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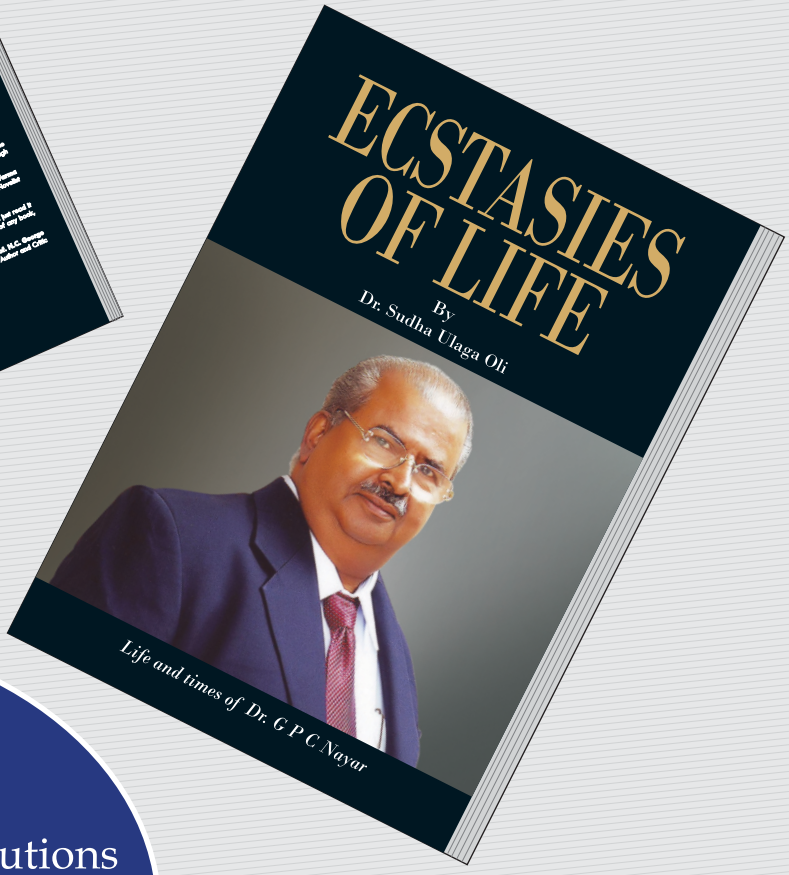
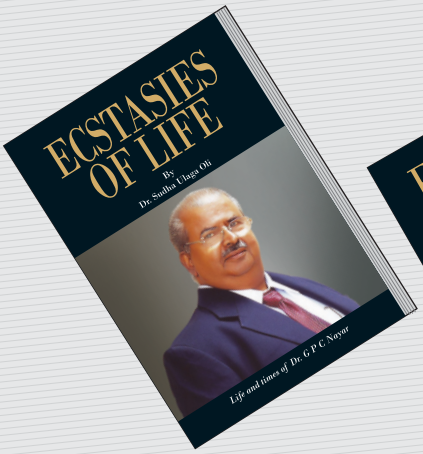
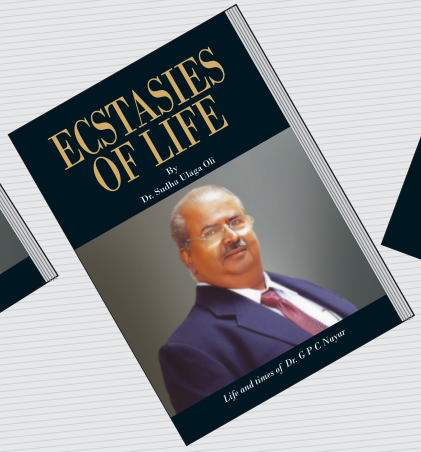


Here's an entrepreneur
who has created
some excellent academic institutions
in an unfriendly environment.
It is a saga of trials and tribulations
in an extremely readable manner
by a consummate
writer in English.





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Chairman's Overview

The second issue of this year carries a good mix of studies from all aspects of management practice. We have strived to bring to you research that is relevant to the times that we live in while also being informative from an academic perspective. The psychology behind consumer buying is an area of research that is particularly fascinating. The lead article is in the area of emotional branding and offers a compelling glimpse into how brand love affects brand jealousy in the case of buyers of high-end clothing.

The second article is a factor analytical approach to classification of the reasons behind the occurrence of Non Performing Assets (NPA) in banks. This is a study that is especially relevant for these times as analysts expect that the record rate of loan defaults due to the pandemic will cause a peak in NPA by 2022. The pandemic induced lockdowns and work- from home culture has caused a re-examination of the set gender norms and roles in a typical household. The third study on gender differences in work-family conflict among academia is an insightful look at how family structure and gender causes differences in the satisfaction with work and life.

The issue then moves on to a valuable read for the business fraternity on how ownership structure affects financial performance using a sample of Indian IT companies. The next author provides an in depth conceptual analysis on the flows and risks in the Ancient Silk Route supply chain. A study into the attitudes towards tax compliance and how it is moderated by financial condition among Ethiopian business profit taxpers follows. The rest of the issue contains a comprehensive empirical analysis of stock portfolio hedging and returns in the US, Chinese, Japanese and Indian markets vs crude oil as well as an analytical study on the determinants of the Indian stock market movements. A nuanced look into the dynamics of mentoring in higher educational institutions in India is valuable in light of the recommendations of the National Education Policy, 2020. This edition draws to a close with a remarkable, scoping review on how culture impacts humanitarian operations during disaster relief operations.

