is an incredible assistance from organisation, helping expatriates adapt to the new culture and experience greater job satisfaction.

Similarly, the role of CQ has proved to be pivotal in determining the adjustment of expatriates (Guðmundsdóttir, 2015; Lee & Sukoco, 2010). Moreover, studies have also proposed that cultural adjustment mediates the positive impact of CQ on expatriate performance (Ramalu et al., 2012). In addition, performance being a criterion of job satisfaction gives us a base to propose that cultural adjustment will mediate the positive effect of CQ on job satisfaction as well.

We propose cultural adjustment as a mediating variable in this study. The role of a mediator is to expound on the causal relationship between the antecedent and consequence (Baron & Kenny, 1986). Accordingly, we propose that adjustment as a mediating variable will facilitate the positive association between the antecedents (i.e., CQ and POS) and the consequence (i.e., job satisfaction). The hypotheses that are formulated are as follows:

H₆: Cultural adjustment mediates the relationship between CQ and job satisfaction.

H₇: Cultural adjustment mediates the relationship between POS and job satisfaction.

Figure 1 illustrates the hypothesised path relationships.

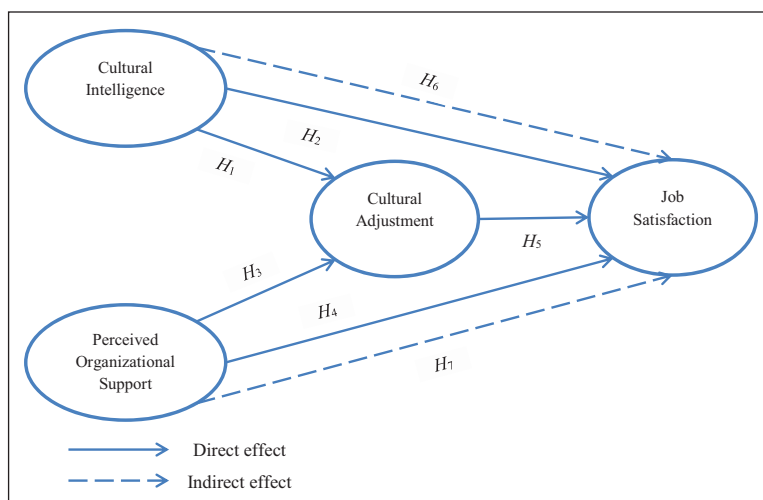


Figure 1. Hypothesised Model.

Methodology

Data Collection

To test the proposed model, we gathered data from the Indian-origin expatriates currently working in foreign countries. A questionnaire prepared in English was used to solicit the responses. The study participants were acquired through convenience and snowball sampling. Our respondents were selected from multiple sources. First, an online survey link was mailed to expatriate managers from management program alumni lists and researchers' own references, requesting them to participate in the study. We also requested these managers to send the survey to expatriates from their contact list. To collect more responses, we approached the Indian expatriates' groups and communities on the internet. In total, 234 responses were collected; however, 8 were discarded for being outliers and 6 were deleted because of unengaged responses. Finally, 220 usable questionnaires were included in the analysis.

Measurement

To measure CQ, we used items from the cultural intelligence scale (CQS) developed by Ang et al. (2007). We asked the expatriates to rate their disagreement or agreement with statements on a five-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'. The sample item is 'I am conscious of the cultural knowledge I use when interacting with people from different cultural backgrounds'.

We measured the POS with Kraimer and Wayne's (2004) scale. We asked the expatriates about their perceived degree of support from the organisation on a five-point scale, where 1 = 'strongly disagree' and 5 = 'strongly agree'. One sample question is 'The financial incentives and allowances provided to me by my organisation are good'.

To measure the degree of cultural adjustment, we adopted items from Black's (1988) scale. Sample item includes 'How adjusted are you to the weather in foreign?' A five-point scale ranging from 1 = 'not adjusted at all' to 5 = 'very well adjusted' was used.

We measured the job satisfaction of expatriates with West et al.'s (1987) scale. We asked the respondents to rate how satisfied they were with their job on a five-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree'. The sample question is 'I'm satisfied with my performance in the job'.

Common Method Variance

Since all our study variables were rated by a single source, that is, expatriates, there is a potential for method bias (Podsakoff et al., 2003). To address this issue, we assured the respondents that their responses would be confidential and anonymous. Further, while designing the questionnaire, we randomly placed the items for the predictor and criterion variables. We also ensured that all questions in the questionnaire can be easily comprehended. Finally, we used Herman's single-factor test by loading each construct item on a single factor (Harman, 1976; Podsakoff et al., 2003). The un-rotated principal component analysis (PCA) resulted in the first factor explaining 42.92% of the variance, which is below 50% and does not constitute a majority of the variance (Podsakoff & Organ, 1986). Hence, it can be assumed that common method variance (CMV) is not concerning in the used data set.

Analysis and Results

We used SPSS and AMOS 22.0 to conduct the data analyses. First of all, we discussed the sample characteristics by presenting the demographic profile of respondents. The sample consisted of 220 Indian nationals expatriated to 30 foreign countries. In regards to the gender distribution, most of them were male (73.6%) and in the age bracket of 30–40 years (48.6%). 61.8% of the respondents were married and 33.1% were with kids. The participants came from multiple sectors, that is, IT, science and technology, education, media and entertainment, banking and financial services, and others. Table 1 presents the demographic profile of respondents.

Table 2 presents the descriptive statistics of variables, that is, means, standard deviations, internal consistency (Cronbach's alpha) and correlations between constructs. Alpha values ranging from 0.77 to 0.88 indicate good internal consistency reliability of study variables (Nunnally, 1978).

Table 1. Demographic Profile of Respondents.

Demographic Variables		No. of Participants	% of Total Sample
Gender	Male	162	73.60
	Female	58	26.40
Age	Below 30 years	88	40.00
	30–40 years	107	48.63
	41–50 years	21	9.54
	51 years and above	4	1.81
Marital status	Married	136	61.80
	Unmarried	84	38.20
No. of children	0	147	66.81
	1	54	24.54
	2 or more	19	8.63
Industry type	Information technology	101	45.90
	Science and technology	36	16.40
	Education	12	5.50
	Media and entertainment	4	1.80
	Banking and financial services	15	6.80
	Others	52	23.60

Table 2. Descriptive Statistics and Correlations between Constructs.

Constructs	Mean	SD	1	2	3	4
1. Cultural intelligence	4.03	0.55	(0.77)			
2. Perceived organisational support	3.81	0.59	0.61	(0.84)		
3. Cultural adjustment	4.29	0.48	0.48	0.44	(0.84)	
4. Job satisfaction	4.11	0.53	0.48	0.62	0.68	(0.88)

Notes: $N = 220$.

Correlations are significant at $p < .01$ (two-tailed).

Values within parentheses represent reliabilities.

We followed the recommendations of Anderson and Gerbing (1988) and checked the distinctiveness of constructs first. To do that, we performed confirmatory factor analysis (CFA) to assess the convergent and discriminant validity. In the next step, we used structural equation modelling (SEM) to test our hypothesised path relationships.

Confirmatory Factor Analysis

We first performed CFA to test the measurement model. Items with standardised regression weight (SRW) less than 0.50 were deleted (Hair et al., 2010). The overall model fit was assessed based on the chi-square (χ^2) value and other global fit indices such as Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Squared Error (RMR), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI). Table 3 presents the results for the overall measurement model. The statistics for global fit indices indicate that the values satisfy the relevant thresholds and the data adequately fit the model (Byrne, 2001; Chau, 1997). Furthermore, the average variance explained (AVE) greater than 0.50 and the composite reliability (CR) greater than 0.70 for all constructs establishes the convergent validity (Hair et al., 2010). In addition, the AVE values exceeding the maximum shared variance (MSV) ensure the discriminant validity (Hair et al., 2010).

Structural Equation Modelling

We used the SEM to test the hypothesised path relationships. This study examines the relationship between CQ, POS, cultural adjustment and job satisfaction using the imputation method in AMOS. We followed the recommendations of Preacher and Hayes (2004) to test the mediating effects of cultural adjustment.

To test the direct relationships, we first analysed the impact of CQ on cultural adjustment and job satisfaction. The results indicated that CQ has a significant effect on both adjustment ($\beta = 0.56, p < .001$) and job satisfaction ($\beta = 0.55, p < .001$) of expatriates. Hence, hypotheses H_1 and H_2 stand accepted. Similar results were found for the effect of POS on adjustment ($\beta = 0.52, p < .001$) and job satisfaction ($\beta = 0.70, p < .001$), indicating support for hypotheses H_3 and H_4 .

Finally, the calculation for the effect of the cultural adjustment on job satisfaction was also found to be significant ($\beta = 0.76, p < .001$). Thus, H_5 was supported.

Table 3. The Measurement Model.

	Goodness-of-fit Statistics	Composite Reliability	Average Variance Extracted	Maximum Shared Variance
1. Cultural intelligence	$\chi^2/df = 1.95$, GFI = 0.91,	0.78	0.55	0.38
2. Perceived organisational support	AGFI = 0.87, RMR = 0.02, RMSEA = 0.06,	0.83	0.55	0.39
3. Cultural adjustment	CFI = 0.95, TLI = 0.94	0.84	0.58	0.46
4. Job satisfaction		0.88	0.66	0.46

Table 4. Bootstrapping Results for Mediation.

Hypothesis	Standardised Total Effect	Standardised Direct Effect	Standardised Indirect Effect	Mediation Type
CQ-CA-JS	0.55 (***)	0.18 (***)	0.36 (***)	Partial mediation
POS-CA-JS	0.69 (***)	0.42 (***)	0.27 (***)	Partial mediation

Notes: $n = 2,000$ bootstrapping resamples, 95% bias-corrected confidence interval.

*** $p < .001$.

CQ = Cultural intelligence; POS = Perceived organisational support; CA = Cultural adjustment; JS = Job satisfaction.

In order to determine the indirect effects, the mediating variable, that is, cultural adjustment was put between the independent and dependent variables. A bootstrap method was used to estimate the indirect effect. Table 4 presents the bootstrapping results which show a significant indirect effect of both CQ ($\beta = 0.36, p < .001$) and POS ($\beta = 0.27, p < .001$) on job satisfaction through cultural adjustment. Accordingly, hypotheses H_6 and H_7 were supported.

Furthermore, cultural adjustment partially mediates the relationship between the predictors, that is, CQ and POS, and the outcome variable job satisfaction, as the direct effects of both CQ ($\beta = 0.18, p < .001$) and POS ($\beta = 0.37, p < .001$) on job satisfaction remained significant in the presence of the mediator. Hence, support for all seven hypotheses was obtained in the present study.

Discussion

This study investigates how CQ and POS influence the job satisfaction of Indian expatriates directly and indirectly. Drawing on multiple intelligences theory and the theory of organisational support, we developed a model investigating relationships among CQ, POS, cultural adjustment and job satisfaction of Indian international assignees. We sought to explore the following two issues: first, the direct impact of CQ and POS on job satisfaction; and second, the indirect impact of cultural adjustment between the predictors, that is, CQ and POS, and the outcome variable job satisfaction. The results of statistical analyses revealed that both CQ and POS were positively and significantly associated with cultural adjustment and job satisfaction of Indian expatriates. CQ was found to explain 32% and 31% of the variance in cultural adjustment and job satisfaction, respectively. Similarly, POS accounted for 27% of the variance in cultural adjustment and 49% of the variance in job satisfaction. This finding helps us in concluding that Indian expatriates who have high CQ and who believe that their organisation cares about their well-being tend to demonstrate greater adjustment and are more likely to be satisfied with their job.

Moreover, the present study gathered support for the effect of the cultural adjustment on job satisfaction of Indian expatriates. Therefore, it can be concluded

that expatriates who are able to adjust and get along well in distinct cultural contexts are also satisfied with their job and work aspects.

We argue that expatriates with high CQ are better able to handle the intricacies of a new culture by utilising their cultural cues to develop an effective understanding of different cultures and exhibiting the desired responses in various cross-cultural interactions. This simplifies the overall adjustment process and also leads to more satisfaction with the job. Our findings are in line with Guðmundsdóttir (2015) and Lee et al. (2014) in demonstrating the usefulness of CQ in cross-cultural scenarios.

We also argue that expatriates' adjustment in foreign nations becomes easy if positive and favourable support is obtained from the organisation. Perception of favourable organisational support may help expatriates believe that their organisation would be there to support them in situations of need. This feeling may help them get along well with new culture and workplace environment. Our findings are consistent with the results of Caligiuri et al. (1999), and Kraimer et al. (2001) who suggested that organisational support is significantly associated with cross-cultural adjustment and job satisfaction.

The present study also calculated the effect of CQ and POS on job satisfaction when the mediator, that is, cultural adjustment was inserted. The results showed support for partial mediation of cultural adjustment on the relationship between the predictors (CQ and POS) and job satisfaction. This means that the total variance in job satisfaction accounted for by CQ and POS is partly caused by their direct influence, and partly caused by their indirect influence mediated through cultural adjustment. Simply put, an increase in CQ and POS of expatriates leads to an increase in their adjustment to the host country, which in turn leads to an increase in their job satisfaction.

Theoretical and Managerial Implications

Our research supplements the expatriation literature in four ways. First, both our predictor variables, that is, CQ and POS were drawn from relevant theories, thus providing a strong foundation to the proposed conceptual model. Second, although several studies have investigated the consequences of CQ; a few have investigated beyond adjustment and performance (Ott & Michailova, 2018). Our study examined the impact of CQ on a critical organisational outcome, that is, job satisfaction, and found positive support for its role in influencing expatriates' job satisfaction. Third, our study is among the few that investigated the cross-cultural consequences of Indian expatriates; a population that constitutes a significant portion of western countries' total immigrant population (Shah & Barker, 2017; Vijayakumar & Cunningham, 2016). Finally, our study is an addition to the limited research on expatriates from developing countries. The literature on cross-cultural assignments is dominated by MNCs from western countries (Zhao et al., 2016). Therefore, our study contributes to the extension of expatriation literature to developing countries.

The results of the study helped in suggesting some managerial implications as well that may help organisations preventing assignment failure. The positive

relationships between POS, cultural adjustment and job satisfaction suggest that organisations may devise plans on building up good and conducive relationships with expatriating employees in order to help them adapt well to distinct cultural settings and contribute towards the success of the assignment. Organisational support should be extended by both the parent country organisation as well as the subsidiary. Furthermore, organisations may also devise plans for assisting the families of expatriating employees and help them deal with logistical issues that may arise. The support for the family by organisation may help expatriates be at ease and focus more on their work duties. Improved organisational support could increase the efficiency of expatriates and result in the overall success of the assignment.

Similarly, considering the crucial role played by CQ in cross-cultural assignments, organisations should incorporate it in their selection and training criteria before sending their employees on foreign assignments. Additionally, interesting and unique facts about the host country's culture should be shared in advance with the expatriating employees to help them develop cultural awareness. In addition, organisations should strive to provide employees with all relevant information relating to the new assignment to facilitate an easy transition. Contact information of existing expatriates in the given host country can also be shared with new expatriating employees to provide them with the social support that they might need during the initial days of the assignment.

Limitations and Directions for Future Research

Like every research, this study has a few shortcomings that may impact its contributions and generalisability. However, these shortcomings open several avenues for further research. First of all, the study sample comprised Indian expatriates only, which limits the generalisability of the results. India is a highly diversified country that encompasses a variety of cultures; therefore, Indians may be comfortable understanding the nuances of different cultural settings. It would be interesting to see if the study findings hold true for expatriates of other nations and origins. Next, the study contained only one dependent variable, that is, job satisfaction. Future researchers may explore other criterion variables such as organisational commitment, engagement and knowledge transfers. Another limitation is the cross-sectional design of the study. In the future, longitudinal studies can be conducted to check how the relationship between CQ, POS, adjustment and satisfaction varies over time. Lastly, the self-reported questionnaires used in the study may pose the risk of CMV. Although we employed certain methodological remedies to alleviate its effects, the presence of method bias cannot be completely ruled out. To address this issue, future research works could use a combination of self-report and peer/spouse-report surveys to enhance the power and reliability of results.

Declaration of Conflicting Interests

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Service Quality Dimensions in AI-enabled Chatbots Leading to Customer Satisfaction: A Study from South Asia

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Abstract

The purpose of this article is to investigate the antecedents of satisfaction of consumers with chatbots using service quality (SERVQUAL) in the South Asian context. Customer satisfaction is one of the critical attitudinal variables that may influence customer behaviour and lead to greater customer loyalty. Automated query resolutions facilitated through AI chatbots are used to enhance SERVQUAL and customer satisfaction. However, it has been observed that inability to resolve queries satisfactorily results in frustration and abandonment of the channel. To address this service deficiency, the proposed study uses the SERVQUAL scale to identify antecedents of customer satisfaction. A total of 355 usable responses were collected from consumers who used chatbot services across different sectors. Confirmatory factor analysis and structural equation modelling (AMOS 26) were employed to test the proposed model. Tangibles, assurance and efficiency were significant in explaining customer satisfaction while responsiveness and privacy were insignificant. Assurance was significant and caused dissatisfaction when perceived as absent; tangibles were significant but were no longer a differentiator; efficiency was perceived as significant and can be critical in building assurance and accelerating adoption. The findings from this study provide beneficial insights to businesses who handle large volumes of service requests for instance, digital banking applications, travel sites, e-commerce sites and educational institutions. Businesses need to focus on critical service dimensions like assurance and

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efficiency rather than improving the conversational ability of chatbots. This article addresses an important paradox namely poor satisfaction with chatbot services despite demand for technology-enabled services. Theoretically speaking, easy-to-use and easy-to-access technologies should result in higher engagement among consumers. However, the rapid deployment of chatbots by businesses is met with high dropout in chatbot service channel. Technology adoption has been studied widely, but this study addresses the larger issue of what could enable better customer satisfaction in an easy-to-use technology.

Keywords

AI chatbots, customer satisfaction, service quality, service delivery

Introduction

Chatbots are computer programs that maintain a conversation with a user in natural language, understand the users' intent and send responses based on the organisation's business rules and data (Deloitte, 2017). Customers' demand for instant service resolution and increasing pressure on contact centres due to high turnover rates fuel the market forces driving chatbot implementation (Deloitte, 2018). The chatbot ecosystem is rapidly evolving through variegated offerings, including personalised restaurant recommendations, loan applications, ride-hailing, apparel recommendations and order status checks. Chatbot assistance is highly effective in routine transactions, recommendations, or complaint resolution. However, in a highly populous nation like India, transactions are still carried out in the hybrid model. A man-machine interface is standard across highway toll booths, airport check-in kiosks and kiosks at quick-service restaurants owing to the availability of a low-cost workforce.

A recent survey of consumers from around the world indicated that 86% of customers preferred interacting with a human agent to a chatbot. In contrast, only 30% stated that chatbots were more effective than human agents for query resolution (Press, 2019). While evidence from practice shows that firms in India that have deployed chatbots report better efficiency, cost savings and quicker resolution of queries for the customer, there is no explicit focus on replicating human-like experiences through chatbots. Complex service requests are resolved using a human interface, while repetitive queries are left to chatbots (Sheth, 2019).

The availability of a good quality workforce seems to provide a differentiated context to view customer satisfaction with chatbots, that is, quick and efficient service. A key differentiating factor between the technologically mature western nations vis-a-vis South Asia is the abundance of human resources and consequent human interactions. The context of western research is rooted in the customer's emotional state while interacting with humanised chatbots. Studies centred around anthropomorphism (attribution of human traits) focus on the customer's emotional state while engaging with a chatbot. The absence of extensive human interactions

in the more developed and less populated western nations makes human-like traits very desirable in chatbots. Anger (Crolic et al., 2022), trust (Mozafari et al., 2020), engaging in personal conversation, listening and displaying warmth (Soderlund, 2022) have been studied in measuring customer satisfaction. However, it is essential to understand the antecedents of customer satisfaction in a nuanced manner that centre stages the South Asian context.

The present study uses a sample size of 355 participants to identify critical service dimensions that drive customer satisfaction. It combines the Service Quality Framework (SERVQUAL) (Parasuraman et al., 1985, 1988) and E-Service Quality Framework (E-S-QUAL) (Parasuraman et al., 2005) to identify the critical service dimensions that drive customer satisfaction. Our study reveals that assurance followed by efficiency and tangibles are essential drivers of customer satisfaction with a chatbot. Customers were dissatisfied with the current levels of assurance and efficiency, indicating that inconsistent query resolution has led to a lack of trust in chatbots, thus increasing the preference for human service agents. Focusing on a consistent resolution of basic requests and queries is vital in increasing customer satisfaction compared to features such as personalisation and conversational abilities, which do not impact satisfaction.

The rest of the article is organised as follows: the literature review is followed by hypotheses, a discussion on research methods, analysis and results, discussion of results, and theoretical and managerial implications.

Literature Review and Hypotheses

E-commerce and self-service technologies, such as self-checkout counters and kiosks, face more extended adoption periods since a learning curve is associated with adapting to such technology (Meuter et al., 2005). On the other hand, interacting through chat is an intrinsic part of a customer's daily life. They spend 2 hours on average per day communicating on messaging applications such as Facebook and WhatsApp (Statista, 2018). Low usage of chatbots has less to do with chatbot ability and customer readiness and more to do with the frequent failure of chatbots to meet customers' expectations (Adam et al., 2020). 'Service encounters are critical moments of truth in which customers often develop indelible impressions of a firm' (Bitner et al., 2000, p. 139). SERVQUAL can be a crucial construct to explain customer satisfaction since it positively influences customers' behavioural intention, satisfaction and loyalty. Customer satisfaction is one of the critical attitudinal variables that may influence customer behaviour and greater customer loyalty (Lee et al., 2009).