I am confident that this issue will be truly informative and educative to our readers.

Dr. G. P. C. NAYAR
Chairman, SCMS Group of Educational Institutions.

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Editorial

Rebooting the Education System

The release of this issue also coincides with the halfway mark of living our second year in the 'new normal.' Educational institutions around the world- from nursery schools to universities- grapple with the reality of a second academic year conducted predominantly online. What has emerged with renewed strength is a worldwide clarion call for the reformation of the current education system. We need to tackle our learners with more empathy as student fatigue in front of the screen and within their residence is being overlooked.

It is in this context that the UNESCO's International Commission on the Futures of Education has formulated a policy document for education in the post- Covid world. Some of the ideas proposed for public action call for ensuring adequate public funding to ensure accessibility and equity in education. It asks that open-sourced technologies and digital resources for learning be made available free of cost to learners. India's National Education Policy, 2020 also calls for a blended learning approach where the physical space of the classroom is supplemented with the use of technology and digital tools.

The successful implementation of the 'phygital' classroom will enable the mass customisation of educational solutions. This means that digital tools will make it possible to customise learning and assessment according to the needs and abilities of the individual learner. At the same time, we can never discount the importance of the teacher-student interaction and relationship. The teacher training curriculum needs to be revised to help our front-line educators to navigate the hybrid pedagogy effectively. The key takeaways for education from the lessons that the pandemic has taught us are to emphasize on flexibility in the mode of delivery, reduce digital and geographical divides to accessibility, and to provide equitable solutions so that no learner is left behind.

Dr. Radha Thevannoor

Studying the Influence of Brand Love on Brand Jealousy for Premium Clothing Brands

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Abstract

Interpersonal love literature proposes that love begets jealousy. Driven by this underlying notion, this research investigates the role of brand love in influencing brand jealousy feelings among consumers for premium clothing brands. Further, an investigation has been made into the influence of brand jealousy on consumer behavioural aspects like attitudinal and action loyalty, word of mouth and active brand engagement. By employing a survey research methodology and factor analysis approach on 269 respondents, this study reveals a positive and significant effect of brand love on brand jealousy. Additionally, the findings also support a positive and significant effect of brand jealousy on various aspects of the consumer behaviour investigated in the research. Finally, the important contributions of the present research and the directions for future research work are discussed. The results of this research are expected to give a new direction to marketers in designing their marketing strategy.

Keywords: *Brand Love, Brand Jealousy, Attitudinal Loyalty, Action Loyalty, Word of Mouth, Active Brand Engagement*

1. Introduction

Traditional notions of marketing concentrating on exchange as a major goal have undergone a change under the lens of modern marketing, wherein the growth and development of consumer brand relations have become a crucial function (Joshi & Garg, 2021; Meijani et al., 2021; Verma, 2021). Every marketer aims at delivering an optimal product or service which meets the needs of the consumers. However, under the new consumer brand relation domain, the worth of any marketing offering is evaluated on its capacity to generate a strong need and desire for the product or service (Nawaz et al., 2020). And this has revolutionised the marketing literature with growth of emotions and their exploration in branding related studies (Bairrada et al., 2018; Joshi & Garg, 2021; Rodrigues & Brandão, 2021; Tandon et al., 2021; Verma, 2021).

The notions of inter-personal brand association are rooted in the domain of emotional branding where an emotional link created between the consumer and brand takes precedence over the pure rational needs for sustainable advantages (Gobe, 2001; Schiffman et al., 2010). The existing studies in the field of consumer behaviour, have been gauging for the emotional buying elements present among the consumers (Bairrada et al., 2018; Fournier, 1998; Joshi & Garg, 2021; Nawaz et al., 2020; Rodrigues & Brandão, 2021). Some emphasize that the psychological and hidden buyer needs lead to emotional purchases (Fournier, 1998; Gobe, 2001; Joshi & Garg, 2021; Nawaz et al., 2020;). While others specify that the emotional symbolic meaning of the goods result in the purchase decision (Bairrada et al., 2018; Nyadzayo et al., 2020; Verma, 2021).

All this development has resulted in ideas like brand love (Bairrada et al., 2018; Bergkvist & Bech-Larsen, 2010; Carroll & Ahuvia, 2006; Joshi & Garg, 2021; Rodrigues & Brandão, 2021), brand desire (Meijani et al., 2021; Sarkar et al., 2014; Shimp & Madden, 1988), brand jealousy (Dawood & Kashif, 2021; Kashif et al., 2021; Rosita & Ratnandika, 2019; Sarkar & Sreejesh, 2014; Tandon et al., 2021) coming to the fore. Two such brand related emotional constructs, brand love and brand jealousy, have gained researchers' interest and seen a surge in research studies into these two domains lately (Bairrada et al., 2018; Dawood & Kashif, 2021; Joshi & Garg, 2021; Kashif et al., 2021; Rodrigues & Brandão, 2021; Rosita & Ratnandika, 2019; Tandon et al., 2021).

The past studies have either looked into the negative connotations linked with brand jealousy associated brand feelings (Dawood & Kashif, 2021; Kashif et al., 2021) or using brand jealousy to entice the desires of consumers (Meijani et al., 2021). A few studies have looked into the impact of brand jealousy on consumer behaviour also (Chairy & Syahrivar, 2018; Rosita & Ratnandika, 2019; Tandon et al., 2021). Even if these studies have touched that approach, they have studied the composite effect of both brand love and brand jealousy on consumers behaviour, rather than investigating the chained effect of brand love on brand jealousy followed by the impact of brand jealousy on consumer behaviour. The aim of this article is to empirically analyse the chain effect association between these two ideas, brand love and brand jealousy, and the impact of brand jealousy further on consumer behavioural aspects like attitudinal and action loyalty, word of mouth and active brand engagement for premium range clothing brands. Specifically, the research objectives are stated ahead.

2. Research Objectives

1. To look into the influence of brand love on brand jealousy feelings of the consumers for premium clothing brands.
2. To further analyse the impact of brand jealousy on consumer behavioural aspects of loyalty, word of mouth and active brand engagement for premium clothing brands.
3. To enrich the existing literature by providing important managerial implications regarding brand love and brand jealousy.

3. Theoretical foundation

"I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel." – Maya Angelou

The above quote precisely summarizes the buying behaviour of modern consumers, who aren't only focussed on the need quotient, but their feelings and emotions play a much larger and significant role in their decision making (Ahuvia, 2005; Bairrada et al., 2018; Batra et al., 2012; Fournier, 1988; Joshi & Garg, 2021; Nawaz et al., 2020; Rodrigues & Brandão, 2021). Interpersonal emotions like love, attachment, passion, desire, jealousy have always

remained a complex puzzle for researchers to understand. The *colour wheel model* as proposed by John Lee, in his book, '*The Colours of Love*' explained various emotional shades of love like passion, care, affection, obsession and sacrifice (Lee, 1977). The three primary styles namely '*Eros, Ludos and Storge*' are representations of passion, non-commitment and friendship love respectively (Lee, 1977). The three primary styles further lead to secondary styles of '*Mania, Pragma and Agape'* representing emotions like obsessive jealousy, realism and selflessness love respectively (Lee, 1977).

Two such human emotions, love and jealousy, have come up in a big way in the marketing domain as brand love and brand jealousy (Bairrada et al., 2018; Dawood & Kashif, 2021; Joshi & Garg, 2021; Kashif et al., 2021; Rodrigues & Brandão, 2021; Rosita & Ratnandika, 2019; Tandon et al., 2021). Both these emotional feelings are rooted in the domain of consumer brand formation brought to focus by Susan Fournier's work (1988). She found love, passion, inter-dependence, intimacy and commitment as core parts of the consumer brand relationship quality (Fournier, 1988). Her findings became a base for initiating studies in the domain of brand love (Bairrada et al., 2018; Batra et al., 2012; Carroll & Ahuvia, 2006; Filho et al., 2010; Joshi & Garg, 2021; Nawaz et al., 2020; Rodrigues & Brandão, 2021; Shimp & Madden, 1988; Thomson et al., 2005).

Brand love is an intense emotional response where a consumer seeks to become one with the brand, discarding any negative feelings for the brand if any (Bairrada et al., 2018; Carroll & Ahuvia, 2006; Filho et al., 2010; Nawaz et al., 2020). Consumers tend to get emotionally attached with brands (Thomson et al., 2005), which makes brand love very similar to interpersonal love (Nawaz et al., 2020; Sarkar et al., 2012; Sarkar, 2013). Shimp and Madden (1988) analysed the components of Sternberg's theory (1986) and proposed three components for brand and consumer relations namely liking (*intimacy*), yearning (*passion*) and decision/commitment (*buying behaviour commitment*). Whang et al. (2004) used the model propounded by Lee (1977), for the development of romantic brand love model for bikes. Researches in the empirical (Bairrada et al., 2018; Batra et al., 2012; Carroll & Ahuvia, 2006; Filho et al., 2010; Joshi & Garg, 2021; Nawaz et al., 2020; Rodrigues & Brandão, 2021; Shimp & Madden, 1988; Thomson et al., 2005) and managerial (Nawaz et al., 2020; Roberts, 2004; 2006; Rodrigues & Brandão, 2021) domain have proliferated since then.

It is widely known that love begets another emotion called jealousy (Sharpsteen & Kirkpatrick, 1997). It is also found in the consumer brand relations that a consumer may experience jealousy when a brand loved by him/her is possessed first or purchased early by friends, peers or family and not possessed by him/her (Kashif et al., 2021; Sarkar et al., 2014). Financial constraint is a major reason behind the non-possession of a loved brand (Sarkar et al., 2014; Sarkar & Sreejesh, 2014). Other possible reasons could include better targeted persuasive appeals by a competitor brand, consumer life-cycle and lifestyle changes (Meijani et al., 2021; Oliver, 1999; Sarkar & Sreejesh, 2014; Tandon et al., 2021). Sarkar et al. (2014) developed a conceptual framework on brand jealousy and correlated it with brand desire and brand love. Their conceptual paper, further led to some empirical studies which explored materialism, brand love, brand jealousy and other brand related behaviours (Chairy & Syahrivar, 2018; Meijani et al., 2021; Rosita & Ratnandika, 2019; Sarkar & Sreejesh, 2014; Tandon et al., 2021). Both the ideas of brand love and brand jealousy try to create an emotional belonging for specific brands reaching the consumers' hearts directly (Kashif et al., 2021; Meijani et al., 2021; Sarkar, 2013; Sarkar et al., 2014).