Anthropomorphism

Anthropomorphism, or the attribution of human-like properties, characteristics, or mental states to nonhuman agents and objects (Epley et al., 2007; Waytz et al.,

2010), has dominated the discourse on chatbots in the recent literature (Crollic et al., 2022; Soderlund, 2022; Troshani et al., 2021). Some of the more apparent benefits of humanised chatbots are enjoyable customer experiences and resultant purchase intentions (Han, 2021; Holzwarth et al., 2006; Yen & Chiang, 2021), friendship with users leading to increased loyalty (Schweitzer et al., 2019), increased trust by increasing perceived competence (Waytz et al., 2014). Han and Yang (2018) have opined that the anthropomorphic characteristics add a degree of charm and affection to customer interactions, thereby leading to continued application usage. The deployment of anthropomorphic features in chatbots in critical services results in higher positive usage intentions (Blut et al., 2021). While humanised chatbots are found to result in cost reduction and control over the quality of interactions with the customer, Crollic et al. (2022) have warned against ‘unconditional deployment’, which could lead to adverse outcomes. Recent research has found that human users experience distrust and even revulsion while interacting with robots with more remarkable human resemblance (Mathur & Reichling, 2016). Yang et al. (2022) find that in situations where customers perceive low process and outcome control, AI service agents with a less anthropomorphic design might be more attractive. While anthropomorphic chatbots influence trust and can lead to a better customer experience, customers expect chatbots to perform services reliably (Troshani et al., 2021). Anthropomorphic design in branding and product design contexts may not always produce beneficial outcomes (e.g., Kim et al., 2016; Kwak et al., 2015). The degree of anthropomorphism in AI applications can be better determined by the functions they intend to perform (Troshani et al., 2021). Applications meant to support sociorelational services (healthcare, for example, where empathy is the key) may need to be designed to exhibit greater anthropomorphism levels than AI applications meant to support repetitive tasks or improve efficiency (a food delivery application, for example).

Service Quality and Customer Satisfaction

We integrate two main theories popular in the service literature—the SERVQUAL model (Parasuraman et al., 1988) and E-S-QUAL (Parasuraman et al., 2005) to identify service dimensions better to evaluate customer satisfaction. The SERVQUAL model has been widely used across different service settings and cultural contexts (Meyer-Waarden et al., 2020). Both academicians and practitioners regard the SERVQUAL model to measure the level of customer service satisfaction (Seth et al., 2006). From a customer perspective, SERVQUAL is a subjective evaluation of the service in the interactive service delivery process (Dabholkar et al., 2000; Parasuraman et al., 1988). From an organisation’s perspective, consistency with the initial design defines SERVQUAL (Golder et al., 2012). SERVQUAL can be broadly defined as a customer’s comparison of different service expectations vis-à-vis its performance. When technology adds value to the service experience, companies can increase customer

satisfaction and competitive advantage (Bitner et al., 2010). Customer satisfaction and SERVQUAL are interrelated, and in a competitive business scenario, SERVQUAL is an essential factor that impacts customer satisfaction (Adhikari & Paul, 2016; Agbor, 2011). SERVQUAL has been measured extensively in the brick and mortar businesses (Cui et al., 2003; Lai et al., 2018; Wong & Fong, 2012). However, we notice a lack of SERVQUAL studies on online businesses in emerging economies.

Cai and Jun (2003) identified shortcomings of the existing models in measuring SERVQUAL. They suggested the four-element dimension of E-S-QUAL, including website design/content, trustworthiness, prompt/reliable service and communication, with an integrated perspective of both online buyers and information searchers. While E-S-QUAL has four dimensions (efficiency, system availability, fulfilment and privacy), SERVQUAL has five dimensions of SERVQUAL (tangibles, assurance, reliability, responsiveness and empathy). Assurance has the highest impact on customer satisfaction (Ghost & Gnanadhas, 2011; Jain & Gaur, 2012). Empathy (human-like) enhances firm-customer interactions (Murtarelli et al., 2021); marks the high quality of service (Parasuraman et al., 1988); creates positive perception (Li & Sung, 2021); reduces customers' perceived risk; and enhances customers' trust and credibility in AI chatbot (Murtarelli et al., 2021). However, given the high degree of involvement of human resources and the prevalence of hybrid mode in service delivery, empathy does not resonate in the South Asian context and is not included in our framework. System availability and fulfilment (order delivery and availability of items) were not considered since chatbots are available 24×7 , and delivery is not a functionality of chatbots. Poon and Lee (2012) suggested that efficiency and reliability overlapped, making efficiency a good measure of service dimension. *The purpose of the present study is to develop a parsimonious model of SERVQUAL for chatbots by examining the service dimensions that consumers use to evaluate both SERVQUAL and E-S-QUAL.*

The conceptual framework developed by the authors uses three dimensions from SERVQUAL: tangibles, assurance and responsiveness, and two from E-S-QUAL, namely efficiency and privacy.

Assurance

The assurance dimension indicates how competent, knowledgeable and courteous employees are during the service interaction. Further, the ability to build trust in customers is an integral part of assurance (Parasuraman et al., 1985, 1988). In sectors like banking, knowledge of personnel is extremely critical in building trust (Kant & Jaiswal, 2017), while in the case of online shopping, lack of trust is cited as a reason for not shopping online (Rasty et al., 2020). The importance of assurance varies across research. However, Gronroos (1988) opined that assurance was the most critical service dimension. In the context of chatbots, assurance implies the ability to proficiently address customers' queries with accurate answers, in the least response time and in a consistent manner, thereby building trust over time. Hence, we propose Hypothesis 1 as follows.

H_1 : Assurance (competence, knowledge) positively affects customer satisfaction with chatbots.

Tangibles

Parasuraman et al. (1985, 1988) specify tangibles as physical facilities that include equipment, personnel and materials used for communication. Customers attribute good tangibles as an indication of care and concern shown by the service provider (Fitzsimmons et al., 2008). Huang et al. (2007) E-S-QUAL framework suggest design as one of the online tangible cues that indicate visual appeal. Further, Mollen and Wilson (2010) state that in a virtual environment, the design enhances telepresence, which is defined as the psychological state of 'being there'. The use of texts, graphics and colour, ease of navigation, uncluttered interface, logical flow of the conversation and easy search path, among others, form an integral part of the tangible facets of E-S-QUAL. Hence, the second hypothesis is derived as follows.

H_2 : Tangibles (colours, visual appearance) positively affect customer satisfaction with chatbots.

Responsiveness

Responsiveness as a dimension of SERVQUAL refers to the organisation's willingness and ability to help customers and provide quick service within the stipulated time frame (Parasuraman et al., 1985, 1988). The willingness of employees to provide service irrespective of time has an impact on customer satisfaction (Parasuraman et al., 1988). The ability of the firm to respond to customers and provide individualised attention increases customer satisfaction. Notably, in sectors like banking, responsiveness directly impacts customer satisfaction (Kant & Jaiswal, 2017). In case of a breakdown in service, the ability of the organisation to recover quickly and respond to customer queries and requests has a direct impact on SERVQUAL (Hernon & Nitecki, 2001). Yarimoglu (2014) elaborated responsiveness to encompass mailing the transaction slip, calling back the customer quickly and providing prompt service. In chatbots, responsiveness implies understanding customer queries and informing customers when the required services will be performed. Hence the third hypothesis is as follows:

H_3 : Responsiveness (understanding and prompt) positively affects customer satisfaction with chatbots.

Efficiency

Efficiency and reliability of SERVQUAL in technology scenarios are closely linked (Poon & Lee, 2012). An important criterion of customers opting for technology-enabled services is the time taken for resolution (Collier & Kimes, 2013). In other words, when customers perceive that service resolution is faster due to technology than human agents, they would use technology-enabled services. Constraints due to location and time can decide which service channel a customer should opt for (Collier & Sherrell, 2010). Further, when service delivery

time is considerably reduced, customers prefer to use technology-enabled services over human interaction (Lee & Yang, 2013). Studies on self-service technologies highlight that fast service resolutions are one of the most important factors that drive customer satisfaction (e.g., Collier & Kimes, 2013; Howard & Worboys, 2003; Meuter et al., 2000). When customers perceive that their service requests would be resolved quickly, they are more likely to rate that service channel higher, leading to higher customer satisfaction (Collier & Sherrell, 2010). In chatbots, efficiency relates to the response time and accuracy with which customers' queries are resolved. We hypothesise that efficiency is an essential antecedent of customer satisfaction.

H₄: Efficiency (speed of query resolution) positively affects customer satisfaction with chatbots.

Privacy

The rise of disruptive technologies and issues regarding regulation on the internet have created challenges for firms to assure consumers regarding data sharing and privacy (Bandara et al., 2020). Privacy implies that customer data is secure and disseminated to other businesses only after obtaining customer consent. Security and confidentiality shape the usage of technology services (Lu et al., 2018). Customers are concerned with data sharing and usage through mobile applications and websites (Feng & Xie, 2019; Wottrich et al., 2018). Consumers of line banking services identified security as a critical determinant of E-S-QUAL (White & Nteli, 2004) and the most crucial factor in visiting a site and making purchases (Ranganathan & Ganapathy, 2002; Yoo & Donthu, 2001). Privacy encompasses the protection of any data shared by the customer with the chatbot during their interaction. As consumers conduct online financial transactions, the role of ethical behaviour by financial service providers is significant (Patterson & McEachern, 2018). Hence, the fifth hypothesis is as follows:

H₅: Privacy (secure and confidential interaction) positively affects customer satisfaction with chatbots.

The conceptual framework used for this study is depicted in Figure 1.

Research Methodology

We used a mixed-method consisting of qualitative and quantitative analysis. The qualitative research aims to help identify critical and redundant constructs from the existing framework. A discussion guide was used to conduct in-depth interviews among 15 participants. We recruited participants from diverse backgrounds to extract varied perspectives (4 academicians who had published research in the relevant areas; 8 industry practitioners with over 10 years of experience across financial services, consulting, information technology and supply chain; 3 senior industry professionals with more than 25 years of experience in the banking and manufacturing industries). The participants were active users

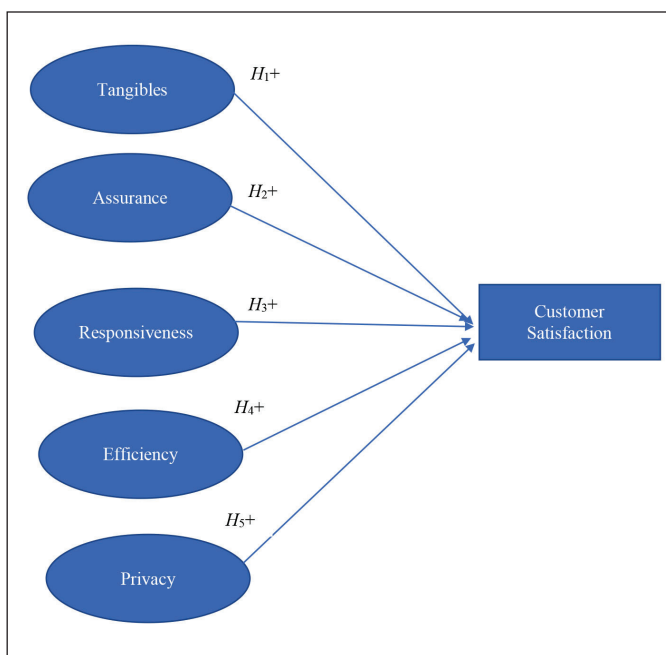


Figure 1. Framework for Customer Satisfaction with Chatbots.

of chatbot services and part of the design and solution team for various functions in business. Inputs drawn from the qualitative research were used to design the questionnaire, divided into the following three sections—demographic details, perception of different service dimensions and overall satisfaction with chatbots.

The final questionnaire measured 17 items, incorporating the SERVQUAL (Parasuraman et al., 1985, 1988) and E-S-QUAL measures (Parasuraman et al., 2005). Three items measured the following five service dimensions: tangibles, responsiveness, assurance, efficiency and privacy. ‘Customer satisfaction’ was the dependent variable consisting of the following two statements—‘I am pleased with the services offered by chatbots’ and ‘I am satisfied with the services offered by Chatbots’. A five-point Likert scale with 1 = Very Dissatisfied and 5 = Very Satisfied was used. Pilot surveys follow a subjective decision of the survey administrator regarding the sample size since there are no specific rules and formulas that indicate the adequate pretest sample size (Naumann & Giel, 1995). A group of 20 respondents was selected as part of the pilot survey to identify and eliminate potential problems and modify the questionnaire based on the feedback given by these respondents. The participants were equally divided between males and females (10, 10), used chatbots frequently, and were skewed towards the younger age group (9 respondents in the age group of 18–24, 7 in 25–34 and 4 in 35–44).

All aspects of the questionnaire were tested, including question content, wording, sequence, form and layout, question difficulty and instructions. Respondents in the pretest shared similar characteristics with those in the actual survey regarding their background, familiarity with the topic and interest levels (Reynolds & Diamantopoulos, 1998).

A team of 10 interviewers collected the data. The interviewer teams were briefed about the study's objective and asked to conduct mock interviews to check their ability to probe for responses. Participants were chosen based on the frequency of usage, and the sample included demographic subsets such as age, gender, education and income. A link to the questionnaire was emailed to the participant's post confirmation of their availability for the study. The interviewers then contacted them at a pre-decided time to fill in the questionnaire. The authors ensured no abnormal skew towards a particular gender, age group, city and chatbot usage by different sectors. The authors checked the key demographic criteria and chatbot usage across sectors after every 100 interviews. This resulted in five checks, and any skew that was observed was duly corrected in the next phase. The data was collected over 3 months, from October to December 2020. A total of 500 respondents were contacted, of which 415 respondents agreed to participate in the survey. In total, 60 questionnaires with inconsistent, incomplete, spurious or erroneous responses were eliminated post back checks, and the final usable sample for the study was 355. The final achieved response rate for the survey was 71%. A response rate of 55.6% is an acceptable norm for behavioural studies (Baruch, 1999).

Results

Table 1 summarises the findings from the qualitative research. Table 2 indicates service dimensions retained and dropped post the qualitative analysis.

The results from the qualitative study imply that the respondents value efficiency and quick resolution over enhanced anthropomorphic features such as empathy or enriching conversations.

Sample characteristics were studied using univariate data analysis IBM SPSS 26. The sample demographic details are given in Table 3. The data showed higher percentage of males (58%), younger population (61% belonged to 18–34 years). The monthly household income was evenly distributed and there was slightly higher percentage of participants who used chatbots on food aggregator sites (62% preferred Food Aggregator sites such as Zomato and Swiggy).

The 17 items that measured tangibles (3 items), assurance (3 items), responsiveness (3 items), efficiency (3 items), privacy (3 items) and customer satisfaction (2 items) were tested using Confirmatory Factor Analysis (details in Table 4).

Table 1. Findings from Qualitative Research.

Nature of Tasks Performed	What do Customers Expect from Chatbot?	Which Are Critical Service Dimensions?	Which Sectors Should Deploy Chatbots?
Routine	Do what it states, timeliness, finish in a minimum number of steps, seamless	Tangibles Efficiency	Presence of large number of FAQs; educational institutions, government websites, financial services, airlines, travel aggregators, food ordering, telecom
Recovery	Assure, inspire confidence, give options, guide till the end, route to the right entity, don't take customer in circles, resolve quickly Don't require empathy, it sounds fake and phony	Assurance Efficiency Responsiveness	High order value, application, delivery issues. E-commerce, banking and finance, B2B, vendor & supplier relations
Recommendation	Relevant, personalised, unique, save time, take permissions to use data, protect data	Assurance Efficiency Privacy	Apparels, streaming platforms, beauty sites, fine dining, E-commerce, music

Table 2. Service Dimensions Retained and Dropped.

Service Dimensions Retained	Service Dimensions Dropped and Reasons for Dropping
Tangibles	Reliability – overlaps with efficiency
Responsiveness	Empathy – not an essential requirement in transactional interactions
Assurance	Availability – not applicable as chatbots are available 24 × 7
Efficiency	Fulfilment – chatbots are for query resolution and not for delivery
Privacy	

Common Method Bias Test

Common method bias (CMB) was carried out to ensure that data was 'free from bias'. This study adopted a multilevel approach. We used reversed coded items to prevent respondents from losing their attention while answering the questionnaire and used 'Harman's single factor test' to ensure that the data was free from bias.

Table 3. Demographic Profile.

Demographic	Number	Percentage
Gender		
Male	206	58
Female	149	42
Age		
18–24	100	28
25–34	118	33
35–44	76	21
>45 years	67	19
Education		
Undergraduates	71	20
Graduates	135	38
Post graduates	149	42
Profession		
Public sector/government services	71	20
Private sector service	92	26
Self employed	60	17
Students	89	25
Stay at home	43	12
Monthly household income		
Less than 1 lac (\$1338)	96	27
₹ 1 lac to ₹ 2 lac (\$1338 to \$2676)	92	26
₹ 2 lac to ₹ 3 lac (\$2676 to \$4014)	78	22
₹ 3 lac (more than \$4014)	89	25
Preference of chatbots across sectors		
Banking and financial services	135	38
Food aggregator (ordering and delivery)	220	62
Online grocery	149	42
Telecom services	124	35
E-commerce	170	48

The result indicates that the highest total variance value explained for a single factor is 37.24%, which is less than the recommended (50%) (Podsakoff et al., 2012). Therefore, the data did not find any issue related to CMB. Further, we used the marker-variable technique in confirmatory factor analysis to ensure that the data was free from CMB. The findings demonstrate that the collected data does not have a CMB problem.

Table 4. Service Dimensions and Items.

Service Dimensions	Items
Tangibles	I was able to access chatbots from my laptop, phone and other devices easily The chatbot was visually appealing The chatbots had a simple layout and were easy to use
Responsiveness	Chatbots have been prompt in resolving my queries Chatbots let me know the time within which my query will be resolved I was put in touch with a human when the chatbot was not able to resolve my query
Assurance	I feel I can trust chatbots Responses by chatbots instil confidence in me I feel assured with the responses given by chatbots
Efficiency	The entire query resolution process using a chatbot was quick Chatbots resolve my query in minimum number of steps Chatbots are able to give the right response within limited time
Privacy	I feel that my information is safe when interacting with chatbots Chatbots protect my information and past data Chatbots do not share my personal information with other sites/ entities
Customer satisfaction	I am pleased with the services offered by chatbots I am satisfied with the services offered by chatbots

CFA was used to evaluate the following six latent dimensions: tangibles, assurance, responsiveness, efficiency, privacy and customer satisfaction. Each of these latent constructs was measured by their respective observed variables. The overall fit of the model was improved by dropping one item from responsiveness. The item was dropped after studying the factor loading, which was below 0.4 (Hair et al., 2012). After the item was deleted, the new measurement model had 16 items. The final CFA model was found to be acceptable. Details of the various indices are as follows: $\chi^2/df = 1.59$ $\chi^2/df \leq 2.0$ considered acceptable; CFI = 0.955, CFI > 0.95 considered good; GFI = 0.901; GFI > 0.90 considered good; TLI = 0.94 TLI > 0.90 good, NFI = 0.891; NFI > 0.90 considered good; RMSEA = 0.062; and RMSEA ≤ 0.08 considered good. The measurement model was assessed for convergent validity by examining the factor loading, average variance extracted (AVE) and composite reliability (C.R.). Internal reliability was measured using Cronbach's alpha. Table 5 provides details of the reliability and validity measures. Discriminant validity was tested using AVE analysis (Table 6). The value of AVE for each construct should be at least 0.50 and much larger than the correlation of a specific construct with other constructs (Fornell & Larcker, 1981).

Table 5. Reliability and Validity Measures.

Measure	Composite Reliability	Average Variance Extracted	Cronbach's Alpha
Tangibles	0.67	0.41	0.67
Assurance	0.86	0.68	0.86
Responsiveness	0.66	0.51	0.62
Efficiency	0.82	0.60	0.81
Privacy	0.88	0.70	0.88
Customer satisfaction	0.85	0.73	0.85

Source: Hair et al. (2012).

Note: Composite reliability > 0.7, AVE > 0.5 and internal reliability > 0.6 .

Table 6. Average Variance Extracted Analysis.

	Tangibles	Assurance	Responsiveness	Efficiency	Privacy	Customer Satisfaction
Tan	0.44					
Assur	0.38**	0.68				
Resp	0.28**	0.50**	0.51			
Eff	0.39**	0.52**	0.44**	0.60		
Pri	0.31**	0.41**	0.26**	0.36**	0.7	
CS	0.40**	0.51**	0.41**	0.31**	0.30**	0.73

Note: The numbers in bold in the diagonal is the square root of the average variance extracted of each construct.

**Significant at 5% level of significance.

In case AVE is less than 0.5 but C.R. is higher than 0.6, the convergent validity of the construct is still adequate (Fornell & Larcker, 1981). Hence, while the AVE for Tangibles was 0.41, the C.R. was 0.67, indicating that the convergent validity of the construct is adequate.

The final CFA model was then modelled using Structural Equation Modelling. Figure 2 shows the final model with the exogenous constructs tangibles, assurance, responsiveness, efficiency and privacy, while the endogenous construct was customer satisfaction.

Structural Equation Modelling was used to test the hypotheses. The results are given in Tables 7 and 8. Regarding H_1 , the results show that assurance (competence, knowledge) positively affects customer satisfaction with chatbots. (Std $\beta = 0.44$, $p < .001$). Tangibles (colours, visual appearance) have a positive effect on customer satisfaction with chatbots (Std $\beta = 0.23$, $p < .05$). Thus, H_2 is accepted. Efficiency (speed of query resolution) has a significant positive effect on customer satisfaction (Std $\beta = 0.37$, $p < .001$). Thus, H_4 is accepted. Responsiveness (understanding and prompt) does not significantly affect customer satisfaction with chatbots (Std $\beta = 0.11$, p value = .748). Thus, H_3 is rejected. Privacy (secure and confidential interaction) does not significantly affect customer satisfaction with chatbots (Std $\beta = 0.07$, p value = .355). Thus, H_5 is rejected.

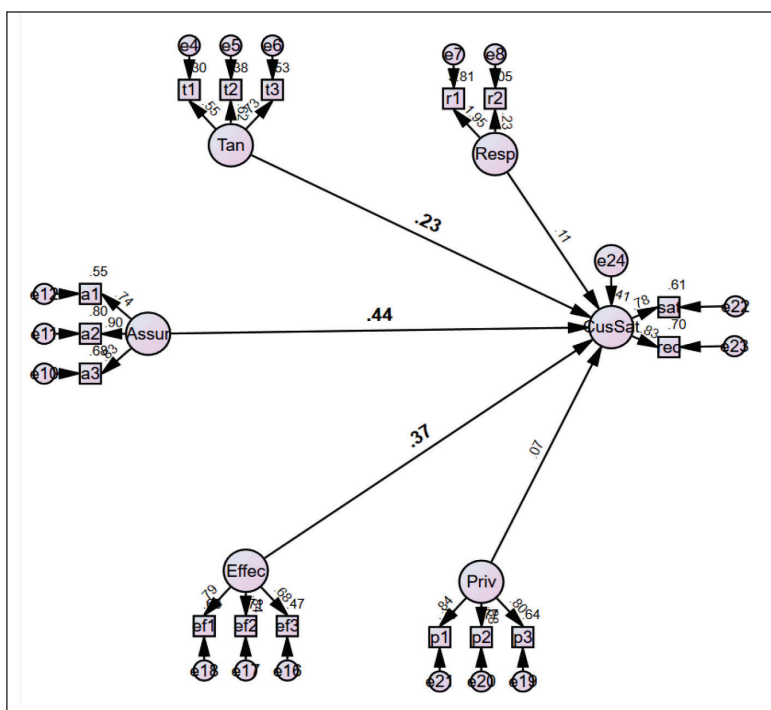


Figure 2. Structural Equation Modelling.

H_1 , H_2 and H_4 were supported, while H_3 and H_5 were not supported (see Figure 2, Tables 7 and 8).

Thus, the research revealed that assurance, efficiency and tangibles were the factors that significantly impacted customer satisfaction with chatbots. Responsiveness and privacy, which were hypothesised as significant drivers of customer satisfaction, were insignificant predictors. We explain each service dimension in the following section.

Performance of Key Service Dimensions

To understand the performance of the service dimensions (tangibles, assurance and efficiency) with respect to overall customer satisfaction, the mean scores of the responses were evaluated (see Table 9). The mean scores indicated that customer perception about SERVQUAL dimensions in chatbot services were favourable for Tangibles. Participants rated Chatbots on tangibles as a service dimension favourably with a mean score of 3.80 (80% of the customers found chatbots had a simple layout and were easy to use). Efficiency was rated moderately with a mean score of 3.37, while assurance was rated negative and found significant (mean score of 2.95). Of the insignificant factors, responsiveness

Table 7. Regression Weights.

Measure	Estimate	SE	CR	p
CusSat $\leftarrow$ Resp	0.033	0.103	0.321	.748
CusSat $\leftarrow$ Tan	0.332	0.143	2.323	.020
CusSat $\leftarrow$ Assur	0.316	0.065	4.858	***
CusSat $\leftarrow$ Effec	0.336	0.084	3.973	***
CusSat $\leftarrow$ Priv	0.056	0.061	0.925	.355

Note: ***Significant at 1% level of significance.

Table 8. Standardised Regression Weights.

Measure	Estimate
CusSat $\leftarrow$ Resp	0.107
CusSat $\leftarrow$ Tan	0.231
CusSat $\leftarrow$ Assur	0.444
CusSat $\leftarrow$ Effec	0.375
CusSat $\leftarrow$ Priv	0.074

was rated moderately (mean score = 3.43), while privacy was rated average (mean score = 3.01) (satisfaction measure on 5-point scale, 5 = Very Satisfied). Tangibles performed above average, responsiveness and efficiency had an average performance, while the least performing dimensions were assurance and privacy (see Table 7). Customer satisfaction with chatbot services received an average score of 3.37, indicating that customers did not have a favourable opinion of chatbots.

Assurance, Efficiency and Tangibles were found to be ‘must-have’ features in customer-chatbot interactions to increase satisfaction levels. Responsiveness and privacy were favourable features but did not impact customer satisfaction. Most chatbots have a well-defined user interface, and hence tangibles as a service dimension are no longer a differentiator. On the other hand, customers expect the correct responses to their queries in fewer steps and less response time. This is where chatbots across sectors differed on customer satisfaction.

Discussion

The results on assurance, efficiency and tangibles are on expected lines. However, the results on responsiveness and privacy are somewhat counter-intuitive. The ease of availability of people-powered services in India may help in explaining why responsiveness is given low priority. Data privacy in the legislative context is still in the nascent stages in India. Personal data protection has still not been legislated, nor do the Indian users report high levels of awareness as far as data protection is concerned. The lack of legal framework and lack of awareness at the individual level could explain the results of this study which finds privacy and security insignificant factors.

Table 9. Performance of Chatbots.

Dimensions	Mean Score (5 = Very Satisfied)	Dependent variable: Customer Satisfaction $R^2 = 41\%$
Customer satisfaction	3.37	
Tangibles	3.80	Significant
Assurance	2.95	Significant
Efficiency	3.37	Significant
Responsiveness	3.43	Insignificant
Privacy	3.01	Insignificant

Building robust interactive response systems through extensive machine learning is a critical part of assurance. Our results align with the literature, which states that assurance positively impacts customer satisfaction with chatbots (Li et al., 2021; Trivedi, 2019). Confirming the literature by Wang et al. (2006) finds that when service agents are perceived as credible, impartial experts, users trust chatbots, leading to greater assurance. Similarly, accuracy, credibility and competence enhance customer satisfaction in luxury brands (Chung et al., 2018). However, the low mean score indicates that chatbots were lacking in delivering the correct responses to queries and requests (refer to Table 9). Our study finds that the absence of assurance caused customer dissatisfaction.

Efficiency was the second most crucial antecedent that significantly affected customer satisfaction. In the context of chatbots, consumers expect chatbots to respond with the correct response in a minimum number of steps (Meyer-Waarden et al., 2020). However, mean scores indicate that respondents were not fully satisfied with the efficiency of chatbots (refer to Table 9). Our discussion with respondents revealed that chatbots were efficient on food delivery sites for queries related to the status of an order and the time taken for delivery. In contrast, banking sites reported a good performance on queries regarding account statements and address updates. (summary of discussions reported in Table 1). However, chatbots took respondents on an endless loop on travel sites for basic queries like flight schedules resulting in frustration and preference for human agents. The loss of time by switching from one service channel to another resulted in dissatisfaction and lower usage of chatbots over time.

Tangibles significantly impacted customer satisfaction, and customers were quite satisfied with this dimension (details in Table 9). Our study supports existing research, whereby a tangible, physical environment generates favourable customer evaluation (Wakefield & Blodgett, 1999). However, with the rapid proliferation of chatbots, the appeal of tangibles and aesthetics on product usability is strong only in the short term, either before or during the early stage of adoption of a product, and it quickly vanishes once users have become acquainted with a product (Minge & Thüning, 2018)

Users expect chatbots to respond with accurate and timely information for queries, complaints and requests. Tangibles have performed well, possibly because of the rapid digitalisation and better understanding of customer

requirements, enabling service providers to give better user interface and customer experience. Service providers need to design responsive, interactive and efficient systems while maintaining visual appeal. The lack of awareness of security issues creates the need for the service provider to provide security features on the chatbots proactively. Chopra and Ranjani (2020) recommend using cyber security tips and pointers to be built into the application itself. Customer protection cannot be left to regulatory compliance but must be integrated into the product itself.

Implications

The study has theoretical contributions and practical implications for academia, businesses and chatbot vendors.

Theoretical Implications

On a theoretical level, our study offers two main contributions. First, we have integrated two well-established theories, SERVQUAL and E-S-QUAL that would allow businesses to identify critical service dimensions that impact customer satisfaction. Most studies that focus on SERVQUAL in the online environment context such as the CiteQUAL (Yoo & Donthu, 2001), the WEBQUAL 1.0 to WEBQUAL 4.0 (Barnes & Vidgen, 2001, 2002), the eTailQ (Wolfinbarger & Gilly, 2003), the 11 dimensions of the SERVQUAL of online shopping proposed by Zeithaml et al. (2005), the four dimensions proposed by Cox and Dale (2001) and the dimension summarisation in review work (Madu & Madu, 2002) capture the views of online buyers while ignoring other perspectives such as information searchers. Our framework has an integrated perspective of measuring the impact of SERVQUAL on customer satisfaction with chatbots of both online buyers and information seekers.

Next, our study focuses on customer satisfaction with chatbot in the South Asian context. Home to 25% of the total world population (United Nations, 2021), South Asia has access to good quality and skilled workforce at a low cost. Several services are rendered exclusively by humans, and it is common to see AI services deployed along with humans rather than as stand-alone services. Therefore, our study underlines the need for a differentiated chatbot.

Practical Implications

Chatbot developers focus on bettering the conversational abilities of the bots to make them sound more natural, human-like and empathetic. Customers who interact with chatbots do not expect human-like conversations or empathy from them (Lei et al., 2021). Soderlund (2021) explains this phenomenon as 'deception'. Yu and Sangiorgi (2018) suggest that a holistic understanding of

user experiences in designing chatbots would result in wide adoption, while Dietvorst et al. (2015) propose that trust will lead to broader adoption. Our results help explain the role of *assurance*, *efficiency* and *tangibles* in the broader adoption of chatbots. Focusing on *efficiency* will build *assurance* critical for the wider adoption of chatbots. *Assurance*, which represents the trust and confidence of customers, can only be built over consistent and seamless interaction.

The respondents of this study have placed a high value on the efficiency dimension, which implies that users have made extensive use of chatbots for non-critical service contexts. We see the potential for AI chatbots to be deployed in educational institutions, government services and other organisations (where service requests are routine and repetitive) to automate the query resolution process and reduce the load on their respective contact centres. Digital banking led by mobile payment services is gaining traction in the Indian banking ecosystem (Kar, 2020). In the banking sector, for example, successful resolution of basic requests will instantly lead to customer satisfaction, which, in turn, will create a willingness to use chatbots for future service requests. As a growing base of millennials enters the workforce, many seek information to plan their future better (Barbić et al., 2019). Integrating AI chatbots with wealth advisory services would help drive cross-selling of various financial instruments among young consumers through the digital medium. Healthcare systems have undergone a transformational change aided by AI chatbots for digital health (Wamba & Queiroz, 2021). As interactions with chatbots become more frequent, data generated through these interactions will enable highly personalised conversations in the future. Recommendation functions using sophisticated AI technology can be incorporated into chatbots once customers develop a high level of trust towards the brand and show an inclination towards adopting the personalised services offered by these chatbots.

Organisations adopting AI chatbots face the dilemma of finding an optimal balance between the familiar human touch and technology's desired speed and efficiency (Solnet et al., 2019). Due consideration should be taken regarding the nature of the service task, service offering and service process before using AI to engage with customers (Huang & Rust, 2021).

Limitations and Directions for Future Research

First, the study was restricted to urban customers. Second, the study has only examined the perception of the users of chatbots. Third, the study was conducted in India and maybe more reflective of the South Asian subcontinent. The implications, therefore, may be more applicable to emerging economies. Fourth, the study has not been done sector-wise but at an aggregated level. Fifth, the study has not identified chatbot used for critical and non-critical sectors. Sixth, our study used a cross-sectional survey, which cannot be relied upon to provide causal evidence.

Studies comparing the differences between rural and urban consumers would provide valuable insights to chatbot vendors. Second, follow-up studies from the perspective of key stakeholders in different business sectors will facilitate chatbot developers and vendors to bridge the gap between business outcomes and customers' expectations. Certain innovative features, like voice ordering, are now being incorporated into chatbots in developed countries. Understanding the impact of such functionalities across the value chain can create a road map for critical stakeholders keen on regularising the use of interactive chatbot technologies. Third, given that developed countries are reporting the deployment of sophisticated chatbots, it may be worthwhile to conduct a comparative cross-national study to understand the low usage of chatbots better. Fourth, sector-specific studies on understanding customer satisfaction with chatbots would provide more nuanced implications for businesses. Next, examining the differences in expectations regarding chatbot services between critical and non-critical sectors would offer significant insights. Last, experimental methods (Crolie et al., 2022; Mozafari et al., 2020) may provide causal evidence for the impact of various dimensions on customer satisfaction with chatbots.

Declaration of Conflicting Interests

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Inter-linkage between FDI Outflow and Manufacturing Sector Growth in India: Role of Price and Other Selected Economic Factors

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Abstract

The manufacturing sector in India has increasingly grown over the period of last 20 years. Various factors like interest rate, inflation, government interventions, technology and finance affect the growth of a sector; but this article focuses on foreign direct investment outflow (FDI outflow), consumer price index (CPI) and real effective exchange rate (REER) to assess the impact of these factors on the growth of manufacturing sector of India in particular. This study employs a cointegration model and vector error correction model to analyse the impact and also the Granger causality test to determine causality between them over a time period of 20 years, which is from 2000 to 2019. The results indicate second-order cointegration and no short-run relationship among the variables, whereas there is existence of a long-run relationship. The findings of the article affirm the idea that FDI outflow has the potential to contribute to the growth of the manufacturing sector in India. Also, through proper management of REER and control of CPI, the impact of FDI outflow on the manufacturing sector growth can further be augmented.

Keywords

Foreign direct investment, consumer price index, manufacturing sector, growth, real effective exchange rate, cointegration, vector error correction model

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Introduction

The manufacturing sector has been a core sector for the growth of any economy. Indian government has been relaxing and introducing policies like ‘Make in India’ to channelise investments into the country to make it one of the fastest growing sectors of the Indian economy. The government back in 1990s knew in order to attain the peak of growth, there is a need to induce investments from abroad due to which the reforms in economy were made through liberalisation, privatisation and globalisation with a larger aim to erode poverty and create more employment opportunities for citizens by expanding the economy, especially manufacturing sector.

Recently, the government has eased the rules of foreign exchange management act and the measures like PM Gati Shakti have been taken to increase investments in India. The government even approved production linked incentive (PLI) scheme for auto industry and drone industry to boost manufacturing sector capacity. In only the first half of FY 2021, India received foreign direct investment (FDI) investments of US\$ 30 billion, which is 15% more than the previous year in the same period.¹ Although the service sector receives the maximum investments followed by the automobile sector, the government is promoting FDI in the manufacturing sector to emerge as a global manufacturing hub.

As seen in Figure 1, the manufacturing sector has witnessed a continuous growth since 2000 except in 2012–2014. According to the Department for Promotion of Industry and Internal Trade, FDI equity inflow in India stood at US\$ 572.81 billion between April 2000 and December 2021, indicating that the government’s efforts to improve ease of doing business and relaxing FDI norms have yielded results. However, India’s outward FDI has also increased since liberalisation, and the country is heavily investing in developing countries of the south to promote south–south cooperation. As per the Ministry of Economic Affairs, GOI; countries such as Singapore, Netherlands and USA receive maximum investments from India.

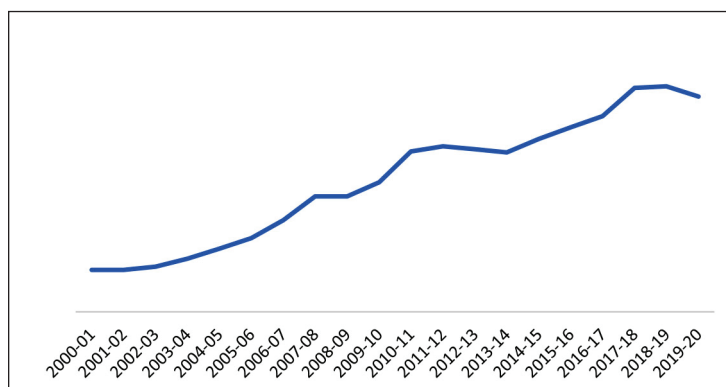


Figure 1. Trend of Growth in Manufacturing Sector from 2000–2020 in Million USD.

Source: World Bank.

Several of the studies such as Bano and Tabbada (2015), Devajit (2012) and Srikanth and Kishore (2012) have been conducted in the past that look at the impact of inflow of FDI. However, the focus of study is now increasingly shifting to finding the determinants and impact of outflow of FDI on economy of the host nation through quantitative analysis. Studies such as Imbriani et al. (2011), Nayyar and Mukherjee (2020) and Thomas and Narayanan (2017) have significantly contributed to this matter of study using panel data, difference in difference estimator, etc. However, their concern largely remains on finding the determinants of outward FDI and the relation between exports and outward FDI. Also, the studies conducted in the past have looked at a few specific developed and developing economies. It is in this context that there is a need to further expand the area and scope of the study; hence, this study is undertaken to focus on the impact of outward FDI on the manufacturing sector of the Indian economy, which is relevant and necessary due to the shift in the government policies to build India as a manufacturing hub.

Investments across the nations is one among many reasons which affect the growth of this sector. Among different factors, the exchange rate also affects the growth of this sector by influencing the trade patterns among nations. Consumer price index (CPI) as a proxy of cost/ inflationary conditions in the markets to which most of India's exports are directed also affects the growth of a nation.

FDI, real effective exchange rate (REER) and CPI are three significant parameters that serve as a vehicle for economic development and this research paper will empirically explore the influence of these parameters on the growth of the manufacturing sector in the case of the Indian economy.

The organisation of the study is as follows. The first section introduces the subject and the importance of the variables for the larger economic development and the second section introduces the literature review. The third section introduces the objectives and research questions of the study. The fourth section introduces the methodology adopted to conduct the research, the fifth section will discuss the analysis and its results, followed by the conclusion.

Literature Review

World today is characterised by global interconnectedness and dependence. Globalisation has brought together national and regional economies under one global economy, which has further opened prospects for growth and dynamic development (Surugiu & Surugiu, 2015). To realise this potential, governments around the world have deregulated trade and financial markets, which has resulted in extensive flows of goods and services among countries.

However, due to the growing complexities in the trade relations among the nations, the countries started to invest in other countries apart from importing and exporting. Eaton and Tamura (1994) found that FDI is induced by exports. However, Grosse and Trevino (1996) argue that exports are induced and established by FDI. It is well-proclaimed that foreign investments are crucial to the growth of any economy as they increase production capacity, enhance job opportunities and hence bring growth to the recipient nation (Banga, 2004). Devajit (2012) in his study says that FDI is seen as an important catalyst of

economic growth in India since it induces domestic investment and facilitates the import of technology. Srikanth and Kishore (2012) suggest that Indian policymakers should be encouraged to make policies conducive to attract huge FDI into the country because it increases industrial production. In this regard, emerging nations like India have even reformed their investment policies to attract more stable forms of foreign capital (Nanda et al., 2020). This shows that the general notion that FDI inflows play an important role in the economic growth of recipient country is supported widely.

While there is a significant literature that supports this idea, there is another argument put forth by researchers that even outward FDI allows countries to expand their operations in foreign countries, bring technological know-how and in turn achieve domestic economic growth. Joseph (2019) in his study mentions outward FDI has benefitted the manufacturing sector in India through easy access to natural resources. Sahoo and Bishnoi (2021) in their paper found that in the case of India, domestic investments are positively affected by outward FDI and it confirms its positive effect on economic growth. Bano and Tabbada (2015) found that FDI outflows are positively linked with high gross domestic product (GDP), foreign reserves, domestic savings and even on FDI inflows in the host nations, however, the necessity of each factor is found varying with development. Banga (2008) in her paper, looks at the drivers that induce outward FDI from Asian developing countries and they found that increasing competition by imports in domestic markets and bilateral investment agreements have facilitated the outward investment. Also, it was found that the capability to make outward investments improve with higher investment inflows and rising imports of technology. Costly labour and poor infrastructure have been marked as important domestic drivers of outward FDI from Asian developing countries.

Imbriani et al. (2011) in their paper analyse if outward FDI has any significant impact on job creation and productivity in the donor country and also if the impact of FDI outflow differs among different sectors like manufacturing and services in Italy employing difference-in-difference estimator. The results show that while considering the manufacturing sector, outflow of FDI is seen to have strengthened productivity and job market, however, in the service sector, a negative effect is seen on jobs; but only after 2 years of investment. Particularly, in Indian context, Pradhan (2017) reveals that outward FDI tends to enlarge market access and further contributes to technological upgrading through the acquisition of strategic assets or overseas research and development (R&D). On the flip side, Tolentino (2010) in his paper suggest the level of outward FDI do not Granger cause home country-specific macroeconomic factors neither in China nor India.

Several others like Thomas and Narayanan (2017) in their paper find the determinants of outward FDI with reference to Indian manufacturing firms using dynamic random-effects models and the results showed a significant impact of exports–imports of technology, R&D intensity on the outward FDI of firms. It also revealed a complementary relationship between outward FDI (OFDI) and exports by Indian firms. Yang et al. (2013) in their paper use panel data to investigate the impact of OFDI on the technical efficiency of the OFDI firms, and the study suggests a positive relation between them. Likewise, Nayyar and

Mukherjee (2020) suggest the government should increase its efforts on sharing of knowledge and technology to induce the flow of FDI. The paper indicated the existence of long-run relationship among the explanatory variable, that is, FDI and dependent variable, that is, macroeconomic policies in the host nation. Contrarily, Bhasin and Kapoor (2019) in their paper say that FDI outflow negatively impacts the exports in the donor country, and also there is no long-run relationship among the variables.

The impact of outward FDI is perhaps also influenced by the type of economy investment is made into and in this regard, study by Liu et al. (2015) explores how the outward FDI by manufacturing firms in Taiwan affects their job market, domestic productivity, and it was found that outward FDI from Taiwan to high-wage countries has a positive impact on these variables, that is, productivity and employment generation.

Substantial studies have been carried out specifically to find out the possible determinants of growth. Majority of the studies concluded that possible determinants of growth are FDI, market size, trade openness, exchange rate, CPI, etc., and the influence of exchange rate on growth has increased post-deregulation of the economy. Drawing from history, competitive and stable exchange rates are taken as crucial indicators for industrialisation. Koirala (2018) in his paper examines if REER has any impact on growth in Nepal. The Engle-Granger cointegration test and error correction model have been employed in the study using independent variables such as REER, money supply, trade, and capital formation and dependent variable is the GDP of Nepal. The results of the study reveal that there is a positive and significant relationship among the variables.