Brand jealousy as an idea is found more relevant for empirical analysis in case of products/services belonging to premium categories (Chairy & Syahrivar, 2018; Kashif et al., 2021; Meijani et al., 2021; Sarkar & Sreejesh, 2014). Also, the non-possession of any specific premium brand by the consumers or its purchase by some known or dear one of the consumers before them, gives a rise to strong feelings of jealousy and regret in a bundled manner (Kashif et al., 2021; Meijani et al., 2021; Sarkar et al., 2014; Sarkar & Sreejesh, 2014). All these reasons form a strong base-case to investigate the feelings of brand love on brand jealousy and of brand jealousy on consumer behavioural aspects like attitudinal and action loyalty, word of mouth and active brand engagement for premium brands over other normalized or routine brands (Kashif et al., 2021; Meijani et al., 2021; Sarkar et al., 2014; Sarkar & Sreejesh, 2014). Thus, this research has empirically analysed brand love and brand jealousy for premium clothing brands. The decision to

choose clothing in particular is driven by the empirical evidence for the presence of strong feelings of love and jealousy for clothing products or clothing fashion brands as found in the literature (Bairrada et al., 2018; Kashif et al., 2021).

4. Hypotheses formulation

4.1 Brand Love and Brand Jealousy

Jealousy is an integral effect of romance and love (White, 1981). In a similar analogy, brand jealousy indeed becomes an effect of brand love also (Dawood & Kashif, 2021; Kashif et al., 2021; Sarkar et al., 2014). Brand love is a composite of emotional passion, closeness and attachment (Bairrada et al., 2018; Batra et al., 2012; Carroll & Ahuvia, 2006; Filho et al., 2010; Joshi & Garg, 2021; Nawaz et al., 2020; Sarkar, 2013). The inner feelings and emotions of arousal in consumers are what contribute to the dire need for the brands, developing more passion and love in future (Ahuvia, 2016). Thus, it is seen that brand jealousy follows brand love from the aroused passion and desire (Sarkar et al., 2014; Sarkar & Sreejesh, 2014) and higher the presence of love for brands higher the experienced jealousy (Dawood & Kashif, 2021; Kashif et al., 2021; Sarkar & Sreejesh, 2014). Brand jealousy is a complex whole of feelings and thoughts (Sarkar et al., 2014), which a consumer loving a brand faces especially in cases of non-possession of premium brands (Chairy & Syahrivar, 2018; Kashif et al., 2021; Meijani et al., 2021; Sarkar & Sreejesh, 2014). This article proposes that:

H1: Brand love positively influences brand jealousy.

4.2 Brand Jealousy and Attitudinal Loyalty

Loyalty in the consumer behaviour literature (Halim, 2006; Khajeheian & Ebrahimi, 2020) is quite often described as a combination of the actual purchase action (action loyalty) and the attitude or the thoughts of a consumer regarding making any actual purchase decision (attitudinal loyalty). This attitudinal loyalty, not necessarily always, gets reflected into purchases, and is the attitude or emotions of a consumer before making a purchase decision (Khajeheian & Ebrahimi, 2020).

Brands that develop a feel-good effect of desire among people are indeed the most thought about from a positive attitude or mindset also (Ahuvia, 2016; Bairrada et al., 2018; Batra et al., 2012; Sarkar, 2019). Strong feelings of brand love induced jealousy also makes the consumers to value such from their hearts and minds and keep thinking about buying them (Batra et al., 2012; Kashif et al., 2021; Meijani et al., 2021). People feel such brands not only satisfy their utility needs, rather they cross a mark further providing them with a sheer sense of excellence by making them experience a very strong intention to behave and have thoughts of those special brands (Ahuvia, 2016; Bairrada et al., 2018; Kashif et al., 2021; Meijani et al., 2021; Sarkar, 2019). Indeed these thoughts and attitude to behave in a positive manner towards the brands leads to the development of an attitudinal loyalty for such brands and the feelings of brand jealousy further reinstate that effect. Thus, this article proposes that:

H2: Brand jealousy positively influences attitudinal loyalty.

4.3 Brand Jealousy and Action Loyalty

The loyalty behaviour which actually gets transformed into an actual purchase in the loyalty literature is referred to as the action loyalty (Khajeheian & Ebrahimi, 2020). In the interpersonal domain of emotions, jealousy is seen to also bring in some sadness with it (Sharpsteen, 1993). So is also found in brand context, where a non-possession of some loved brand by an individual in contrast to the possession of it by some known near and dear one gives rise to brand jealousy (Meijani et al., 2021; Sarkar & Sreejesh, 2014). Such brand jealousy further gives rise to the urge to buy the specific brand even if it requires someone to save a large amount of money (Kashif et al., 2021; Sarkar et al., 2014). The buying action can indeed help the consumer to reduce some sadness and ease the anxiety (Batra et al., 2012; Thomson et al., 2005). The induced jealousy feelings drive the consumers not only to have positive thoughts in the form of attitudinal loyalty for such brands, but also drive their energy into an action mode to actually make the purchase, thus commanding action loyalty alongside also. This article proposes:

H3: Brand jealousy positively influences action loyalty.