Vorlak et al. (2019) in their research paper examine the impact of exchange rate on the growth of Cambodia which is measured through GDP. The study used somewhat similar explanatory variables such as exchange rate, money supply, trade, inflation and FDI. Using ordinary least squares regression model, it was found that except trade openness all other factors have a positive correlation with GDP. Likewise, there is a study conducted by Kogid et al. (2012), which attempts to examine the impact of the exchange rate on growth in Malaysia using time series. Through the auto-regressive distributed lag (ARDL) test, it is suggested that there exists long-run cointegration between exchange rate and economic growth. Meanwhile, Korkmaz (2013) in her paper found that foreign exchange is perhaps also impacted by political factors besides economic factors like inflation or unemployment.

Another major determinant of growth is CPI, which measures the average price changes in goods and services purchased by consumers over a period. It is generally denoted as a proxy of inflation and to general understanding, we know that a high level of inflation negatively affects the GDP of a country. Aboobucker and Jahufer (2018) in their paper look at the impact of CPI and gross domestic savings on the GDP of Sri Lanka and their results show that there exists a long-run causality significantly from economic growth to CPI. Also, Gumbe and Kaseke (2009) in their paper found that CPI negatively impacts productivity and job opportunities and in turn negatively affects the manufacturing output.

Through the literature considered, it is clear that the impact of FDI on the economy is a major area of discussion and study. However, in view of the uncertainty and the contrasting opinions about role and impact of FDI, this present study is undertaken with the aim to contribute to the mainstream literature by investigating the impact of FDI outflow and other necessary/controlling factors in the case of India. Also, as seen the economic landscape is changing significantly, hence, there emerges a need to re-examine these relationships in the case of emerging economies (Sahoo & Bishnoi, 2021). Thereby, this study tries to look at the relationship between outward FDI and the growth of the manufacturing sector in particular and to explain this relationship, three sets of explanatory factors are considered as follows: (1) FDI outflow; (2) exchange rate and (3) CPI.

In the following section, research questions and hypothesis are framed and the methodology adopted to carry the analysis is illustrated.

Objective and Research Questions

The general objective of this study is to find out the relationship between manufacturing sector growth and the different identified macroeconomic variables, while the specific objectives are as follows:

1. To identify and measure the impact of FDI outflow on manufacturing sector growth.
2. To identify and measure the impact of CPI on manufacturing sector growth.
3. To identify and measure the impact of REER on manufacturing sector growth.

Framing Hypothesis

H_1 : Value added of the manufacturing sector is positively affected by FDI outflow.

H_2 : CPI will negatively influence the manufacturing sector's value added.

H_3 : REER will have a positive influence on the value added of the manufacturing sector.

Methodology

The article analysed the time series data of India for the period 2000–2019 to measure the impact of FDI Outflow on the growth of the manufacturing sector. The article has also identified the impact of other controlled variables on the value added of the manufacturing sector through the literature review and the analysis, that is, REER and CPI. The efficiency of the model is checked through the normality of the variables and stationarity test of the time series data. Then, the cointegration test is applied to observe the existence of either a short-run or long-run relationship in the time series variables. After conducted cointegration test only, decision is made on using the vector error correction model (VECM) model.

Last but not least, the Granger causality test is performed to examine the causality of the variables used in this article.

To examine how net FDI outflows, REER, CPI from the years 2000–2020 affect the value added to the manufacturing sector in India, the model below is used:

$$GVA_t = \alpha_0 + \alpha_1 FDI_{t-1} + \alpha_2 REER_{t-1} + \alpha_3 CPI_{t-1}$$

where GVA: gross value added to the manufacturing sector

FDI: foreign direct investment outflows

REER: real effective exchange rate

CPI: consumer price index

However, if there is non-stationarity/unit root presence and also cointegration in the variables of our model, then we will take the course to usage of VECM in order to capture the long-run relationship between variables. The model then used will be as follows:

$$\Delta GVA_t = \alpha_0 + \alpha_1 \Delta FDI_{t-1} + \alpha_2 \Delta REER_{t-1} + \alpha_3 \Delta CPI_{t-1} + \beta ECT_{t-1}$$

Data Source

The data are collected for the period 2000–2019. The data for CPI² and REER at 36 currency index have been taken from the RBI Bulletin.³ Overall FDI outflow data are taken from UNCTAD Stat, whereas value added of the manufacturing sector, that is, GVA at current prices has been retrieved from World Bank. The relevant data is collated in Appendix.

Key Analysis and Results

Performing Some Diagnostic Tests

Normality Test

Prior, the efficiency of the model is checked through the normality of the variables, stationarity test or unit root test, autocorrelation and multicollinearity of the time series data. Jarque–Bera test is used to see the normality of the variables. The summary statistic of the same is mentioned in Table 1.

Stationarity Test

Since it is time series data, there is a need to check stationarity of the series using the unit root test. The augmented Dickey–Fuller test is used to see the stationarity

Table 1. Jarque–Bera Test Results.

Variable	PValue	Result
GVA	.765	Normally distributed
FDI outflow	.508	Normally distributed
CPI	.164	Normally distributed
REER	.392	Normally distributed

Table 2. P Value Estimates for Level and First Difference.

Variable	PValue (Level)	PValue (1st Difference)
gva	.87	.0189
fdi	.33	.0002
cpi	.53	.0003
reer	.72	.0000

Table 3. Selection Order Criterion.

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-725.646				4.8e+34	91.2058	91.2157	91.399
1	-686.488	78.317	16	.000	2.9e+33	88.311	88.3604	89.2767
2	-667.824	37.328*	16	.002	3.4e+33	87.978	88.067	89.7163
3	—	—	16	—	-2.3e+17*	—	—	—
4	1252.6	—	16	—	—	-148.575*	-148.416*	-145.484*

of the variables in the model knowing the usage of non-stationary variables can lead to spurious and non-reliable results. Using Stata, Mackinnon approximate p value for level and first difference equation is presented in Table 2.

Since all the variables or the entire series are non-stationary at level and as the trend of the series is stochastic, therefore differencing helps remove the problem of non-stationarity. So, I adopt the same process to run the augmented Dickey-Fuller (ADF) test at first difference with trend. As seen through the table, the p value of GVA, FDI, REER and CPI are stationary at first difference form by rejecting the null hypothesis at 5% significant level. Based on ADF test results, it can be concluded that all variables in the model have reached stationarity in first difference instead of level form. It also implies that the whole series have integrated of order one [I (1)]. Therefore, cointegration test analysis is applicable for further approach. Before checking for cointegration, it is necessary to find the optimal lag for our model and also perform the causality test.

Optimal Lag Selection

Table 3 provides the summary statistics of the lag selection order criterion using 'Varsoc' command in Stata.

The optimal lag is determined by the Akaike Information Criteria since the sample size of the data is small, that is, just 20 observations. From Table 3, the least value obtained is -148.57. Thus, the optimal lag that can be used for our model is 4.

Granger Causality Test

Granger causality test is used to test for short-run relationship and for that matter, the series have been converted to make it trend stationary. The results of the Wald test are presented in Table 4.

It is evident that fdi, cpi and reer Granger cause gva and also reer granger causes fdi. There is unidirectional causality from the independent variables to the dependent variables chosen in the model. In other words, the Wald test supports

Table 4. Granger Wald Test.

Equation	Excluded	Chi ²	df	Prob > Chi ²
gva	fdi	5.3e+26	4	.000
gva	cpi	4.3e+26	4	.000
gva	reer	6.6e+26	4	.000
gva	ALL	2.4e+27	12	.000
fdi	gva	—	0	—
fdi	cpi	—	0	—
fdi	reer	5.7e+23	1	.000
fdi	ALL	5.7e+23	1	.000
cpi	gva	—	0	—
cpi	fdi	—	0	—
cpi	reer	—	0	—
cpi	ALL	—	0	—
reer	gva	—	0	—
reer	fdi	—	0	—
reer	cpi	—	0	—
reer	ALL	—	0	—

the model chosen in this article. Hence, FDI outflow, CPI and REER are all imperative for manufacturing sector growth in our country.

Cointegration Test

At max rank 0:

The trace statistic is 90.72 and 5% critical value is 29.68 (as indicated in Table 5). Now, since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 48.79 and 5% critical value is 20.97. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is cointegration in the model.

At max rank 1:

The trace statistic is 41.93 and 5% critical value is 15.41. Now since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 38.04 and 5% critical value is 14.07. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is a cointegration of Equation 1 in the model.

Table 5. Results of Johansen's Test for Cointegration.

Maximum Rank	Parms	LL	Eigenvalue	Trace Statistic	5% Critical Value
0	30	−283.22382	—	90.72	29.68
1	35	−258.82778	.95262	41.93	15.41
2	38	−239.80373	.90726	3.88	3.76
3	39	−237.86275	.2154	—	—

Maximum Rank	Parms	LL	Eigenvalue	Max Statistic	5% Critical Value
0	30	−283.22382	—	48.79	20.97
1	35	−258.82778	.95262	38.04	14.07
2	38	−239.80373	.90726	3.88	3.76
3	39	−237.86275	.2154	—	—

Table 6. Results of Vector Error Correction Model.

Beta	Coef.	SE	z	$p > z $	{95% Conf. Interval}
_cel					
Gva	1	—	—	—	—
fdi	−1.86e + 07	510331.1	−36.37	.000	−1.96e + 07 −1.76e + 07
cpi	2.028065	1.53e + 07	.00	1.000	−3.00e + 07 3.00e + 07
reer	−1.17e + 10	2.26e + 08	−51.75	.000	−1.21e + 10 −1.12e + 10
_cons	1.05e + 12	—	—	—	—

Note: Johansen's normalization restriction imposed.

At max rank 2:

The trace statistic is 3.88 and 5% critical value is 3.76. Now since the trace statistic is more than 5% critical value, we reject the null hypothesis meaning the time series variables are gva, fdi, cpi and reer are cointegrated. The maximum statistic is 3.88 and 5% critical value is 3.76. Again, as the maximum statistic is more than 5% critical value, we reject the null, and hence, there is cointegration of Equation 2 in the model.

Now, since there is cointegration in the model, we will now proceed estimating the long-run behaviour of the model using VECM.

Vector Error Correction Model

The *long-run behaviour* between the dependent variable and independent variables:

1. The value of the dependent variable GVA is 1.05e + 12 (as indicated in Table 6), that is, intercept, when the level of FDI, REER and CPI is equal to zero.
2. The value of independent/controlled variable FDI is −1.86e + 07, which implies that the level of value added to the manufacturing sector increases

- by 1.86% on average for every 1 percentage change in the level of FDI, *ceteris paribus*.
3. The value of the independent variable REER is $-1.17e + 10$, which implied that the level of value added to the manufacturing sector increases by 1.17% on average for each 1 index point change in the level of REER, *ceteris paribus*.
 4. The value of the estimate of CPI is 2.028, which implied that the level of value added to the manufacturing sector decreases by 2.028% on average for each 1 index point change in the level of CPI, *ceteris paribus*.

Putting together, fdi and reer has a positive impact on gva, whereas cpi has a negative effect on gva. The coefficients, that is, fdi and reer are statistically significant at 1% level referring the *p* value, whereas cpi is not. Concluding, it can be said that all the independent variables have an asymmetric effect on the gva, that is, the dependent variable in the long run, on average, *ceteris paribus*.

Error Correction	D_gva	D_fdi	D_cpi	D_reer
Coint. eq.1	-1.57	-1.63e-06	5.01e-08	4.38e-10
standard error	3.56	3.32e-07	2.40e-08	6.17e-10
<i>p</i> value	(.65)	(.00)	(.03)	(.478)
gva (LI)	-1.64	-2.56e-06	8.16e-08	7.83e-10
standard error	5.62	5.23e-07	3.79e-08	9.74e-10
<i>p</i> value	(.77)	(.00)	(.03)	(.42)
fdi (LI)	-1.30e+07	-9.748194	.3036817	.0016515
standard error	2.35e+07	2.183531	.158108	.0040639
<i>p</i> value	(.57)	(.00)	(.05)	(.68)
cpi (LI)	2.53e+08	393.4781	-11.8227	-.1392997
standard error	7.92e+08	73.68212	5.335273	.1371355
<i>p</i> value	(.74)	(.00)	(.02)	(.31)
reer (LI)	-5.05e+09	-3760.925	93.5598	-.038891
standard error	7.40e+09	688.717	49.86953	1.281824
<i>p</i> value	(.49)	(.00)	(.06)	(.97)

Note: The values here are represented only till lag 1 since the values at further lags were found insignificant.

The negative error correction term in gva and fdi equations is good since it shows convergence to the long-run equilibrium. Hence, there is long-run causality in gva and fdi equations, among which fdi is statistically significant at 1% level.

The *short-run behaviour* between the dependent variable and independent variables:

In the short run, gva, cpi and reer are seen to have a significant effect on fdi at 1% level. Fdi and gva also have a significant effect on cpi at 5% level whereas reer have a significant impact on cpi at 10% level. However, there is no causality from fdi, reer and cpi to gva in short run. Concluding, we cannot infer strong causality from independent to dependent variables in the short run.

Conclusion

The study has explored the inter linkage between FDI outflow and manufacturing sector growth in India and measured the role of selected economic factors such as CPI and REER. The empirical analysis is based on the long-term cointegration model using the last two decades data (2000–2019). The study finds out that FDI outflow has direct significant effect on manufacturing sector growth in India. Moreover, the analysis also revealed that the price level and foreign exchange influence the relationship between FDI outflow and growth of the manufacturing sector. While CPI has an adverse impact on manufacturing sector growth, REER has a positive influence on the relation.

Despite theoretical evidence of bidirectional relationship between the factors, this study only confirms (through Granger causality) uni-directional relationship for the period 2000–2019. However, the results are largely in line with the literature. The positive impact of outward FDI on domestic growth of the manufacturing sector in India can be explained through the supply of important raw materials at affordable costs. This also ensures reliable supply of those raw materials for indigenous production. This allows the domestic manufacturing sector to produce goods at affordable cost in India. Owing to the affordability, the demand of goods increases leading to an increase in output and hence overall growth of the investing country. However, FDI outflows also instigate economic growth of investing/source country because investing in other countries allows the domestic firms to expand its operations in the foreign market in turn contributing to domestic growth. The returns on investment in terms of high foreign exchange inflow are also very crucial for the economic growth of a country.

The findings of this article have significant policy implications. To promote economic growth especially growth of the manufacturing sector, FDI outflow may be the alternative tool as the country can decide on it unlike FDI inflow on which there is relatively less control. Investment on FDI outflow can stimulate the growth of the manufacturing sector in the host country through the channels described in the previous paragraph. Moreover, through proper management of REER and control of CPI, the impact of FDI outflow on the manufacturing sector growth can be augmented. As CPI has an inverse relationship, policymakers can choose to reduce it through various policy measures to stimulate manufacturing sector growth. Similarly, REER can be modified through trade policies to influence manufacturing sector growth and, in turn, promote economic growth in the host country.

However, the destination of FDI outflow may have a significant effect but that needs to be confirmed with further analysis. Moreover, the result is not significant for the relation between CPI and manufacturing sector growth, probably due to the change in the methodology of the data collection pre- and post-2012 as referred by the RBI Bulletin.

Appendix

Years	gva	fdi	cpi	reer	gvad (1st diff)	fdid (1st diff)	cpid (1st diff)	reerd (1st diff)
2000	7.50E + 10	514	444	100.09				
2001	7.40E + 10	1,397	463	100.86	-2.95E + 08	883	19	.770004
2002	8.00E + 10	1,678	482	98.18	5.81E + 09	281	19	-2.68
2003	9.50E + 10	1,876	500	99.56	1.46E + 10	198	18	1.379997
2004	1.10E + 11	2,175	520	100	1.75E + 10	299	20	.440002
2005	1.30E + 11	2,985	540	103.1	1.88E + 10	810	20	3.099998
2006	1.60E + 11	14,285	125	101.29	3.17E + 10	11,300	-415	-1.81
2007	2.10E + 11	17,234	133	108.52	4.25E + 10	2,949	8	7.229996
2008	2.00E + 11	21,142	145	97.8	-2.02E + 08	3,908	12	-10.72
2009	2.30E + 11	16,058	163	94.74	2.51E + 10	-5,084	18	-3.06001
2010	2.90E + 11	15,947	180	102.25	5.53E + 10	-111	17	7.510002
2011	2.90E + 11	12,456	195	99.15	8.87E + 09	-3,491	15	-3.1
2012	2.90E + 11	8,486	123.3	105.57	-5.15E + 09	-3,970	-71.7	6.419998
2013	2.80E + 11	1,679	135	103.27	-5.87E + 09	-6,807	11.7	-2.3
2014	3.10E + 11	11,783	118.9	108.96	2.40E + 10	10,104	-16.1	5.690002
2015	3.30E + 11	7,572	124.7	112.07	2.06E + 10	-4,211	5.799995	3.110001
2016	3.50E + 11	5,072	130.3	114.51	2.01E + 10	-2,500	5.600006	2.440002
2017	4.00E + 11	11,141	135	119.71	5.03E + 10	6,069	4.699997	5.199997
2018	4.00E + 11	11,447	139.6	114.01	3.00E + 09	306	4.600006	-5.7
2019	3.80E + 11	13,144	146.3	116.75	-1.86E + 10	1,697	6.699997	2.739998

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Notes

1. <https://www.ibef.org/economy/foreign-direct-investment>
2. Data for CPI are taken for industrial workers till 2012, whereas post-2012, it has been taken as a combined general index for both rural and urban regions owing to the change in the methodology of the data collection and reporting.
3. For symmetrical data analysis, the data for financial years have been used as a proxy for calendar years for the variables CPI and REER (for instance: data for the year 2001–2002 is taken as data for the year 2001) due to the unavailability of data in calendar years for these variables.

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Evolving Trends and Patterns in the Indian Textile Industry: A Critical Evaluation

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Abstract

This perspective seeks to unearth the crucial trends and patterns of manufacturing, employment and exports in the socio-economically critical Indian textile industry. The period of analysis is broadly from 2000–01 to 2015–16, 2017–18 and 2020–21. Using available empirical and literary evidence, the viewpoint tries to elicit the causes, consequences and future policy implications of the study for the sector. All in all, given the stagnant and even declining trends on manufacturing, employment and export fronts, it is suggested that the industry stakeholders ranging from textile firm owners to policymakers adopt suitable and structurally superior digital technologies of production such as Artificial Intelligence, Internet of Things and 3D while also balancing with the prevalent welfarist objectives of employment and equity. The sector is vital for many other sections (such as women) and sectors (such as environment), which makes it all the more imperative to have suitable policies and incentive structures in place that could ensure a high growth and sustainable textile development pattern in the coming future.

Keywords

Indian textile industry, manufacturing, employment, environment, exports, women, digitalisation

Introduction

The Indian textile sector occupies a pre-eminent position within India's socio-economic landscape. It is one of the largest in the world with a huge raw material base and manufacturing strength across the value chain. To support the fact of

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importance of this sector for India, the textile industries contribute 2%–3% to India's gross domestic product (GDP) and accounts for 14%–15% of industrial production, 27% of the foreign exchange inflows and 13%–15% of the export earnings. Also, the sector is a major employment generator and is second only to the agricultural sector in terms of the same. It gives direct employment to 45 million people and most of these employees are women. As per several informed estimates, almost 60%–70% of the total workforce in this sector is accounted for by women, who with their knowledge of the traditional textile craftsmanship and dexterity of hands are more suited for employment in the textile industry. In line with the above argument, it is also to be mentioned that the textile industry, until recent years, has relied heavily upon traditional and labour-intensive production processes. Of late, thanks to the increasing weight attached to quality, the demand for skilled labour too has risen (Kanupriya, 2020a, 2021; Ministry of Textiles, n.d.). This raises the profile of the sector both in terms of its current contributions to the Indian socio-economic landscape as well as its future implications for the country, given its significance for employment, manufacturing, exports and by that very fact, GDP.

It is in this context that this article seeks to expound and critique the evolving trends and patterns within the Indian textile landscape. The primary objective of this perspective piece is, therefore, to elucidate on the dynamism of developments in the areas of textile manufacturing, employment and trade (both exports and imports) using both secondary data-dependent empirical tools as well as existent literature on the subject. Databases of the likes of the Annual Survey of Industries (ASI), National Accounts Statistics (NAS), Trade Map and the World Integrated Trade Solution (WITS) are used for the purpose of analysis in this article.

The article is divided into the following sections. The first section explains the purpose and methodology followed in this article, after giving a brief background to the theme. The second section seeks to illustrate the contributions, trends and patterns of the textile sector towards manufacturing, employment and trade in India using a review of the literature. The third section explores the existing literary evidence within a secondary data analysis framework using available databases. The next section seeks to explain the underlying causes, consequences and lessons drawn from these trends and patterns. The last but one section concludes the study. The final section educes the future policy implications of this analysis. The next segment reviews the existing literature on the significance of the Indian textile sector for the country's economy.

Significance of Textiles for the Indian Economy: A Review of the Literature

The textile industry contributes 2%–3% to India's GDP, 13%–14% to her export earnings, and as much towards her organised manufacturing GDP. Besides, the sector provides employment to an estimated 45–60 million people both directly as well as indirectly. A major proportion of these employees are women and by that

very fact, the sector holds primacy when it comes to its socio-economic pre-eminence in India, second only to agriculture (Kanupriya, 2021, 2022; Ministry of Textiles, n.d.; Oberoi, 2017; Papola, 2012).

There has been an improvement in the Indian textile exports and imports, employment and manufacturing output after the phase-out of the Multi-Fibre Agreement (MFA) framework phase. Thus, the post-2004–05 time period witnessed a non-uniform improvement in the textile industrial conditions. The reasons for this non-uniform improvement and not a secular increase are inadequate support in the form of unfavourable interest rates, untimely industrial packages, inopportune release of export incentives and inverted duty structures on textile inputs. Another reason has been the lack of adequate market access of Indian textile products in the developed country markets on account of India not being a least developed country but an emerging market economy, thereby it not being offered preferential tariff treatment unlike its competitors such as Bangladesh and Vietnam (Kanupriya, 2020b; Oberoi, 2017).

The next segment studies the contributions, trends and patterns of the Indian textile sector towards manufacturing, employment and trade in India using secondary databases.

Contributions of the Indian Textile Industry: Evolving Trends and Patterns

This section details the contributions, trends and patterns of the Indian textile industry towards the country's manufacturing, employment and trade. Table 1 presents the share of textiles in India's manufacturing GDP.

As evident from Table 1, the Indian textile sector contributed 11.69–13.87% towards India's manufacturing GDP between the period 2000–01 and 2015–16 as per the NAS data. It is to be noted that the method of calculating GDP is gross value added (GVA) at constant basic prices, for the base period 2011–12. This is a noteworthy contribution to the manufacturing of the country as almost one-tenth of the manufacturing is accounted for by the textile sector.

Total GVA for each year is calculated by summing up the contributions of agriculture, forestry and fishing; mining and quarrying; manufacturing; electricity, gas, water supply and other utility services; construction; trade, repair, hotels and restaurants; transport, storage, communication and services related to broadcasting; financial services; real estate, ownership of dwelling and professional services; public administration and defence; and other services in line with the value-added method of calculating GDP.

Table 2 presents the share of textiles in total industrial employment of the country.

As evident from Table 2, the textile sector accounts for anywhere between 15.25% and 20.83% of the total industrial employment.¹ This is almost one-fifth of the entire industrial employment in the organised sector, as measured by the ASI data.

Table 1. Share of Textiles in India's Manufacturing GDP.

Year	Textiles and Apparels GVA	Total Manufacturing GVA	Share of Textiles and Apparels in Total Manufacturing GVA (%)
2000–01	743,240.00	6,356,680.00	11.69%
2001–02	731,280.00	6,501,000.00	11.25%
2002–03	783,060.00	6,947,410.00	11.27%
2003–04	769,190.00	7,387,640.00	10.41%
2004–05	816,120.00	7,933,080.00	10.29%
2005–06	950,170.00	8,674,750.00	10.95%
2006–07	1,134,750.00	10,217,800.00	11.11%
2007–08	1,101,470.00	10,931,060.00	10.08%
2008–09	1,246,030.00	11,440,850.00	10.89%
2009–10	1,418,760.00	12,695,640.00	11.18%
2010–11	1,513,210.00	13,672,580.00	11.07%
2011–12	1,532,380.00	14,099,860.00	10.87%
2012–13	1,773,980.00	14,868,730.00	11.93%
2013–14	2,164,110.00	15,607,090.00	13.87%
2014–15	2,164,290.00	16,839,380.00	12.85%
2015–16	2,589,360.00	19,038,500.00	13.60%

Method: Gross value added at constant basic prices, base year 2011–12.

Source: National Accounts Statistics.

Table 2. Share of Textiles in Total Industrial Employment.

Year	Total Direct Employment	Textiles Direct Employment	Share of Textiles Employment in Total Industrial Employment
2000–01	4,882,143	994,683	20.37%
2001–02	4,660,496	915,327	19.64%
2002–03	4,739,339	897,820	18.94%
2003–04	4,591,237	908,135	19.78%
2004–05	4,851,233	950,306	19.59%
2005–06	5,099,750	998,503	19.58%
2006–07	5,516,703	1,149,108	20.83%
2007–08	5,659,750	1,075,035	18.99%
2008–09	5,977,328	1,011,886	16.93%
2009–10	6,153,723	1,004,819	16.33%
2010–11	6,541,222	1,052,353	16.09%
2011–12	6,828,309	1,052,522	15.41%
2012–13	6,608,207	1,030,555	15.60%
2013–14	6,934,221	1,057,405	15.25%
2014–15	6,953,177	1,109,598	15.96%
2015–16	7,177,708	1,121,290	15.62%
2016–17	7,463,498	1,127,894	15.11%
2017–18	7,777,197	1,213,136	15.60%

Source: ASI-based calculations.

Continuing with the description of the employment conditions in the Indian textile sector viz-a-viz the entire Indian economy, Table 3 gives the employment elasticities of textile output as computed from the ASI data and comparable with the entire organised industrial sector.

Table 3 depicts the employment generation potential in the Indian textile sector with regard to all the industries. The computations are done for the period 2000–01 to 2017–18 on the double logarithmic form of direct employment and output for both the textile and the overall organised industrial sectors. This gives the employment elasticities with regard to output in the Indian textile and the overall industrial sectors.

As evident from this table, the employment elasticity of the Indian textile sector is 0.14, viz., for a percentage point increase in textiles output, employment

Table 3. Employment Elasticities in the Organised Sector.

Sector	Employment Elasticity Coefficients
Textiles	0.14
All industries ²	0.22

Source: ASI-based calculations.

Table 4. Employment Coefficients in the Organised Sector.

Year	Employment Coefficients for All Industries (Employment/Output)	Employment Coefficients for the Textile Sector (Employment/Output)
2000–01	0.53	1.42
2001–02	0.48	1.44
2002–03	0.42	1.34
2003–04	0.36	1.25
2004–05	0.29	1.14
2005–06	0.27	1.04
2006–07	0.23	1.07
2007–08	0.20	0.87
2008–09	0.18	0.81
2009–10	0.16	0.70
2010–11	0.14	0.53
2011–12	0.12	0.49
2012–13	0.11	0.45
2013–14	0.11	0.40
2014–15	0.10	0.40
2015–16	0.10	0.42
2016–17	0.07	0.43
2017–18	0.06	0.43

Source: ASI-based calculations.

in the sector goes up by 0.14 percentage points. This can be compared to all the industries. As far as the employment elasticity for the entire industrial sector is concerned, it is 0.22, viz., for a percentage point increase in the overall industrial output, total industrial employment goes up by 0.22 percentage points in the organised sector (Arora, 2015; Papola, 2012).

Thus, the employment-generating potential for the Indian textile sector is comfortable when placed within the overall industrial economy.

Continuing with the description of the employment conditions in the Indian textile sector viz-a-viz the entire Indian economy, Table 4 gives the employment coefficients of textiles and the overall industrial economy as computed from the ASI data.

Table 4 gives another measure of employment generating potential for the Indian textile sector viz-a-viz the entire industrial economy. Employment coefficients are defined as the ratio of total employment generated per unit of output.

As evident from the calculations, the employment coefficients for the entire industrial economy hover between 0.06 and 0.53 for the period under study. At the same time, those for the Indian textiles sector are much higher at 0.40 to 1.44, implying that total employment generated per unit of textiles output is more than the employment generated per unit of total industrial output (Arora, 2015; Papola, 2012).

This places the Indian textile sector in a commanding position as far as its contribution to employment generation in the Indian organised industrial sector is concerned.

Table 5 describes the employment scenario in the unorganised textile sector as placed within the overall industrial segment using the National Sample Survey Organisation (NSSO) data.

Table 5 studies the employment scenario in the unorganised textile sector within the overall industrial economy. In this regard, the concepts of principal status (PS) and subsidiary status (SS) are important to be noted. First, PS employment refers to the status of activity on which a person has spent a relatively longer time of the preceding 365 days prior to the date of the survey. Second, SS employment refers to the status of activity on which a person has spent a minor period of not less than 30 days prior to the date of the survey (Oberoi, 2017).

As evident from Table 5, employment in the unorganised segment of the industrial economy for the Indian textile sector is high to the tune of 9.7, 8.4 and 9.2 million for the years 2004–05, 2009–10 and 2011–12 as per the NSSO data. As a share of manufacturing in the unorganised sector, this accounts for 17.99%, 16.57% and 15.38%, respectively (Mehrotra et al., 2014).

Furthermore, some of the employment figures from Oberoi (2017) help to supplement this trend even better and also explicate the duration and nature (PS or SS) of employment in the sector.

As Table 6 depicts, there is an unclear trend of declining usual status employment for the Indian textile and garment sectors (combined) from 1999–2000 to 2009–10. For the years 1999–2000, the usual status employment in the Indian textile and garment sectors (combined) stood at 51.17 lakhs. This number

Table 5. Employment (PS + SS) in the Unorganised Manufacturing Sector.

Manufacturing Sector	2004–05	2009–10	2011–12
Food products and beverages	5.5	5.5	6.4
Tobacco products	4.7	4.1	4.9
Textiles	9.7	8.4	9.2
Wearing apparel	7.2	7.3	9.6
Leather products	1.3	0.9	1.3
Wood and wood products	5.2	3.6	3.9
Paper and printing, etc.	1.5	1.6	1.1
Rubber and petroleum products	0.9	0.8	1.3
Chemical products	2	1.7	2
Non-metallic mineral products	4.5	4.3	5
Machinery and metal products	6	6.6	6.9
Transport equipment	1	1.5	1.5
Furniture manufacturing	4.4	4.3	6.6
Unorganised manufacturing (total)	53.9	50.7	59.8

Source: Adapted from Mehrotra et al. (2014).

Table 6. Usual Status Employment in the Textile and Garment Sectors (Combined).

Years	Principal Status (PS)	Subsidiary Status (SS)	Usual Status (PS + SS)
1999–2000	29.25	2.01	31.26
2004–05	29.54	2.63	32.17
2009–10	26.58	1.95	28.55

Source: Adapted from Oberoi (2017).

Table 7. Average Male-to-Female Employment Ratios by Industry and its Size.

Industry	Small Scale	Medium Scale	Large Scale
Textiles	2.3	3.9	27.6
Apparels	4.0	6.4	5.2
All other industries	2.7	5.6	19.5

Source: Adapted from World Bank calculations in Lopez-Acevedo and Robertson (2016).

saw successive, yet asymmetrical patterns of decline over the next few years. For the period 2004–05 and 2009–10, these figures become 60.56 and 41.95 lakhs, respectively. Also, as depicted in the table, the share of PS employment is higher than the share of SS employment, implying that the status of activity on which a person has spent a relatively longer time of the preceding 365 days prior to the date of the survey or the PS employment is higher than the SS employment as defined by the workers having worked for a minor period of not less than 30 days. It could thus be safely stated that long-duration employment in the sector outshines shorter period employment for the time period under study (Oberoi, 2017).

Table 7 educes the male-to-female employment ratio using the ASI data to gauge the female-intensive nature of textile employment.

Table 7 elicits the male-to-female employment ratios for the Indian textile sector to gauge whether or not the sector is female-labour intensive compared to apparel and all other industrial categories. This links the selection of the textile sector in the thesis topic owing to its role in providing employment to women over any other labour-intensive sector.

Clearly, the male-to-female employment ratios are favourable for females in the Indian textile sector for both small and medium-scale sectors, as compared to the other industrial categories. As the majority of firms in the sector are of medium and small-scale nature, these results are quite telling (Lopez-Acevedo & Robertson, 2016).

Thus, the importance of the industry for the female employment generation cannot be overlooked.

The ratios are calculated using ASI establishment-level data for 2000–01 to 2014–15 by the World Bank in Lopez-Acevedo and Robertson (2016).

Next, Figures 1–3 assess the trade performance of the Indian textile sector within the overall Indian economy.

Given the centrality of trade (exports and imports) in the thesis topic, it is prudent to assess the relative importance of the textile sector in the country's overall trade scenario.

For the purpose, Figure 1 graphs trade in textiles as a share of India's total trade for the period 2000–18 using data from WITS.

As evident from Figure 1, textile exports as a share of India's total exports hover between 12.97% and 4.69% for the period under study, indicating significance of the sector for India's exports. Also, the sector's imports account for 0.75% to 1.60% of its total imports for the period under study. Clearly, exports are more pronounced for the sector as compared to imports in their trade composition.



Figure 1. Textile Trade as Share of India's Total Trade.

Source: WITS.

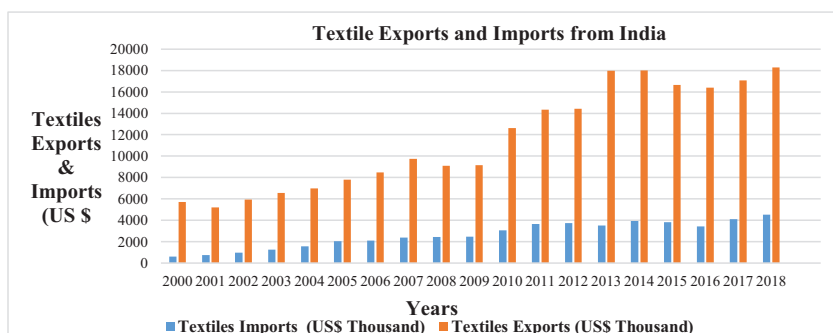


Figure 2. Textile Exports and Imports from India.

Source: WITS.

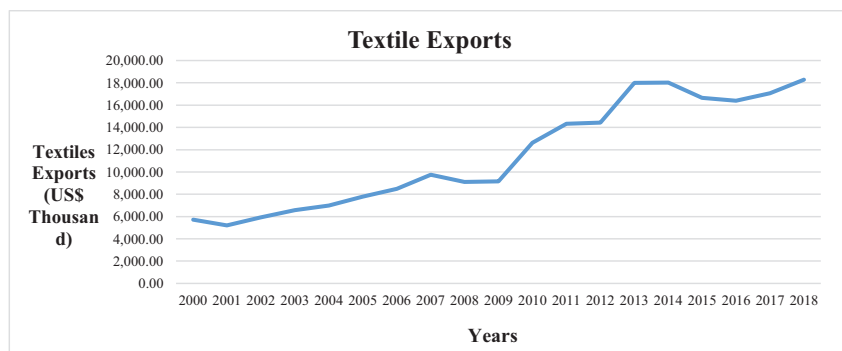


Figure 3. Textile Exports from India.

Source: WITS.

Given the centrality of trade in the subject matter of this article and to have an understanding of the trade scenario in the Indian textile industry, a graphical description (Figure 2) of exports and imports of the Indian textile sector is given on the basis of WITS database for the period 2000–2018 with their values having been expressed in US\$ thousands.

As Figure 2 depicts, the value of textile exports from India witnesses an upward trend for most of the years under study, especially after the post-MFA period from 2004–05 onwards. The imports too, see an increasing trend over the period under study, albeit at a pace slower than the value of exports. This corroborates the trends of Figure 1 such that textile exports corner a more prominent position than imports in the Indian trade scenario.

To further gauge the trade conditions in the Indian textile sector, a disaggregated analysis of exports and imports of the Indian textile industry is depicted in Figure 3.

As Figure 3 depicts, the average value of textiles exports from India records a rising trend for the period under study till 2013–14, especially after the post-MFA period from 2004–05 onwards. The period from 2013–14 onwards witnesses a declining trend in textiles exports owing to the industry not receiving adequate support in the form of favourable interest rates, timely industrial support and opportune release of export incentives.

In general, though exports see an uptrend for the period under study.

Figure 4 depicts the trend for the value of textile imports for the period under evaluation.

As per the depictions, in general, the values of textile imports witness an uptrend for the period 2000–2018, especially after the post-MFA period from 2004–05 onwards.

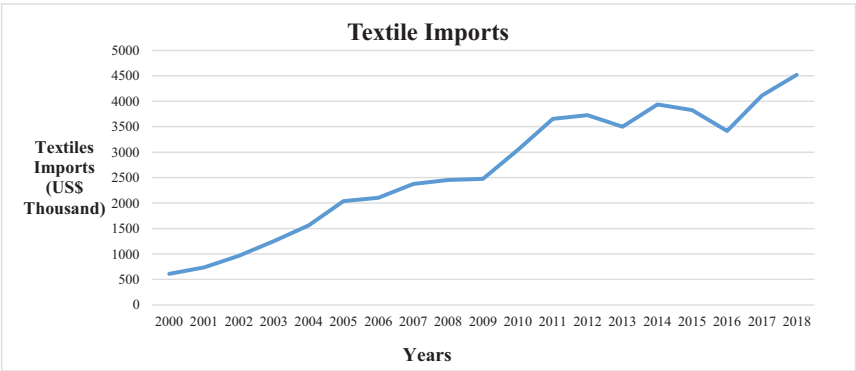


Figure 4. Textile Imports from India.

Source: WITS.

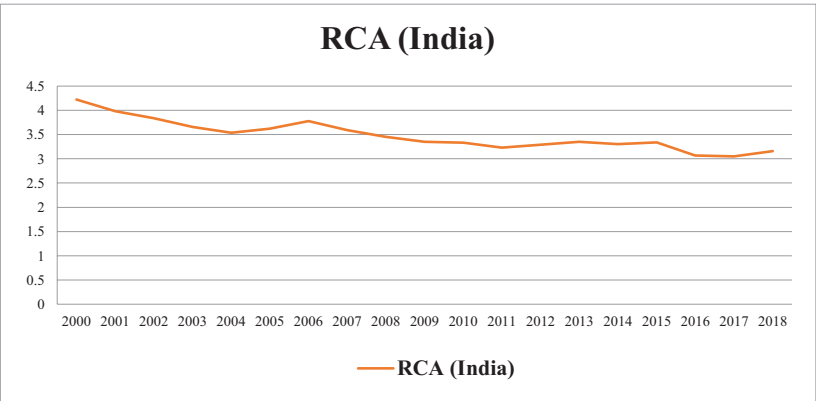


Figure 5. Revealed Comparative Advantage of the Indian Textile Sector.

Source: WITS.

The following depiction of revealed comparative advantage (RCA) expounds the desirability and suitability of Indian textile exports in the global markets.

As evident from Figure 5, the RCA as defined by Balassa and Noland (1989) relates to the relative advantage or disadvantage of a certain country in a certain class of goods or services as evidenced by trade flows. It is based on the Ricardian concept of comparative advantage. For RCA values more than unity or 1, the nation has an RCA in the concerned class of goods, in other words, that economy should continue to export that class of goods to the rest of the world. Henceforth, that economy shall continue to export those goods and services in which it has a RCA. The class of goods for which the value is less than unity should be discontinued as exports. Since the WITS database contains values only till 2018, the chart too depicts the trend up to 2018.

Deducing from the chart, the RCA values for the textile sector for the years 2000–2018 lie between 3.05 (the value for 2017) and 4.22 (the value for 2000). Also, using Trade Map, the values for 2019, 2020 and 2021 come to be 2.03, 2.50 and 2.14, respectively—values not pointing towards competitiveness in the Indian textile sector.

There is, thus, a declining RCA for the Indian textile sector for the period under study. It could imply that India is ceding its textile exports' space to other competitors in the world, on account of their better exports performance viz-à-viz India.

Similar results are obtained for another vital trade index, namely the export similarity index for India viz-a-viz her top textile export competitors (Kanupriya, 2020b).

Based on the results and trends arrived in this section, the next segment discusses the causes, consequences and lessons derived from the same.

Causes, Consequences and Lessons for the Indian Textile Industry

As described in the preceding section, despite the centrality of textiles in the Indian socio-economic landscape, the same cannot be thought of as a 'top performer' within the Indian economy, when it comes to its shares, contributions and relative competitiveness in terms of manufacturing, employment (mainly organised sector employment) and trade.

There are a number of causes that could be offered as an explanation of the lack of meritorious performance by the Indian textile industry. Corruption and leakages at the foreign borders (Kanupriya, 2020b; Kapoor, 2019), high costs and delays caused by domestic transportation, burdensome customs procedures, problems in meeting quality/quantity requirements of buyers (both domestic and foreign), challenges in accurate identification of the potential buyers and markets, lack of access to imported inputs at competitive prices, lack of easy access to output and trade finance, lack of seamless transportation (both domestic and international), tough technical requirements and standards abroad, tariff barriers abroad, lack of

appropriateness of the production technology and skills, Rules of Origin (RoOs) abroad, lack of availability of cheaper production inputs like skilled labour, capital, land, and so on (Kanupriya, 2020b; Kapoor, 2019).

There is, thus, a pressing need to enhance textile production, employment and export competitiveness by way of successful negotiation of ongoing preferential trade agreements and improving the logistical performance of the Indian textile industry, as also reaping the benefits of scale economies through technological upgradation of small and medium enterprises (Kanupriya, 2020b).

The only noteworthy consequences of a less than remarkable performance of the Indian textile sector are the lagging of the sector in terms of its manufacturing and exports competitiveness while also not being able to catch up with an ever-rising labour force, thereby being a letdown in terms of its demographic dividend potential for India's youth.

As an upshot of the discussion thus far, the only feasible option for the Indian textile industry is to upgrade itself structurally in terms of the latest technologies of production, better adherence to production targets and standards, reducing corruption, procuring cheaper inputs of production and adopting digital technologies as part of the Industry 4.0 initiatives. Not only would it act as the saviour for the distressed sector but also ensure that the future generations do not bear the consequences of the human action today, for textiles is one of the most polluting sectors, especially the colouring and dyeing businesses (Kanupriya, 2022). For effecting this transformation, both the private and the public sectors must work together. Only then can a truly lasting and sustainable 'digital circular' transformation be realised for this sector (Kanupriya, 2022).

Conclusion

The article educes major contributions, trends and patterns in the Indian textile industry in terms of manufacturing, employment and trade. The same points at a worrying trend of stagnant and even declining textile relevance and competitiveness when it comes to its contributions to manufacturing, employment and trade. That the trend must be immediately arrested and major course corrections should be done have been emphasised. The study advocates undertaking drastic structural transformations in order to keep the industry competitive, both domestically as well as globally. The last section lists the future policy implications of this perspective.

Future Policy Implications

This perspective is an attempt at summarising and analysing the dynamic trends and patterns of manufacturing, employment and trade in the Indian textile sector. Studies and opinion pieces on the Indian textile industry often overlook the dynamics of the changes in the country's textile landscape both in the present and in the years to come.

As elucidated in this article, while it is all too important for the industry managers and practitioners to transform themselves structurally for survival, embracing new currents in textile technology in line with Industry 4.0 is imperative for any future welfarist manager/textile producer. This is especially so in a sector that employs several marginalised communities, including women and can take the initiative to introduce new techniques and processes to bring them within the fold of a productive and competitive textile economy (Kanupriya, 2020a, 2022). The ecological ramifications for a digital circular textiles economy too are profound, as discussed in the previous sections of this article.