4.4 Brand Jealousy and Word of Mouth

Word of mouth essentially means to talk and share all pleasantries of a brand with known people around (Carroll & Ahuvia, 2006). People experience a strong passionate desire to buy loved brands which further deepens love for such

brands and their products (Ahuvia, 2016; Albert & Valette-Florence, 2010; Bairrada et al., 2018; Batra et al., 2012; Roberts, 2004; Rodrigues & Brandão, 2021; Sarkar, 2013). Such passionate feelings drive the people to talk to more people about the brand (Bairrada et al., 2018; Batra et al., 2012; Rodrigues & Brandão, 2021; Sarkar, 2013). Sharpsteen (1993) also found the need to talk to more and more people when they experienced jealousy in inter-personal relations. Driven by the same notion and analogy, this article proposes that in the branding context also, brand jealousy leads to word of mouth and thus the proposed hypotheses is as follows:

H4: Brand jealousy positively influences word of mouth.

4.5 Brand Jealousy and Active Brand Engagement

Active brand engagement refers to the extent of efforts and resources like time and money, which the consumers indulge in apart from the actionable purchase (Bergkvist & Bech-Larsen, 2010). These could include behaviours like following the brand related news, posting positive comments on brand blogs, following the brand on social media and similar other behaviours (Choedon & Lee, 2020; Joshi & Garg, 2021; Verma, 2021). Inter-personal jealousy also brings in features like desire to make associations with the people surrounding the 'person of interest' (for whom jealousy is felt), beyond other behavioural exhibitions (Sharpsteen, 1993). Similarly, in brand jealousy context also consumers tend to continuously drive their attention and focus on the loved and jealousy enhancing brands, resulting in more and vibrant engagement with the brand (Bergkvist & Bech-Larsen, 2010; Choedon & Lee, 2020; Joshi & Garg, 2021; Verma, 2021; Sarkar & Sreejesh, 2014). Sarkar et al. (2014) have also conceptually proposed that brand jealousy begets brand community development, which represents a form of active brand engagement. Thus, the proposed hypotheses for the research is as follows:

H5: Brand jealousy positively influences active brand engagement.

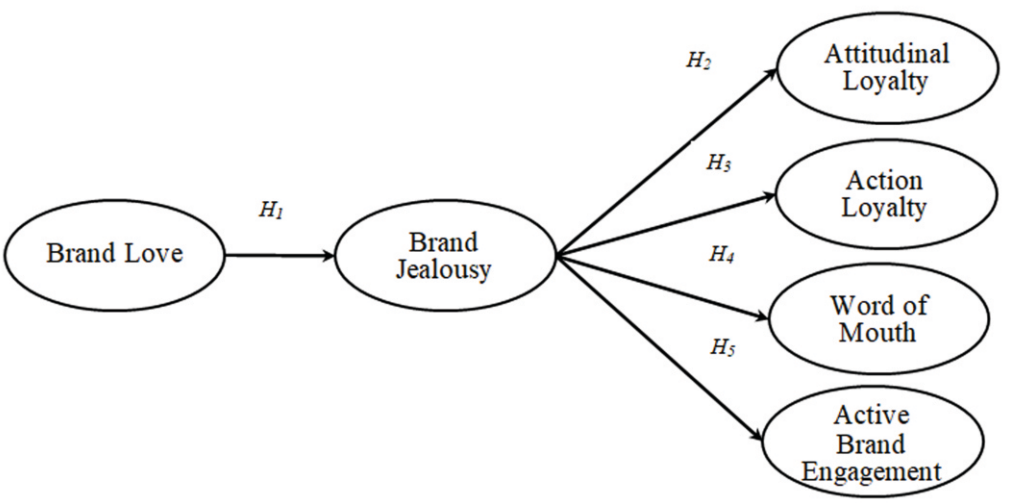

Figure 1: Hypothesized Framework

5. Methodology

5.1 Instrument

Adapted scale items used in the study include brand love and word of mouth (Carroll & Ahuvia, 2006), brand jealousy (Sarkar & Sreejesh, 2014), attitudinal and action loyalty (Halim, 2006) and active brand engagement (Bergkvist & Bech-Larsen, 2010). The response scale of a 5-point Likert scale, from 1 signifying completely disagree to 5 signifying completely agree was used. A pilot study for the evaluation of the questionnaires was conducted where the

questionnaire was sent to 39 respondents to gauge the understandability of the wordings and sense of the questionnaire. The pilot study resulted in the deletion of one statement of brand love and one statement of word of mouth.