Adopting the latest digital technologies such as 3D, Internet of Things and Artificial Intelligence and simultaneously reskilling and upskilling the existent and incoming workforce in the sector shall almost uncover new insights about not just their consumers but also of their internal business models, competitors and demand–supply dynamics (Kanupriya, 2020a). In line with the same, digitalisation could be a game-changer for the Indian textile sector, if implemented with sufficient pro-poor checks and balances.

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Notes

1. The industries included in the data are crop and animal production, hunting and related service activities, other mining and quarrying, manufacture of food products, manufacture of beverages, manufacture of tobacco products, manufacture of textiles, manufacture of wearing apparel, manufacture of leather and related products, manufacture of wood & wood products, manufacture of paper and paper products, printing and reproduction of recorded media (excluding publishing activities, manufacture of coke and refined petroleum products, manufacture of chemical and chemical products, manufacture of pharmaceuticals, medicinal chemical and botanical products, manufacture of rubber and plastic products, manufacture of other non-metallic mineral products, manufacture of basic metals, manufacture of fabricated metal products, manufacture of computer, electronic and optical products, manufacture of electrical equipment, manufacture of machinery and equipment n.e.s., manufacture of motor vehicles, trailers and semi-trailers, manufacture of other transport equipment, manufacture of furniture, manufacture of other manufacturing, repair and installation of machinery and equipment, electricity, gas, steam and air-condition supply, waste collection, treatment and disposal activities; materials recovery, wholesale and retail trade and repair of motor vehicles and motorcycles, warehousing and support activities for transportation, publishing activities, repair of computers and personal and household goods, and others.
2. All industries are as specified in the first footnote of this article.

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An Empirical Analysis on International Trade between India and the ASEAN

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Abstract

India and the Association of South East Asian Nations (ASEAN) regional grouping had completed three decades of diplomatic relations during this year 2022 and the year has been designated as ASEAN–India Friendship Year. As India initiated its ‘Look East Policy Strategy’ in the year 1991, the trade ties progressed between India and the ASEAN from a sectoral dialogue partnership in 1992 to dialogue and summit-level partnerships during the years 1996 and 2002, respectively. Commemorating, the two decades of India–ASEAN relations the trade ties elevated to the strategic partnership between them during the year 2012. It was in the year 2009 India-ASEAN Free Trade Agreement got signed, and India–ASEAN Services Agreement was signed in the year 2014. ASEAN views India as the most dynamic and trusted partner of East Asia and is keen to accelerate the trade and investment relations with the new Asian tiger. ASEAN also recognises India’s huge trade potential and views it as a strong balancing and stabilising partner in the Asian region. The bilateral trade between the economies has grown exponentially and reached over US\$ 79 billion during the year 2020–2021. India’s investment in ASEAN has been growing and reached US\$2012 billion during the year 2020, and ASEAN investment has also been growing in India. Despite an impressive trajectory of trade between India and the ASEAN, there is room for further growth through the integration of India into the Asian value chains. In this background, the study would assess the commodity trade patterns between India and ASEAN by observing the extent of India’s trade intensity

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and revealed comparative advantage (RCA) advantage and trade competitiveness between India and the ASEAN, the stability of these different indices of RCA were tested, in the light of the analysis few policy suggestions were drawn for future trade between India and the ASEAN.

Keywords

ASEAN, Look East Policy, regional trade, Act East Policy, India, East Asia, Myanmar, ASEAN, Thailand and Singapore

Introduction

India and the Association of South East Asian Nations (ASEAN) are bounded together by their shared culture, history and civilisation. A relation with the ASEAN economies has always been in the forefront of the India's foreign policy. India and ASEAN relations have passed through a dynamic journey with several achievements to reach the year 2022. India is one of the top trading and investment partner with the ASEAN economies and also both the nations closely cooperate on political and security matters. India's relationship with the ASEAN has been a key pillar of its foreign policy, and the Indo-Pacific has obtained renewed vibrancy with the signing of Indo-Pacific vision agreements by ASEAN-10 countries and India. The ASEAN-India together form a prominent economic grouping. Today when ASEAN and India are facing common challenges to safeguard their economies from the COVID-19 pandemic, there is a need for stronger multilateral co-operation to contain the post-pandemic challenges and bring back the economy on the growth trajectory. ASEAN-India together constitutes for 30% of the world population, and India remained ASEAN's largest trade partner as well as FDI investor with \$2.1 billion in 2020. ASEAN has emerged as the fifth largest trade partner to India, and the bilateral trade between India and the ASEAN would reach nearly \$300 billion by 2025. Despite an impressive trajectory of economic relations between the two nations, still, there is enough room for expanding the trade relations through India's integration into the value chains of ASEAN. Asia-Pacific region is among the most progressive regions of the globe today, and both ASEAN and India have a central role in shaping the so-called 'Asian Century', especially when India entered the 'Amrit Kal', after completing the 75 years of independence, and this also completes the India-ASEAN 30 years of dialogue partnership too, with the ASEAN countries. Considering such turn of events, the current article intends to analyse the intensity and potential of India's trade with the ASEAN trade and assess the future commodity trade potential among identified commodity groups between India and the ASEAN by exploring the complementarities between the two.

Review of the Earlier Literature

Several studies have explored the nature and extent of the trade between India and ASEAN countries and found a greater potential for mutual co-operation and also

a larger role of India and ASEAN in the post-COVID-19 geopolitical environment. As deeper integration of India and the ASEAN would help in deriving collective solutions to deal with common challenges and design a common path for resilience (De, 2021). India's exports to ASEAN have increased by 11x, while total Indian exports have risen only 6x during the past 10 years (2003–2013) and predicts that Indian exports to ASEAN are likely to reach \$280 billion by 2023, and India has an advantage in the exports of chemicals, pharmaceuticals, gems and jewellery, iron and steel and other services, whereas ASEAN has advantage in the export of natural resources and electronics projecting the right space for the two-way trade between the countries (Bhagal, 2018). The trade intensity between India and the ASEAN has not only increased but India's exports to and imports from ASEAN countries have been on rise compared to the total trade pattern with the rest of the world. The values of greater complementarities between exports of India and the ASEAN countries were reflected through the RCA index (revealed the comparative advantage index) presenting larger potential for trade between India and the ASEAN (Raghuramapatruni, 2012). India could actually import many products that are currently being imported from China from the ASEAN countries. By doing so, India can reduce its bilateral trade deficit with China, which can result in an equal trading relation. According to UN data, India currently imports more than 50% of its imports in 36 product categories from China. India needs to find more sources for these products for trade security and also for diversification. India is also heavily dependent on chemical imports from China, which are essential to make fertilisers and these could be replaced with ASEAN markets in the near future (Morgan, 2012). Free Trade Agreements (FTAs) are often signed by the developing economies to improve their balance of payments (BOP) situation but the Regional Comprehensive Economic Partnership Agreement (RCEP) has forecasted to be having an adverse impact on the ASEAN's countries BOP situation thereby deteriorating the existing BOP situation of the ASEAN economies by 6%. The literature finds that maximum gains of the RCEP would go to Japan, followed by New Zealand. Post RCEP, the BOP situation will worsen for Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam, in this situation, accelerating ASEAN's trade with India could be seen as a win-win situation for both economies (Banga et al., 2021).

Importance of the Study

The growth in India's economy is the outcome of the deliberate changes of its approach to economic policy, especially from the 1991 macroeconomic crisis. The country has moved from 'inward-looking strategy' to an 'outward-looking strategy' and the initiative of its 'Look East Policy' has a significant bearing on the integration of its domestic economy with the external world especially the East Asian countries which had resulted in sizeable outcome thereby increasing its trade volumes. India had started its journey of accelerating its reforms through the 'Look East Policy'. With the success of Look East Policy (1992), country has

reincarnated it to Act-East Policy in 2018, to accelerate the economic, strategic and cultural linkages with the ASEAN. In the post-COVID-19 environment when the geopolitical spectrum of the world is completely at change, and countries are looking at near shoring their investments and sourcing intensifying and integrating with the Association of South East ASEAN Nations economies would be beneficial for both India and the ASEAN nations. The earlier literature on India–ASEAN relations also focuses at the importance of more responsible role that could be played by the Asian region and most importantly India and the ASEAN-10. This becomes much more crucial with the 30 years of dialogue partnership of India with the ASEAN neighbours. Such kinds of relations are also important to keep the China factor away for India and also ASEAN to ensure a stable and peaceful Asian region. Hence, identifying the commodity trade potential and complementarity between India and the ASEAN would be useful to assess the future trade potential between them. In this background the current study would be helpful for professionals, practitioners and the business community to understand the growth trajectory of trade between India and the ASEAN of and assess the potential for economic linkages between the two.

Objectives of the Study

- To analyse the extent of India's trade with the ASEAN nations and observe the intensity between the two.
- To identify the trade pattern and potential between the two, which could enhance the trade.
- To further identify the sectors/commodity groups with emerging trade potential and explore the opportunities, the trade between India and the ASEAN taken for the study.

Database and Methodology

The researcher employs a combination of descriptive and explorative research design to study the objectives framed. The secondary data sources used for the research are collected from various trade data sites of the World Trade Organization, International Monetary Fund, Asian Development Bank, and United Nations commodity trade data bases. The data are analysed using SPSS and advanced excel tools. The values of correlation for India's exports and imports were calculated along with the Gravity Coefficient (GC) values to estimate India's trade with the ASEAN countries. To understand the intensity of trade relations, the export intensity and import intensity of trade between India and the ASEAN were calculated. The export intensity is calculated as a measure of exports of India, exported to the ASEAN partners divided by the total exports of India with the imports of the ASEAN partners from the world divided by the total imports of the ASEAN countries. Similarly, the Import Intensity Index (III) is also calculated

as imports of India from the ASEAN divided by the total imports of India with the imports of ASEAN countries with the world to the total imports of the world.

Measuring Revealed Comparative Advantage

The RCA (Balassa, 1979) 'B' value is calculated to observe the commodity trade potential. Further the Relative Trade Advantage (RTA) (Vollrath, 1991), comprising the difference between the Relative Export Advantage (RXA) and Relative Import Advantage (RMA) were assessed under the competitiveness:

$$RTA = RXA - RMA$$

Further, the second measure as defined by Vollrath is the logarithm of RXA (In RXA) and finally, the RC (Revealed Competitiveness) is calculated by the difference of the logarithms of RXA and RMA. It can be defined that when the indices of RXA and RMA are presented through the logarithmic form they become symmetric through the origin:

$$RC = \ln RXA - \ln RMA$$

A positive value of Vollrath's 3 measures (RTA, In RXA and RC) reveals a comparative/competitive advantage of the product of the domestic country.

Results and Analysis

Correlation Analysis

The results of Pearson's correlation between India's exports and imports with ASEAN nations present that India's export–import correlation coefficient (r) with the ASEAN nations registered the significant value of ' r ' with almost all the eight economies of the ASEAN with respect to export to and imports from them, except in the case of Brunei, Laos and Myanmar (Figure 1, Table A1). However, in the case of the variable total trade and trade balance, the correlation valuation presents a negative correlation with seven of the ASEAN economies, presenting the untapped trade potential of India with the ASEAN nations. The analysis of Philippines presents a higher value of integration with India and with Singapore and Vietnam presenting the nominal positive values.

Intensity Analysis

Before making an analysis study on the RCA index to understand the trade potential between the ASEAN economies and India, it would be in the fitness of

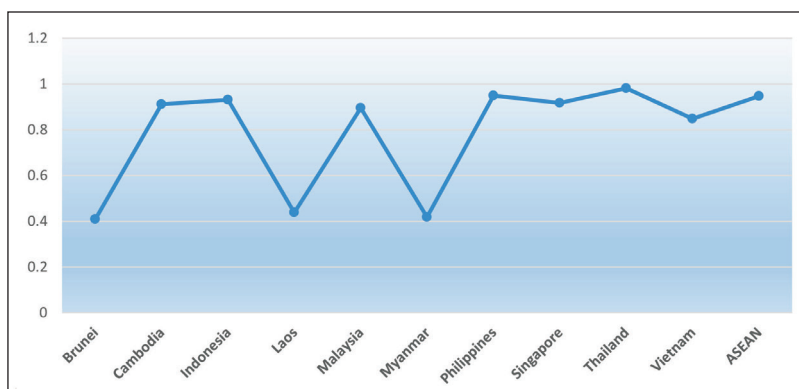


Figure 1. India's Exports and Imports (Value of 'r').

Source: Table A1.

things to make a careful analysis on the growth of the intensity of trade between the two. According to the 'natural trading partner theory' trade between countries who are neighbours and proximity to each other benefit from the FTAs (Krugman & Obstfeld, 2021). Hence, ASEAN countries being closer to India from a distance point of view tend to trade more with their partners. The values of export intensity index (EII) and the III present a greater value of intensity of both export and import relations of India with the ASEAN during the period 1995–2000 (Table 1).

The average values of the EII and III of India with the ASEAN present that among the ASEAN-10, the EII and III average values of India's export and import potential with Myanmar has been high, where the average EII is at 3.867 for the whole period and average III stood at 13.714, the geographical proximity of the nation with India and sharing the same land border are some of the reasons of growing proximity of trade between the two. This is followed by Malaysia with an average EII value at 1.367 and average III value at 2.210, in the whole period of study, the values of EII & III of India and Malaysia were higher than 1, which has been an important trade partner to India, who has an FTA with India. Singapore is also among the top-10 trade partners with India and a major entrepot hub, the average EII (1.760) value and III (1.707) value have been greater than 1 for the whole period. India has an FTA with Singapore. Thailand also registered values higher than 1 on an average for the whole period, with EII value at 1.062 and III value at 1.030. The average EII of the Philippines has been closer to 1 at 0.985, the III is at 0.322. In the case of Laos and Cambodia both, the average intensity index values have been low, EII and III of Laos were at 0.492 and 0.484, respectively, and of Cambodia were at 0.387 and 0.098, respectively. The export bank of India (EXIM bank) also adopted the Cambodia, Laos, Myanmar, Vietnam (CLMV) strategy towards accelerating the trade with the countries of Cambodia, Laos, Myanmar and Vietnam and to encourage the prospective traders in India to trade with the ASEAN neighbours, which could enhance the trade value between them.

Table I. Export Intensity Index and the Import Intensity of India with ASEAN Countries.

Year	ASEAN		Brunei		Cambodia		Indonesia		Laos		Malaysia		Myanmar		Philippines		Singapore		Thailand		Vietnam	
	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III	EII	III
1995	1.299	1.585	0.584	0.003	0.304	0.066			0.089		0.853	1.935	3.809	31.496	0.857	0.197	1.220	1.911	1.126	0.674	2.569	0.469
1996	1.262	1.749	0.395	0.002	0.242				0.089		1.107	2.438	5.439	39.267	0.879	0.215	1.216	1.930	1.010	0.653	1.732	0.039
1997	1.033	1.752	0.164	0.002	0.443	0.318		0.006	0.070		0.992	2.316	3.872	39.978	0.989	0.177	0.936	1.995	0.873	0.714	1.747	0.185
1998	0.935	2.148	0.346	0.011	0.807	0.441			0.369		0.909	3.297	1.861	23.607	0.621	0.184	0.838	2.514	1.230	0.738	1.797	1.052
1999	1.153	2.087	0.155	0.006	0.791	0.029			0.425		1.095	3.253	2.376	20.677	0.706	0.181	0.965	2.387	1.431	0.811	2.108	0.168
2000	1.067	2.106	0.420	0.008	0.620	0.085			0.997		0.986	2.727	2.773	18.248	0.716	0.288	0.891	2.515	1.291	0.998	1.902	0.347
2001	1.366	2.304	0.272	1.160	0.052	0.065			1.614		1.527	2.587	2.891	24.780	0.948	0.386	1.141	2.791	1.380	1.164	1.920	0.348
2002	1.621	2.167	0.394	0.015	0.033	0.035			0.597	0.035	1.229	2.541	4.199	18.099	1.501	0.488	1.565	2.453	1.513	0.884	2.035	0.371
2003	1.585	1.851	0.472	1.373	0.011		3.172	4.071	0.144	0.090	1.226	3.047	4.765	21.113	0.981	0.425	1.608	0.849	1.242	1.058	1.931	0.235
2004	1.769	2.191	0.419	3.622	0.010	0.009	2.644	4.114	0.161	0.032	1.190	2.614	6.239	22.079	0.947	0.431	2.368	2.125	1.092	1.093	2.013	0.363
2005	1.799	2.056	0.311	0.014	0.012	0.011	1.935	3.571	0.782	0.014	1.055	2.393	6.478	13.647	1.027	0.369	2.861	2.084	0.945	1.290	1.817	0.366
2006	3.099	1.925	2.641	3.246	1.004	0.023	2.308	2.788	0.222	0.035	1.016	2.508	4.868	12.762	1.099	0.286	2.556	1.999	1.045	1.068	1.933	0.308
2007	3.016	1.795	0.392	1.783	0.770	0.018	1.884	2.724	0.257	0.006	1.182	2.167	4.681	8.501	0.920	0.272	2.268	1.982	1.116	1.077	1.849	0.225
2008	2.916	1.712	0.553	1.849	0.686	0.052	1.728	2.799	0.271	0.028	1.609	2.143	4.622	7.569	1.036	0.247	2.295	1.766	0.927	0.975	1.862	0.349
2009	2.917	1.689	0.787	4.107	0.543	0.055	2.438	3.370	1.403	0.010	2.169	1.675	3.647	9.518	1.157	0.379	2.115	1.542	0.974	1.056	1.996	0.405
2010	2.605	1.541	0.566	1.913	0.608	0.074	2.276	3.007	0.268	0.280	1.460	1.527	3.871	5.822	0.927	0.379	1.972	1.424	0.791	1.045	1.972	0.666
2011	1.810	1.564	###	3.084	0.076	0.069	2.184	3.014	0.352	0.721	1.227	1.804	3.061	5.330	0.957	0.390	2.587	1.233	0.733	1.033	1.966	0.721
2012	1.646	1.487	0.583	3.414	0.057	0.051	1.959	2.959	0.557	1.340	1.204	1.859	3.570	9.799	1.068	0.334	2.226	1.016	0.865	1.014	2.005	0.689
2013	1.836	1.586	0.671	3.395	0.073	0.071	1.793	3.658	1.198	1.180	1.607	1.826	3.713	4.622	1.346	0.297	2.290	1.074	1.011	1.112	2.730	0.935
2014	1.482	1.568	0.695	4.170	0.075	0.082	1.470	3.589	0.877	0.542	1.310	2.039	3.109	4.488	1.232	0.260	1.509	1.031	0.889	1.145	2.601	0.813
2015	1.488	1.645	0.582	4.356	0.136	0.145	1.242	3.987	0.558	1.127	1.718	2.069	3.147	4.041	1.078	0.354	1.623	1.223	0.949	1.195	1.999	0.743
2016	1.479	1.606	0.848	4.565	0.536	0.158	1.400	3.739	0.270	1.484	1.506	2.092	4.407	4.351	1.000	0.334	1.574	1.229	0.925	1.179	2.067	0.795
2017	1.668	1.497	0.923	4.447	0.500	0.161	1.422	3.902	0.247	1.835	1.683	1.688	3.274	2.264	0.922	0.407	2.091	1.062	0.961	1.188	2.260	0.798
2018	1.524	1.570	0.959	2.953	0.617	0.162	1.529	3.467	0.358	0.563	1.814	1.644	3.865	1.292	0.881	0.365	1.697	1.360	1.064	1.265	1.704	1.185
2019	1.442	1.583	0.653	3.609	0.590	0.161	1.546	3.505	0.274	0.345	1.793	1.754	3.019	1.362	0.817	0.334	1.753	1.446	1.075	1.228	1.276	1.147
2020	1.488	1.458	0.717	3.098	0.480	0.107	1.965	3.325	0.331	0.016	2.080	1.516	2.976	1.843	0.996	0.401	1.604	1.438	1.164	1.119	1.093	0.924

Source: Authors' calculation based on data from unctad.org

Gravity Coefficient Analysis

To further understand gravity of trade between India and the ASEAN region, The GC values for the period of 1995–2020 were analysed to observe the trade dependency situation between them. The values of GC (Table 2) present a greater degree of trade gravity between India and the ASEAN nations during the period of study. The GC value for the whole period (1995–2020) presents a greater than one presents a higher trade integration of India with the ASEAN-10 nations. The average GC value for the entire period of India and the ASEAN is at 1.755 presenting higher integration of the trade among them. Among the countries taken for the study, the GC value between India and Myanmar is the highest with a two-digit value registered for total 9 years, these values reconfirm greater trade integration of India and Myanmar and further this potential can be tapped between the two, the average GC value is at 8.429. Indonesia registered the average GC values at 2.899 followed by Brunei where the average for the period 1995–2020 is at 2.063. Thailand and Vietnam also have presented greater gravity of trade integration with India with average GC values higher than one. Among the ASEAN-10, Philippines (0.629 average GC value), Laos (0.419 GC value) and Cambodia (0.239 GC value) have been low.

Revealed Comparative Advantage of India with ASEAN-10

The various RCA indices as presented in the research methodology computed for India's trade with ASEAN economies for a period 2016–2020, for commodities belonging to 10 categories and 50 products at Standard International Trade Classification-3 (SITC-3), following the Lemer's Aggregation scheme, from the data extracted from the Unctad database (Table 3) (see Tables A2 and A3).

The mean and the CV from the summary statistics of the 4 RCA indices—B (Balassa Index, RTA, RXA, and RMA) are calculated that present a similar pattern, with all the four revealing a comparative advantage: B; for 23 distinct products (Table A2) classified under the 10 distinct categories. The RXA index of 'B' could be observed with respect to all the 10 distinct commodity groups. Under the classification of petro, 1 commodity, raw materials, 1 product, 3 products under the forest product group, followed by 4 commodities under the animal product group, 3 products under cereals group classification, 2 under the labour intensive classification, cap intensive products, 3 and 2 in machinery classifications, respectively. Under the chemicals group, the 'B' value presents the largest number of products with RCA (4 commodities) where India's Relative Export Advantage (REA) has been greater than 1. This is quite evident that over a period India's commodity export basket has shifted from offering low technological labour-intensive commodity exports to high-end, technological manufacturing sector goods.