5.2 Data collection and sampling

Empirical research on investigating the research objectives of the present study was conducted using a survey method. The study aims to delve into the premium clothing brand buyers, which indeed serves as a niche segment for respondents. Taking this into account, convenience sampling was used to particularly tap premium clothing brand buyers. The author made use of the social media apps like WhatsApp, Facebook, and LinkedIn connections and email ids for the same. A formal invite asking the respondents to be a part of the academic research as a sample, along with a few filter questions like- 'Do you prefer to purchase premium or high end clothing brands', 'How often do you purchase them', 'What amount of your annual income do you spend on these brands specifically', 'State the brands that you often shop for' was used. The respondents stating no preference for the premium clothing brands were sent a 'thank you note' for their participation and time. All the other remaining respondents were sent an invite to be a part of stage 2 of the survey and sent the questionnaire via e-mail and different social media apps to participate in the survey. A total of 336 questionnaires were emailed in stage 2 of the survey study. After conducting the online survey, primary data was cleaned and edited. For processing and analysing data IBM SPSS Statistics 20 and AMOS 24 were used.

5.3 Participants

The set of questionnaires that were fully completed and usable for data analysis was filled in by 269 premium clothing brand buyers, of whom 53.6% were women and 46.4% were men. The sample consisted of 35.1% students, 14.7% self-employed individuals, 29.3% working in the public sector, 19.3% working in the private sector and 1.6% of respondents being retired. Regarding the educational level of respondents, 14.9% received senior secondary education, 34.7% received bachelor's degree, 26.6% received master's degree and 23.8% finished graduation along with some professional course. The respondents being the premium clothing brands buyers, all the respondents belonged to the high-income group. The average age of respondents was 28.4 years. Premium brands like *Dior, Louis Vuitton, Emporio Armani, Michael Kors, Burberry, Fendi, Hugo Boss* and *Hermes* represented the brand-set in the research.

6. Analysis and Findings

The theoretical framework was put to rigorous analysis using EFA (exploratory factor analysis), CFA (confirmatory factor analysis), validity checks (construct reliabilities, average variance explained and discriminant validity) followed by using the SEM (structural equation modelling) for testing the proposed hypothesis. The data analysis was run using SPSS and AMOS. A two-stage data analysis methodology was followed so as to get reliable and valid statement items in the first stage using EFA, after which a CFA and SEM was run in the second stage to check the proposed hypothesis (Hulland, 1999).

6.1 EFA Findings

Before proceeding with the EFA analysis, the reliability test for the scale items is necessary for justifying their internal consistency (Hair et al., 2014). Hair et al. (2014) have suggested reliability values of more than .70 using Cronbach's alpha measure as a good sign of internal consistency. For the present research the statement items' reliabilities' came over .70 using Cronbach's alpha as shown in Table 1. A good EFA analysis requires the factor loadings of the constructs to be greater than .50 (Hair et al., 2014). An EFA analysis using principal component analysis and varimax rotation were conducted on the study constructs. The result of the rotated factor component matrix is presented in Table 1. Clearly, a clear cut pattern indicating the factor-item structure is visible with the factor loadings for all items greater than the required criteria of being greater than .50 (Hair et al., 2014). The statement items explained over 65% of the variance in the constructs of the study as indicated in Table 1.

Table 1. EFA Results

Constructs	Items	Rotated Component Matrix						Cronbach's Alpha	Variance Explained
		1	2	3	4	5	6		
Active Brand Engagement (ABE)	ABE1	.963						.921	69.21%
	ABE2	.957							
	ABE3	.941							
	ABE4	.937							
Brand Love (BL)	BL3		.931					.894	79.34%
	BL4		.929						
	BL1		.923						
	BL9		.920						
	BL2		.919						
	BL5		.915						
	BL10		.909						
	BL7		.899						
	BL6		.894						
Brand Jealousy (BJ)	BJ1			.890				.812	75.32%
	BJ2			.887					
	BJ3			.876					
Word Of Mouth (WOM)	WOM3				.873			.824	73.24%
	WOM2				.865				
	WOM1				.860				
Attitudinal Loyalty (ATL)	ATL1					.852		.876	66.41%
	ATL2					.846			
	ATL3					.831			
Action Loyalty (ACL)	ACL3						.826	.902	72.83%
	ACL1						.795		
	ACL2						.789		

6.2 CFA Findings

The application of the CFA technique was to satisfy the validity of the measurement model. Table 2 indicates the standardised regression weights or CFA factor loadings for the different statement items for different constructs used in the measurement model. The minimum required criteria for the CFA factor loadings is to be .70 or more than that (Kline, 2010). All the factor loadings represented in this table, fulfil this criterion well. The validity measures for the constructs are represented via the construct reliabilities (CR) and average variance explained (AVE) for the convergent validity establishment. The CR is required to be greater than .70, while the AVE is required to be greater than .50 but less than CR (Hair et al., 2014). As indicated in Table 2, all the constructs lent good support for the presence of sufficient convergent validity (Hair et al., 2014). For discriminant validity establishment the square root of AVE must come out greater than the correlation of other latent constructs as per the Fornell and Larcker criteria (1981). Table 3 shows the study results establishing the discriminant validity for the constructs.