The Relative Trade Advantage (RTA), which also takes Revealed Import Advantage (RMA) into consideration, finds that RTA could be observed in 17 commodities (Table A2), where the RTA value > 0 . A list of 4 commodities under

Table 2. Gravity Coefficient of India with ASEAN Countries.

Year	ASEAN	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
1995	1.438	0.257	0.196	–	–	1.408	15.151	0.579	1.574	0.906	1.651
1996	1.503	0.187	–	–	–	1.812	18.055	0.602	1.583	0.837	1.001
1997	1.403	0.072	0.381	–	0.045	1.702	15.339	0.630	1.486	0.788	0.988
1998	1.664	0.139	0.623	–	–	2.399	8.675	0.383	1.809	0.939	1.402
1999	1.728	0.050	0.418	–	–	2.479	9.024	0.398	1.778	1.068	1.022
2000	1.667	0.092	0.369	–	–	2.018	9.516	0.481	1.779	1.128	1.086
2001	1.892	0.992	0.057	–	–	2.143	13.348	0.660	2.034	1.263	1.115
2002	1.928	0.121	0.034	–	0.351	1.983	12.512	1.000	2.052	1.173	1.219
2003	1.749	1.250	0.011	–	0.117	2.342	14.471	0.694	1.172	1.141	1.089
2004	2.024	3.235	0.009	3.805	0.106	2.070	15.450	0.671	2.238	1.092	1.154
2005	1.964	0.063	0.011	3.300	0.406	1.933	12.357	0.662	2.404	1.132	1.003
2006	2.395	3.524	0.475	2.937	0.118	2.003	11.069	0.637	2.232	1.057	1.011
2007	2.273	1.747	0.360	2.672	0.113	1.848	7.989	0.544	2.111	1.101	0.949
2008	2.166	1.909	0.330	2.646	0.131	2.020	7.112	0.572	1.970	0.954	0.987
2009	2.163	3.872	0.276	2.864	0.646	1.887	8.112	0.704	1.770	1.039	1.084
2010	1.954	1.901	0.311	3.208	0.270	1.532	5.628	0.603	1.644	0.953	1.210
2011	1.668	5.476	0.070	3.121	0.561	1.634	4.452	0.634	1.753	0.909	1.230
2012	1.549	3.416	0.051	2.484	0.951	1.660	7.344	0.634	1.466	0.944	1.186
2013	1.689	3.207	0.070	2.831	1.153	1.760	4.211	0.748	1.551	1.059	1.660
2014	1.539	3.802	0.076	2.662	0.690	1.776	3.675	0.678	1.226	1.040	1.543
2015	1.591	3.580	0.134	2.678	0.799	1.958	3.459	0.676	1.390	1.103	1.257
2016	1.559	3.641	0.333	2.735	0.881	1.874	4.283	0.667	1.378	1.085	1.333
2017	1.569	3.680	0.309	3.203	1.119	1.702	2.662	0.639	1.461	1.105	1.383
2018	1.552	2.491	0.362	2.756	0.467	1.727	2.346	0.598	1.498	1.188	1.386
2019	1.528	2.713	0.356	2.599	0.312	1.792	2.034	0.560	1.574	1.171	1.201
2020	1.478	2.231	0.274	2.775	0.143	1.754	2.335	0.690	1.514	1.145	0.998

Source: Authors' calculations based on data extracted from unctad.org

Table 3. Revealed Comparative Advantage of India's Trade with Other ASEAN-10, by Product Group.

2016–2020									
Classification	Commodities (SITC Classification)	B >1	RTA >0	ln RXA >0	RC >0	B	RTA Coefficient of Variation	ln RXA	RC
1. Petro	Petroleum, petroleum products and related materials (33)	1.128	-2.065	0.051	-0.450	0.123	-0.260	1.068	-0.049
2. Raw materials	Crude fertilisers other than division 56, and crude minerals (27)	3.231	-1.676	0.508	-0.180	0.031	-0.554	0.027	-0.454
	Metalliferous ores, metal scrap (28)	0.696	-0.741	-0.177	-0.332	0.533	-0.804	-1.139	-0.816
	Coal, coke and briquettes (32)	0.015	-12.389	-1.833	-2.919	0.233	-0.453	-0.053	-0.085
3. Forest products	Wood, lumber, cork (24)	0.169	-1.424	-0.777	-0.978	0.146	-0.099	-0.072	-0.089
	Paper, paperboard (64)	0.513	-1.359	-0.301	-0.567	0.384	-0.598	-0.611	-0.587
	Fruit, vegetables (5)	2.923	1.402	0.465	0.286	0.042	0.122	0.038	0.105
	Sugar, sugar preparations, honey (6)	1.134	0.142	0.003	0.022	0.812	7.339	77.215	14.450
	Coffee, tea, cocoa, spices, etc (7)	14.188	10.343	1.148	0.567	0.028	0.046	0.010	0.032
	Beverages (11)	0.425	0.309	-0.373	0.571	0.019	0.137	-0.021	0.208
	Crude rubber (23)	0.034	-1.460	-1.468	-1.641	0.046	0.002	-0.013	-0.045
5. Animal products	Live animals (0)	2.616	11.898	2.027	2.186	0.252	0.252	0.061	0.002
	Meat, meat preparations (01)	2.758	2.745	0.433	2.321	0.284	0.283	0.278	0.041
	Dairy products, eggs (2)	0.701	0.651	-0.160	1.149	0.058	0.086	-0.183	0.134
	Fish, fish Preparations (3)	0.894	0.818	-0.049	1.079	0.015	0.037	-0.136	0.084
	Hides, skins, furskins, undressed (21)	0.023	-0.182	-1.712	-0.935	1.231	-1.225	-0.318	-0.176
	Crude animal, vegetable minerals (29)	3.231	2.031	0.508	0.505	0.031	0.632	0.027	0.683
	Animal vegetable oils, processed (43)	0.101	-9.375	-0.999	-1.973	0.303	-0.209	-0.132	-0.109
	Animal not elsewhere specified (94)	16.081	10.811	1.189	0.471	0.107	0.074	0.056	0.016

(Table 3 continued)

(Table 3 continued)

2016–2020												
Classification	Commodities (SITC Classification)											
6. Cereals	Cereals, cereal preparations (4)	1.875	1.642	0.268	1.080	0.301	0.468	0.447	0.553			
	Feeding stuff for animals (8)		−0.517									
	Miscellaneous food preparations (9)	0.017	−0.500	−1.769	−1.769	0.165		−0.041	−0.041			
	Tobacco, tobacco manufactures (12)	0.866	0.745	−0.064	0.852	0.006	0.013	−0.039	0.020			
	Oil seeds, oil nuts, oil kernels (22)	6.038	5.581	0.780	1.188	0.110	0.187	0.061	0.291			
	Textile fibres (26)	0.192	−0.957	−0.723	−0.780	0.271	−0.160	−0.169	−1.535			
	Animal oils, fats (41)	0.003	−0.122	−2.723	−1.691	0.176	−0.055	−0.035	−0.038			
	Fixed vegetable oils (42)	5.618	−13.364	0.873	−0.533	0.537	−0.927	2.726	−2.464			
7. Labour intensive manufactures	Non-metallic mineral manufactures (66)	5.731	−176.311	1.724	−0.635	0.821	−0.639	0.432	−0.103			
	Furniture (82)	0.292	−1.195	−0.536	−0.041	141.790	−149.532	−2.807	−0.036			
	Travel good, handbags, etc (83)	0.649	−0.109	−0.192	−0.064	0.255	−0.621	−0.585	−0.634			
	Clothing (84)				−0.540			−0.318				
	Footwear (85)	0.321	−0.780	−0.500		0.356	−0.072	0.029	−0.168			
	Miscellaneous manufactures articles, n.e.s (89)	6.181		0.790	−1.228	0.050	−0.252		−0.068			
	Coin nongold, noncurrent (96)											
8. Capital intensive manufactures	Leather, dressed furskins (61)	1.455	0.374	0.152	0.122	0.341	0.657	0.919	0.337			

(Table 3 continued)

(Table 3 continued)

2016–2020									
Classification	Commodities (SITC Classification)	B	RTA	ln RXA	RC	B	RTA	ln RXA	RC
9. Machinery	Rubber manufactures, n.e.s (62)	0.621	-0.584	-0.207	-0.287	0.024	-0.375	-0.049	#DIV/0!
	Textile yarn, fabrics, n.e.s (65)	0.827	-0.894	-0.086	-0.318	0.190	-0.594	-0.987	-0.535
	Iron and steel (67)	2.001	0.880	0.287	0.239	0.339	0.546	0.527	0.310
	Manufactures of metal (69)	1.221	0.080	0.087	0.030	0.028	0.477	0.140	0.465
	Sanitary, fixtures, fittings (81)	0.887	-0.923	-0.052	-0.296	0.020	-0.742	-0.166	-0.568
	Machinery, other than electrical (71)	1.017	-4.837	0.001	-0.765	0.018	-0.064	8.940	-0.038
	Electrical machinery (72)	0.089	-6.602	-1.052	-1.875	0.006	-0.164	-0.003	-0.040
	Transport equipment (73)	10.935	9.797	1.034	0.978	0.310	0.351	0.130	0.158
10. Chemicals	Professional goods, instruments, watches (86)	0.579	-1.000	-0.241	-0.439	0.261	-0.256	-0.446	-0.307
	Chemical elements, compounds (51)	1.176	-13.943	0.067	-1.112	0.238	-0.057	1.448	-0.100
	Mineral tar and crude chemicals from coal petroleum, natural gas (52)	0.051	-27.218	-1.291	-2.726	0.084	-0.114	-0.032	-0.003
	Dyeing, tanning, colouring materials (53)	0.072	-0.050	-1.143	-0.226	0.227	-0.526	-0.090	-0.601
	Medicinal, pharmaceutical products (54)	0.551	-0.560	-0.264	-0.308	0.222	-0.433	-0.326	-0.421
	Essential oils, perfume materials (55)	1.385	0.396	0.140	0.150	0.024	0.155	0.078	0.166
	Fertilisers, manufactures (56)	0.175	-5.083	-0.760	-1.464	0.098	-0.448	-0.056	-0.136
	Plastics materials, cellulose, etc (58)	1.732	-0.249	0.235	-0.061	0.160	-1.568	0.314	-1.595
Chemical materials n.e.s (59)		7.622	-2.065	1.855	1.682	0.071	0.072	0.017	0.029

Source: Authors' calculations based on data extracted from unctad.org

the forest product group, 5 commodities under the animal product group, 3 under the cereals category, 3 under the capital intensive category, 1 under the machinery group and 1 under the chemicals category could be found to have RTA. These products could provide a major export potential for India and the ASEAN countries trading with each other. As the RTA observed, India's trade potential is in tune with the import requirements of the ASEAN-10 (see Table A3).

A total of 21 commodities present have shown In RXA values greater than 0 present India's greater integration with the ASEAN-10. (Table A3). The value of In RXA could be observed in 1 product under petro, 1 for raw material sector, 3 commodities under the forest product group, 4 commodities under the animal product group, 2 under the cereals category, 1 under the labour intensive category, 3 under the capital intensive category, 2 under the machinery group and also 4 under the chemicals category could be found to be having significant value of log RXA, which is >0 . In total, 19 commodities were present in the RC, where the $RC > 0$ (Table 3). The RC could be observed in 4 commodities under the forest product group, 6 commodities under the animal product group, 3 under the cereals category, 3 under the capital intensive category, 1 under the machinery group and 2 under the chemicals category could be found to be having significant RC values. The low CV values for all the product groups present the indices that were fairly stable during the period taken for study and across all the RCA variables (see Table A3). This presents the commodity trade potential of the ASEAN-10 economies and huge untapped potential that could be carefully channelised to cater the needs of the region towards achieving millennium development goals and accelerate the economic growth of India and the ASEAN as a whole.

Consistency Test of the Indices

The consistency and the dichotomous measures are used to reveal the stability of the above RCA values calculated. The correlation coefficient between the pair of indices of each of RCA for the 5 years is calculated as a cardinal measure of RCA. Out of the possible 6 pairs, 2 pairs (the B and the RTA) and (the InRXA and the RC) were shown to have a higher degree of correlation value which is ≥ 0.72 . This explains that the indices are not consistent as a cardinal measure of RCA. The ordinal measures for the consistency test are calculated by taking the rank correlation coefficients of the RCA pairs, 6 pairings of the indices * 5 years taken for the study, presenting more consistency with 24 pairs out of 30 correlation coefficients, which were >0.72 . The dichotomous measure reveals that all four indices, with 26 pairs out of the 30 pairs taken for study, were fairly consistent with $>70\%$ (Table 4).

These simple tests confirm that the indices are less consistent as cardinal measures, in accordance with the findings of Balassa. However, the results obtained from these test confirm and offer with the results and offer more support for the use of the indices as binary measures of comparative advantage. Hence, we can conclude that the RCA index measures are useful proxies in determining whether or not India has a comparative advantage in a particular product group or not, though they might not be indicating the extent of such type of comparative advantage.

Table 4. Dichotomous Consistency Test: Shares (%) of Matching Indices.

Year	2016	2017	2018	2019	2020
B					
RTA	66	72	72	72	71
In RXA*	100	100	100	100	100
RC	80	82	83	82	81
RTA					
In RXA	66	72	72	72	71
RC	80	84	83	85	81
In RXA					
RC	80	82	83	82	81

Source: Authors’ calculation based on SITC data from unctad.org

Note: *By definition, B and In RXA are perfectly consistent.

Stability of Revealed Comparative Advantage

To further understand the stability of the RCA values during the period 2016–2020, the various measures of stability are applied to the results of the RCA indices. The percentages of the products groups were calculated, which have RCA during the year ‘2016’ but seem to have an Revealed Comparative Disadvantage (RCD) during the period ‘2020’. In addition, similarly, the percentages of the product groups that seem to have RCD in the year ‘2016’ but an RCA during the year ‘2020’ (Hoekman & Djankov, 1997). The product groups after analysis present that India had an RCA during the year 2016 but presents an RCD in 2020, such products accounted between 1% and 10% of the total value of the commodity trade during the period 2016 and less than 1% in 2020. Such products, which reveal an opposite situation, that is, an RCD during the year 2016 but an RCA by the year 2020, were comparatively little higher, which makes up between 7 and 10% (see Table 5), presenting not much change in the RCA during the period of the study. The final values of the ‘B’ and In RXA are usually identical as their perfect match that could be obtained under the dichotomous consistency test.

Distribution of the ‘B’ Value

The changes in the distribution of the ‘B’ Balassa values (Table 6) over the period, as suggested by Hinloopen and Marrewijk (2001), reveals India’s RCA has been consistent with the ASEAN economies—the mean value calculated during the period 2016 is 8.829 this had registered at 8.227 during the period 2018 and after that there was a slight decline to 7.46 during the period 2020. The maximum value also gradually increased from 66.19 from the year 2016 to 73.38 by the year 2020. In the year 2016, 42.66% of the ‘B’ values were greater than 1 and this gradually increased to 46.23 during the year 2020, and 38.77% of the ‘B’ registered greater

Table 5. Stability of Revealed Comparative Advantage Index. (Percentage Share of Product Groups).

Index	RCA2016	RCD2020	RCD2016	RCA2020
B	10.33	0.19	7.142	10.714
RTA	3.84	0.38	0.77	0.94
In RXA	10.33	0.19	7.142	10.714
RC	3.83	0.38	0.77	0.96

Source: Authors' calculations based on Table 2 SITC Rev. 3 data, unctad.org

Table 6. The Distribution of Balassa Index, 'B' Value.

Summary Statistics	2016	2017	2018	2019	2020
Mean	8.829991	12.1047	8.227212	7.6115	7.4626
Maximum	66.19338	70.5765	75.66178	72.2994	73.38
Percent of B Index					
<1	42.66	44.89	42.31	46.21	46.23
<2	38.77	40.81	36.16	26.31	28.22
<3	34.69	38.77	36.12	24.22	16.28
<4	20.4	18.4	16.02	20.44	14.22

Source: Authors' calculations based on Table 2 SITC Rev.3 data, unctad.org

than 2 and this halved to 28.22 during the end of the year 2020. In addition, 34.69 of the 'B' values could be found to have value which is greater than 3, this gradually declined to 16.28% in the year 2020. The products with 'B' values which were >4 were 20% in the year 2016 and this significantly reduced to 14% by the end of the period of the study. This presents that the distribution of 'B' value over the period was largely consistent during the whole period of the study.

Conclusion

India's RCA with the ASEAN is presented for 23 distinct commodity groups taken for the study. This reveals the potential for India's trade with the ASEAN and the presence of complementarity in the product category. The analysis of the stability index and the Coefficient of Variation values also presents a fairly stable situation of the commodity category taken for the study. The revealed trade potential can be taken to tap the untapped trade potential with the ASEAN partners. ASEAN has been one of the four among the focus regions for India. Sharing the same culture and rituals, the eastern part of India has been the gateway for trade with the ASEAN countries. India shares maritime borders with Indonesia and Thailand and a land border with Myanmar. With the strengthening of infrastructure and logistics in the Eastern states, the trade potential with the

ASEAN partners can be accelerated. India and ASEAN has signed some important agreements as Comprehensive Economic Cooperation Agreement in 2010 with the ASEAN, where both the regions agreed to reduce and eliminate duties from both sides significantly on 76.5% of goods and liberate the tariffs for more than 90% of goods, trade has increased for exports for over 23% and imports by 55% during the past decade. Similarly, India–Singapore FTA, India–Malaysia FTA and India–Thailand Early Harvest Scheme have all acted towards integrating India’s trade with the ASEAN partners. The analysis from the current study also confirms a growing intensity of India’s trade with the ASEAN partners.

After nearly 8 years of negotiations, the 15 Asia-Pacific economies such as Japan, China, South Korea, Australia, New Zealand and the ASEAN have concluded the world’s largest FTA the ‘RCEP’ during 2020. India, which was one of the major economies and part of major negotiations for RCEP, chooses to stay away from the RCEP agreement. The major reasons are to protect the domestic industries and correct the deficit situation with the majority of the RCEP countries. Also, India is the only Asian economy to be a part of South Asian Free Trade Area and has an FTA with the ASEAN economies too, India would have been the gateway for the rest of the RCEP countries in the South Asian region through this agreement. With the increasing competitiveness of the Indian exports and growth in the manufacturing sector, and right initiatives of ‘Atmanirbhar’ and ‘Make in India’ programmes along with significant agreements with the ASEAN group the complete potential of India–ASEAN India trade could be achieved in the near future, when India–ASEAN completing 30 years of their integration and India is celebrating its ‘Azadi ka Amrit Mahotsav’.

Appendix A

Table A1. Results of Correlation Analysis of India with the ASEAN (1995–2020).

Variables/Countries	Exports and Imports Value of r
Brunei	0.408214421
Cambodia	0.911401951
Indonesia	0.931294854
Laos	0.43810864
Malaysia	0.895089208
Myanmar	0.418334871
Philippines	0.948997985
Singapore	0.916893919
Thailand	0.981085777
Vietnam	0.847887699
ASEAN	0.947015373

Source: Authors’ calculations based on data extracted from unctad.org

Table A2. List of Commodities Presenting RCA Index.

Commodities Where B > I	Commodities Where RTA > 0	Commodities Where In RXA > 0	Commodities Where RC > 0
1. Petro	–	1. Petro	–
2. Raw materials: Crude fertilisers other than division 56, and crude minerals (27)	–	2. Raw materials: Crude fertilisers other than division 56, and crude min- erals (27)	–
3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, vegetables (5)	3. Forest products Fruit, veget)
Coffee, tea, cocoa, spices, etc (7)	Sugar, sugar prepa- rations, honey (6)	Sugar, sugar prepa- rations, honey (6)	Sugar, sugar prepa- rations, honey (6)
Sugar, sugar prepa- rations, honey (6)	Coffee, tea, cocoa, spices, etc (7)	Coffee, tea, cocoa, spices, etc (7)	Coffee, tea, cocoa, spices, etc (7)
	Beverages (11)	4. Animal products	Beverages (11)
4. Animal products Meat, meat preparations (01)	4. Animal products Live animals (0)	Live animals (0)	
Live animals (0)	Meat, meat preparations (01)	Meat, meat preparations (01)	4. Animal products
		Crude animal, vegetable minerals (29)	Live animals (0)
Crude animal, vegetable minerals (29)	Dairy products, eggs (2)	Animal not else- where specified (94)	Meat, meat preparations (01)
Animal not elsewhere specified (94)	Fish, fish prepara- tions (3)		Crude animal, veg- etable minerals (29)
	Animal not else- where specified (94)	5. Cereals	Animal not elsewhere specified (94)
	Crude animal, vegetable minerals (29)	Miscellaneous food preparations (9)	Dairy Products, eggs (2)
5. Cereals		Oil seeds, oil nuts, oil kernels (22)	Fish, fish Preparations (3)
Cereals, cereal preparations (4)	5. Cereals	Animal oils, fats (41)	
Oil seeds, oil nuts, oil kernels (22)	Cereals, cereal preparations (4)	Fixed vegetable oils (42)	5. Cereals
Fixed vegetable oils (42)	Oil seeds, oil nuts, oil kernels (22)		Cereals, cereal preparations (4)
	Tobacco, tobacco manufactures (12)	6. Labour intensive manufactures	Tobacco, tobacco manufactures (12)

(Table A2 continued)

(Table A2 continued)

Commodities Where B > I	Commodities Where RTA > 0	Commodities Where In RXA > 0	Commodities Where RC > 0
		Non-metallic mineral manufactures (66)	Animal oils, fats (41)
6. Labour intensive manufactures	7. Capital intensive manufactures		
Non-metallic mineral manufactures (66)	Iron and steel (67)	7. Capital intensive manufactures	7. Capital intensive manufactures
	Manufactures of metal (69)	Iron and steel (67)	Textile yarn, fabrics, n.e.s (65)
7. Capital intensive manufactures	Sanitary, fixtures, fittings (81)	Manufactures of metal (69)	Iron and steel (67)
Iron and steel (67)	8. Machinery	Leather, dressed furskins (61)	Manufactures of metal (69)
Manufactures of metal (69)	Machinery, other than electrical (71)		Sanitary, fixtures, fittings (81)
Leather, dressed furskins (61)		8.Machinery	
	9. Chemicals	Machinery, other than electrical (71)	8.Machinery
8.Machinery	Essential oils, per- fume materials (55)	Transport equipment (73)	Transport equipment (73)
Machinery, other than electrical (71)			
		9. Chemicals	9. Chemicals
9. Chemicals		Chemical elements, compounds (51)	Essential oils, per- fume materials (55)
Essential oils, per- fume materials (55)		Essential oils, per- fume materials (55)	Chemical materials n.e.s (59)
Plastics materials, cellulose, etc (58)		Fertilisers, manufac- tures (56)	
Chemical materials n.e.s (59)		Plastics materials, cellulose, etc (58)	

Source: Authors' calculations based on data from Table 3.