Table 2. CFA Results

Constructs	Items	Factor Loadings	AVE	CR
Brand Love (BL)	BL1	.821	.614	.793
	BL2	.762		
	BL3	.844		
	BL4	.833		
	BL5	.751		
	BL6	.704		
	BL7	.710		
	BL9	.794		
	BL10	.732		
Brand Jealousy (BJ)	BJ1	.845	.725	.893
	BJ2	.831		
	BJ3	.809		
Attitudinal Loyalty (ATL)	ATL1	.801	.566	.761
	ATL2	.767		
	ATL3	.752		
Action Loyalty (ACL)	ACL1	.759	.777	.860
	ACL2	.731		
	ACL3	.789		
Word Of Mouth (WOM)	WOM1	.758	.752	.891
	WOM2	.811		
	WOM3	.820		
Active Brand Engagement (ABE)	ABE1	.913	.748	.875
	ABE2	.914		
	ABE3	.892		
	ABE4	.934		

Table 3. Discriminant Validity Results

	BL	BJ	ATL	ACL	WOM	ABE
BL	.781					
BJ	.321	.858				
ATL	.257	.072	.751			
ACL	.139	.123	.340	.884		
WOM	.407	.466	.563	.453	.976	
ABE	.150	.061	.214	.333	.564	.867

6.3 SEM Findings

The SEM or the structural equation modelling approach was applied after the validity of the measurement model was ensured. The purpose of the application for SEM was to test for the chained effects being investigated in the study and the proposed hypothesis. All the proposed hypotheses came out to be statistically significant (see Table 4). Brand love explains jealousy in brand behaviour to the degree of 56 per cent (β= 0.562, $p < 0.01$). Brand Jealousy provides the maximum explanation of the active brand engagement behaviour of around 64 per cent (β= 0. 643, $p < 0.01$). On the other hand, brand jealousy provides 53 per cent (β= 0. 531, $p < 0.01$) and 46 per cent (β= 0. 460, $p < 0.01$) of explanation in the attitudinal behaviour of loyalty and word of mouth behaviour of the people respectively. But brand jealousy provided a mere 36 per cent (β= 0. 364, $p < 0.01$) of the explanation for the action loyalty of the consumers. Figure 2 shows the measurement model model tested for CFA and SEM indicating the factor loadings for construct items and showing the structural relationships among the constructs of the study.

Table 4. Hypotheses Results

Hypothesis	***Standardized β***	**Results**
Brand Love → Brand Jealousy	.562 *	Supporting H_1
Brand Jealousy → Attitudinal Loyalty	.531 *	Supporting H_2
Brand Jealousy → Action Loyalty	.364 *	Supporting H_3
Brand Jealousy → Word Of Mouth	.460 *	Supporting H_4
Brand Jealousy → Active Brand Engagement	.643 *	Supporting H_5

*Notes: * Significant at p < .01*

The model assessment also met all the needed specifications for model-fit requirement. Ratio of Chi-Square and degrees of freedom (df) came to be 2.025 that is between the required range of 2 to 3 (Schreiber et al., 2006). The model needs to indicate values greater than .90 for goodness of fit indicators like Comparative Fit. Index (CFI), Tucker–Lewis index (TLI) and values less than .10 for badness of fit indicators like Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA) (Hooper et al., 2008; Hu & Bentler, 1999; Kline, 2010; Schreiber et al., 2006). The cut-off values for both goodness of fit indicators were found more than .90 (CFI= .97 and TLI= .95) and for badness of fit indicators found less than .10 (SRMR= .04 and RMSEA= .06).