Table A3. List of Commodities Which Have Shown RCA in 2016 and RCD in 2020.

Commodities Which Have Shown RCA in 2016 and RCD in 2020			
'B'	RTA	Log RXA	RC
Cereals, cereal preparations (4)	Fruit, vegetables (5)	Cereals, cereal preparations (4)	Fruit, vegetables (5)

(Table A3 continued)

(Table A3 continued)

Commodities Which Have Shown RCA in 2016 and RCD in 2020			
'B'	RTA	Log RXA	RC
Oil seeds, oil nuts, oil kernels (22)	Dairy products, eggs (2)	Oil seeds, oil nuts, oil kernels (22)	Dairy products, eggs (2)
Fixed vegetable oils (42)		Fixed vegetable oils (42)	
Commodities Which Have Shown RCD in 2016 and RCA in 2020			
'B'	RTA	Log RXA	RC
Oil seeds, oil nuts, oil kernels (22) (28)	Cereals, cereal preparations (4)	Oil seeds, oil nuts, oil kernels (22)	Transport equipment (73)
Dairy products, eggs (2)		Dairy products, eggs (2)	Cereals, cereal preparations (4)

Source: Authors' calculations based on data from Table 3.

List of Abbreviations

B: Balassa's Index

RC: Revealed Competitiveness

RCA: Revealed Comparative Advantage

RTA: Relative Trade Advantage

REA: Relative Export Advantage

RCD: Revealed Comparative Disadvantage

BIMSTEC: Bay of Bengal Initiative for Multi-Sectoral Technical Economic Co-operation

ASEAN: Association of South East Asian Nations

RCEP: Regional Comprehensive Economic Partnership Agreement

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Growth of Modern Retail and Its Impact on Innovation of Small and Medium Enterprises/ Suppliers: A Study with Special Reference to India

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Abstract

Retailer is the last channel partner of any distribution chain. Retailer plays a very important role in the sale of manufactured goods or service. The customer provides a lot of insights at the retail point on the products and services sold by different manufacturers. These insights are very essential in the development of new products. In the case of large manufacturers, they have different sources of customer insights and product strategies to come out with new innovative products and move up in the market. But for small and medium suppliers/manufacturers, with limited resources and information, it is not easy. In such situations, retailers play a very important role in providing insights to these small and medium suppliers/manufacturers and help them in making alterations to the existing products, developing new products or introducing their existing products in new markets. This brings in the need for exploration and validation of various parameters that define efficiency in modern retail. The modern retailer can always pose challenges to small and medium industries/suppliers in making onerous trade agreements, including credit limit, credit period and sale-or-return, which squarely place the burden of funding the retailer's business on the small and medium enterprises (SME)/supplier, and so on. Unless there is a mandate of better payment terms, the evolution of modern retail can spell an end to barely alive Indian SMEs. As part of this study, small and medium suppliers/manufacturers were interviewed for various parameters that would have an impact on their innovation capabilities. With the help of analysis, it is proved that there is a significant impact created by these large companies on their innovation capacities. Unless there is a mandate of better payment terms and knowledge sharing system, the evolution of modern retail can spell an end to barely alive Indian SMEs.

Keywords

Modern retail, suppliers, innovation, channel partners, manufacturers, enterprises

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Introduction

Over the last 20 years there is a rapid transformation in the ecosystem of Indian retailing. Retail business is passing through a transitional phase, and emerging markets like India are witnessing a major change and consequentially there is a growth in organised retail. The Indian retail segment is predominantly unorganised with a minor component of organised retailing, which also constitutes online retail. Growth of online retail has contributed a lot to the overall growth of organised retailing in India. Till mid-90s, the retail sector in our country was typically unorganised, evolved consumerism and with the evolution of preferences and tastes, resulted in the modernisation of retail business and which resulted in the industry getting more prevalent and organised.

Logistics, storage infrastructure and sophisticated distribution process are very critical for the success of the retail business. These key elements help retailers to gain a competitive advantage over the other retailers. The Indian food retailing, which contributes to around 90% of the trade, is been driven by small and independent sellers. It is very important to note that these traders are highly heterogeneous, fragmented and run their businesses with moderate or little technology. The growth of modern/organised retailing had brought with it some of the innovative procurement systems, stock/inventory management tools and right delivery of efficient client response system and other innovations in the field of product development as well. In the last two decades, the evolution of modern retailing in India has brought a considerable surge in the level of investment in the supply chain and logistics dynamics and that cascaded effort could have a significant influence on the total transportation cost suffered in the economy. In the existing literature, here are research studies which have revealed that an efficient supply chain helps in adding 20%–25% additional advantage to buyers and 24%–48% additional savings to producers. As per the previous studies, it is also proved that the collaboration between native producers/manufacturers and modern retailer's buying strategies is expected to help the country's economy and also benefit them to the advantage of the association with local suppliers. However, some of the studies that were conducted in 10 nations categorically defined as developing nations show that the advantage of decreased cost will occur over a long period of time when the modern/organised retailer ultimately hit the efficacy with central controlling system, new and innovative techniques and modern technology implementation (Minot & Roy, 2007; Reardon & Timmer, 2007).

Organised retailers pursue to the extent possible to positively impact the consumer buying decision-making process by giving the consumers competing good quality goods at reasonable prices. Private brands or store labels are becoming strategically important parts of big modern retailers' product assortment to increase the walk ins. Even though the store brand concept is not very prominent in the Indian markets, it is growing at a rapid pace. Non-food retailers, mainly electronics and electrical appliances and clothing tend to manage a good number of private-label product categories to offer a wide variety. Private labels are one area where modern retailers depend on micro small and medium enterprises (MSMEs) for their production. In order to have successful private labels, retail

brands are required to put a lot of effort in establishing product specifications, quality parameters, branding, and so on. In some of the cases, private labels would be having head-on competition from the established brands. Innovation is very important to have successful private labels.

Modern retailing is considerably a large sector with multiple business prospects to budding entrepreneurs and investors. Apart from that, in developing countries like India, modern retailing is highly relevant in offering an all-round experience to the consumers keeping in view their ever-changing needs and demands. The broader benefits of modern retail can be seen in terms of improved supply chain efficiency, enhanced output of agriculture producers and it is also clear that it will assist in uplifting economic activity.

In the literature available, it can be inferred that there is a considerable impact of power of one of the associates on the buyer–supplier relationship. It is evident from the previous studies that the power is not balanced and it is mostly asymmetric (Hingley, 2005), anyway, Hingley's observation about imbalance of power is not always undesirable in the context of having long-term association. As argued by Blois (1999), it is legitimacy and prestige that play a very important role in balancing the shift of power in the association. It is also very important to understand whether the part will really use the power and if so for what purpose the company will use it.

Buyer–supplier association exists in many ways, with different levels of commitment and collaboration. In the case of organised food retailers, supplier associations are highly inclined by the fact that they are inclined to be a few leading food retailers, holding as the 'gate-keeper' between consumer and producer (Robson & Rawnsley, 2001). When it comes to food retailing, food retailers depend on a large number of suppliers and most of these suppliers depend on these retailers for their existence. Organised food retailers have been pushing huge investments into supporting and sustaining enduring supplier relations with the fundamental goal of accomplishing optimum efficiency.

Krishnan et al. (2006) have argued that the imbalance of power and dependency of one player on another may not result in the dominancy of more power players on the other. One of the challenges with the understanding of the kind of trust that goes in seller–buyer association is the amount of trust. This trust is mostly dependent on the viewpoint (Nielson, 1998). Sutton-Brady (2008) and Reitz et al. (1979) have argued that the dependence when viewed in the backdrop of essential resources is very simple to understand that the organisation that has essential and important resources will have the power over the other party which is lacking the resources. Emerson (1962) believes that the power and dependence are intrinsically interwoven; 'power resides implicitly in the other's dependency'. Dependency is influenced by two variables—the motivational investment of one party's goals influenced by the other party, and the availability of those goals outside this relationship.

Duffy and Fearn (2004) are of the opinion that both supplier organisation and customers try to have association that is of collaborative nature with the partnering organisations to improve efficiency. Kalwani and Narayandas (1995) state that the supplier organisations can attain good sales volumes and make higher earnings

from investments invested in partnering long-term associations with their clients. Lee and Whang (2001) study conducted in collaboration with Stanford University and Accenture on hundred manufacturing organisations along with hundred modern retailers in the consumer and food sector disclosed the facts that establishments which have reported returns that are greater than average returns are the entities that were having higher collaboration with reference to information sharing with the one another. Duffy and Fearne (2004) and Mohr and Spekman (1994) are of the opinion that the higher the level of interdependence (i.e., higher level of collaboration) in a relationship the better the firm performance.

In terms of foreign direct investment (FDI), India is one among the top destinations in the world, garnering inflows of \$49 billion in calendar 2019, according to United Nations Conference on Trade and Development (UNCTAD). In total, 85% of all the FDI that comes into South Asia flows into Indian business. One of the important identified results was to rise the proportion of the core manufacturing segment to 25% of GDP.

According to the study that was conducted by Chawla et al. (2018) with the title 'A Critical study of FDI in Indian Retail Sector: An Analysis of Impact on Stakeholders', it was found that the retailing is playing a pivotal role in the supply chain management of the country. Retailers are the people who are having connections with consumers as a result of which it is playing a key role in the manufacturer's end too.

Methodology

The present research study has primarily used primary data and the data is collected from small and medium suppliers supplying various products to organised retailers in Hyderabad. As per the interactions with the modern retail managers, any supplier supplying less than 10 lakhs worth of goods to the retailer they are termed as small supplier and if the value ranges from 10 lakhs to 20 lakhs, they are termed as medium suppliers. These small-scale vendors are either manufacturers or traders of the products that they supply. The sample considered for the research include suppliers of different types of products like disposables, plastic, foods, foot ware, garments, home decors, and so on.

As part of primary data collection from small and medium suppliers to large modern retailers, big brands in the retail business are identified (list as shown in Table 1). Upon interaction with the brands, suppliers to these brands are listed. As per the understanding, a supplier with annual turnover of less than 5 lakhs in a financial year is considered as small-scale supplier. Suppliers with annual turnover of less than 20 lakhs are termed as medium supplier. By applying appropriate filters, for each brand list of small and medium suppliers are identified (as shown in Table 1).

As shown in Table 1, a total of 30% of the population from the entire population with representation of 30% from each retailer is taken for the study. Apart from primary data, secondary data is also collected from numerous sources is been used. Important retrieved sources for this study contain business reports and

Table 1. Sampling.

S. No	Name of Company	No. of Small/ Medium Scale Suppliers	Respondents (Sample Size 30%)
1	D Mart	45	11
2	More supermarkets	38	10
3	Big Bazaar	48	11
4	Spencers Retail	42	10
5	Reliance Mart	48	12
6	Spar Retail	27	7
7	Heritage Retail	32	8
8	Wal Mart	22	6
	Total	254	75

articles from renowned academic journals and renowned studies on the topic. EBSCO host's Business Source Premier, Emerald Insight and EconLit, JSTOR (online periodical databases) were also used as the primary information sources in obtaining peer-reviewed academic and practitioners' journals. The popular studies on the topic have been obtained from the websites of Asian Development Bank (ADB), A. T. Kearney, The World Bank, National Bank for Agriculture and Rural Development (NABARD), Central Statistical Organisation, and so on, in each company is considered as sample size and same has been contacted by using Stratified random sampling technique. Data are collected through the well-framed questionnaire, which covers all the objectives of the present research.

As per the available literature review in the first part of the article, the following parameters are tested in order to understand the influence and support system created by modern retailers in building the innovation capabilities of small and medium scale suppliers supplying products to retailers.

1. Engaged with the key account managers in the development and improvement of new products.
2. Implementation of a comprehensive supplier monitoring process.
3. Worked on pricing bureaucracy/paperwork.
4. Regular focus on Just-in-time (JIT) delivery.
5. Ensure the effective use of enterprise resource planning (ERP) & maximum retail price (MRP) systems.

Hypothesis

A hypothesis is designed to examine if there are significant problems that are hampering the innovation abilities of small suppliers by the modern retailers. Independence *t*-test has to be done and descriptive statistics has also to be done to assess the sanity of the data. Some of the identified variables in the area of innovation are identified as follows: engaged with the key account managers in

the development and improvement of new products; implementation of a comprehensive supplier monitoring process; worked on pricing bureaucracy/paperwork; regular focus on JIT delivery; and ensure the effective use of ERP & MRP systems.

H_0 : It is proposed that there is no significant problem that hampers the growth of small suppliers in the areas of innovation.

vs.

H_a : It is proposed that there is a significant problem that hampers the growth of small suppliers in the areas of innovation.

Analysis

Reliability Test

Further to the calculation of Cronbach's alpha in line with all the calculated factors will result in average scale or results. For the present data Cronbach's alpha value is 0.699, which is below accepted level of 0.70. It can now be concluded that the data is fit and the same can be used for further analysis.

It is also important to note that the mean score of each of the parameter is close to 2.66 and for the 75 respondents the calculated standard deviation is 0.687.

The calculated Cronbach alpha value for all the attributes used in the study is greater than .70, with these results, it can be concluded that apart from overall alpha value being in the acceptable level, the individual alpha value is also reliable to carry out the further analysis.

Analysis of variance (ANOVA) with Cochran's test has resulted in p value < .05, as the p value is less than .05, which means it is significant, at 95% confidence level it can be assumed that the data used in the research is consistent and it can be used for further analysis. Analysis has resulted in the mean of 5.33 and a standard deviation of 1.212.

Table 2. Reliability Test.

Case Processing Summary			
		N	%
Cases	Valid	75	100.0
	Excluded ^a	0	0.0
	Total	75	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	No. of Items
0.699	2

Table 3. Item Statistics.

Item Statistics	Mean	Std. Deviation	N
Performance of suppliers and organised retailer relation depends on the following factors	2.73	0.759	75
Problem that hampers the growth of small suppliers in the areas of	2.60	0.615	75

Table 4. Item-Total Statistics.

Item-Total Statistics	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Performance of suppliers and organised retailer relation depends on the following factors	0.550	0.701
Problem that hampers the growth of small suppliers in the areas of	0.550	0.695

Table 5. ANOVA with Cochran's Test.

Scale Statistics						
Mean		Variance	Std. Deviation		No. of Items	
5.33		1.468	1.212		2	
ANOVA with Cochran's Test						
		Sum of Squares	df	Mean Square	Cochran's Q	Sig
Between People		54.333	74	0.734		
Within people	Between items	0.667	1	0.667	2.941	0.009
	Residual	16.333	74	0.221		
	Total	17.000	75	0.227		
Total		71.333	149	0.479		
Grand mean = 2.67						

In continuation with the data reliability tests indicated in Table 1–4 and Analysis of variance (ANOVA) with Cochran's test (shown in Table 5) indicate p value $< .05$, as the p value is less than $.05$, which means it is significant, at 95% confidence level it can be assumed that the data used in the research is consistent and it can be used for further analysis. Analysis has resulted in the mean of 5.33 and a standard deviation of 1.212.

Hypothesis

Null Hypothesis (H_0): There is no significant problem that hampers the growth of small suppliers in the areas of innovation (Tables 3 and 4).

vs.

Alternate Hypothesis (H_a): There is a significant problem that hampers the growth of small suppliers in the areas of innovation.

To examine the significant problems that hamper the growth of small suppliers in the areas of innovation independence *t*-test has been done at the gender level as shown in Table 6. Descriptive statistics have also been done to assess the sanity of the data. As per the results at a 95% confidence level, in regards with problems that hamper the growth of small suppliers in the areas of innovation, the mean value of the data is 2.56 and the standard deviation is 0.282. In the data, not much deviation has been seen in the variables as compared with mean.

Concluding Remarks: The independence *t*-test table contains inferential *t*-test statistics. Table 7 significantly tells whether there is any statistical difference between equal variances assumed and equal variances not assumed. This table also helps in understanding whether the null hypothesis is in favour or not in favour of the research hypothesis. The most important columns in the above table are as follows:

Levine's test for equal variance, this is the first section of the Independent Samples Test. If the probability level or significance level is higher than .05 then that means there is equal variance between the variables. Here, in the study on problems that hamper the growth of small suppliers in the areas of revenue generation probability value is less than .05 for all the variables or factors; hence, the second row has been used for the results.

Therefore, at a 95% confidence level, it can be concluded that there are problems hampering the growth of small suppliers in the areas of innovation. H_a is accepted.

Table 6. Independence *t*-Test at Gender Level.

Group Statistics					
Statements		N	Mean	Std. Deviation	Std. Error Mean
Engaged with the key account managers in the development and improvement of new products	Male	41	2.88	0.288	0.201
	Female	34	2.85	0.209	0.207
Implementation of a comprehensive supplier monitoring process	Male	41	2.41	0.414	0.221
	Female	34	2.47	0.212	0.208
Worked on pricing bureaucracy/paperwork	Male	41	2.17	0.138	0.178
	Female	34	2.41	0.184	0.203
Regular focus on just-in-time (JIT) delivery	Male	41	2.44	0.361	0.213
	Female	34	2.76	0.35	0.231
Ensure the effective use of ERP & MRP systems	Male	41	2.66	0.315	0.205
	Female	34	2.59	0.351	0.232

Table 7. Independent Sample Test.

Independent Samples Test								
		Levene's Test for Equality of Variances		t-Test for Equality of Means				
		F	Sig.	T	df	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Engaged with the key account managers in the development and improvement of new products	Equal variances assumed	0.24	0.01	0.09	73	0.291	-0.55	0.6
	Equal variances not assumed			0.09	72	0.289	-0.55	0.6
Implementation of a comprehensive supplier monitoring process	Equal variances assumed	3.99	0.05	-0.18	73	0.308	-0.67	0.56
	Equal variances not assumed			-0.18	73	0.303	-0.66	0.55
Worked on pricing bureaucracy/ paperwork	Equal variances assumed	0	0.01	-0.9	73	0.269	-0.78	0.29
	Equal variances not assumed			-0.89	69	0.27	-0.78	0.3
Regular focus on just-in-time (JIT) delivery	Equal variances assumed	0.38	0.05	-1.04	73	0.315	-0.95	0.3
	Equal variances not assumed			-1.04	71	0.314	-0.95	0.3
Ensure the effective use of ERP & MRP systems	Equal variances assumed	0.01	0.01	0.23	73	0.309	-0.55	0.69
	Equal variances not assumed			0.23	70	0.31	-0.55	0.69

Conclusion

Some of the major long-term hurdles that Indian small-scale industries are facing include adequate infrastructure, compliances that can hold SME operations hostage under outdated laws, inadequate funding, innovations, patents, and so on. Growth of modern retail is built on the pillars of efficient small industries. This brings in the need for exploration and validation of various parameters that define

the efficiency in modern retail. A modern retailer can always pose challenges to small industries/suppliers in making onerous trade agreements, including credit limit, credit period and sale-or-return, which squarely place the burden of funding the retailer's business on the SME/supplier, and so on. Unless if there is a mandate of better payment terms, the evolution of modern retail can spell an end to barely alive Indian SMEs.

Annexure

Questionnaire

Growth of Modern Retail and Its Impact on Innovation of Small and Medium Enterprises/Suppliers: A Study with Special Reference to India

Dear Respondents,

My research topic falls within the organised retailers. In this regard, I am approaching you with a request to fill in the questionnaire, which will take about 15 minutes. Data collected through this questionnaire will be used strictly for academic purposes only. This questionnaire aims to understand the performance of organised retailers and sustainability of small and medium suppliers. This survey is purely conducted for academic purpose only. Responses to this questionnaire will be kept strictly confidential.

A. Please answer a few questions based on students profiling

1. Please specify your age (Years):

- 21 to 30 years
- 31 to 40 years
- 41 to 50 years
- >50 years

2. Please specify your gender:

- Male
- Female

3. Please specify your qualification:

- High school
- Intermediate
- Graduate
- MBA
- Others

4. Which categories of the product do you sell to the organised retailers?

- Grocery/FMCG
- Apparel
- Toys

- Cosmetics
 - Electronic/electrical goods
 - Books, music and gifts
 - Footwear
 - Furniture
 - Kitchen appliances
 - Other
5. **How long are you associated with organised retail?**
 - <1 year
 - 2 to 5 years
 - >5 years
 6. **How many organised retail you are associated with?**
 - 1
 - 2
 - 3
 - 4
 - More than 4
 7. **Are you satisfied with your association with organised retail?**
 - Yes
 - No
 8. **How you faced any problem with your relationship with any of the organised retail?**
 - <1 year
 - 2 to 5 years
 - >5 years

B. Please specify the extent of supply chain integration between organised retailer and supplier. Please indicate the extent you agree or disagree with each statement as it pertains to the terms and conditions of the organised retailer.

(Strongly agree = 1, agree = 2, neither agree nor disagree = 3, disagree = 4, strongly disagree = 5)

Problem that hampers the growth of small suppliers in the area of areas of innovation.		1	2	3	4	5
9.	Engaged with key account managers in the development and improvement of new products.					
10.	Implementation of a comprehensive supplier monitoring process					
11.	Worked on pricing bureaucracy/paperwork					
12.	Regular focus on Just-in-time (JIT) delivery					
13.	Ensure the effective use of ERP & MRP systems					

Thank you for your valuable feedback

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