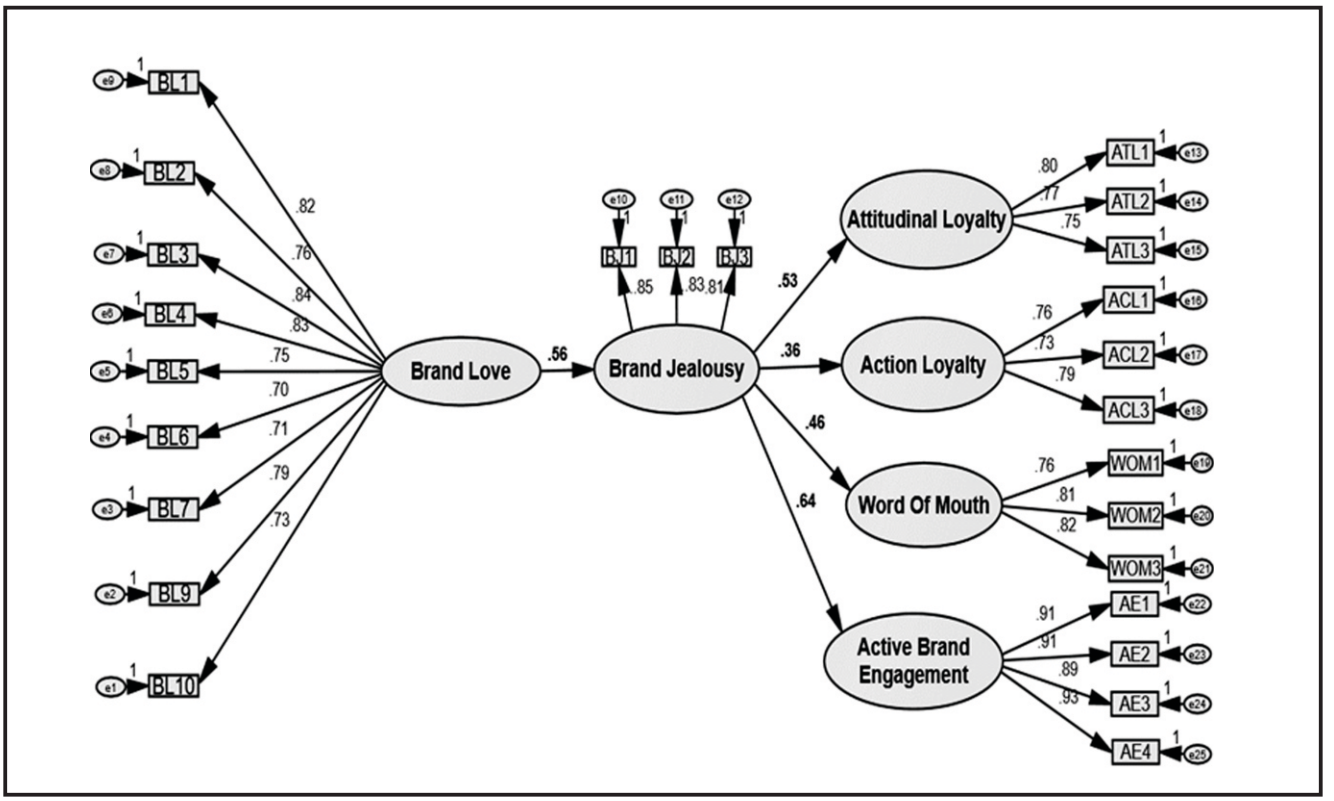

Figure 2: SEM results for Hypothesized Framework

7. Discussion

Companies are no longer able to restrict the consumers specifically towards their brands alone. Dynamic changes are happening in the needs and aspirations of the consumers buying the products or services. The entire marketing landscape has changed with brands fighting for consumers' recognition and it is '*love*' that is needed to be added in the marketing efforts, to attract consumers resulting in the rise of companies' profitability as indicated by the findings of this study.

Brand love tries to form emotional and close consumer relations (Fournier, 1998), which generates feelings of jealousy in the consumers as reflected by the chained effect of brand love over brand jealousy in this study. The results of the present research indeed reflect the significant presence and impact of brand love over the feelings of brand jealousy for the premium or high-end brands, thereby affirming the findings of the past studies (Chairy & Syahrivar, 2018; Sarkar & Sreejesh, 2014). Moreover, any brand, powerful enough to generate feelings of brand jealousy for itself can attract consumers towards itself and also emerge as a special brand from amongst its competitors (Chairy & Syahrivar, 2018; Kashif et al., 2021; Meijani et al., 2021; Sarkar & Sreejesh, 2014). Further the results of the research also indicate a significant impact of the brand jealousy feelings over consumer behavioural aspects of loyalty, word of mouth and brand engagement, as discussed in the following paragraphs.

The brand love induced brand jealousy strongly makes the consumers to actively engage with the brand in form of active search for the brand products online, or intense chats on online brand community and even expressing love by liking the brand's webpages on social media. The existing literature also warrants for the presence of brand engagement when feelings of brand love are prevalent as found in the empirical studies in the literature (Bergkvist & Bech-Larsen, 2010; Choedon & Lee, 2020; Joshi & Garg, 2021; Verma, 2021). But this study has added a new construct in between these two constructs in the form of brand jealousy, enriching the literature thereby.

The induced feelings of jealousy also drive a consumer to positively talk about the loved brand among peers and friends, leading to the spread of positive word of mouth for the brand which is also reflected in the past studies (Ahuvia, 2016; Albert & Valette-Florence, 2010; Bairrada et al., 2018; Batra et al., 2012; Roberts, 2004; Rodrigues & Brandão, 2021; Sarkar, 2013). The present study also investigated the effect of brand love induced jealousy on the loyalty aspects of consumer behaviour via attitudinal and action loyalty. The findings indicate a much stronger presence of induced jealousy over attitudinal loyalty in comparison to actual purchase or action loyalty, confirming the viewpoint in the literature that the mere presence of attitudinal loyalty does not necessarily convert into action loyalty (Khajeheian & Ebrahimi, 2020).

While the purchase intention behaviour reflected from attitudinal loyalty has been studied in the past studies (Bairrada et al., 2018; Batra et al., 2012; Carroll & Ahuvia, 2006; Sarkar & Sreejesh, 2014), the action loyalty and its related findings is a novel aspect studied in the present research. Also, the break-up of the loyalty behaviour, viz., attitudinal and action loyalty for the two constraints of brand love and brand jealousy, is a new approach explored in this study.

The results of the present research can indeed be used by the brands for impactful managerial implications further. The grandness of applying these two new marketing ideas by the firms, in their strategic decisions is required on the part of the brands. These two ideas seem to have a special significance for the premium brands where brand jealousy generated out of brand love make the consumers go for the displaying of special behaviours in favour of the brands. Brand jealousy has an important effect on both actionable and attitudinal loyalty as the feeling of jealousy make the consumer go on thinking about the loved brands and indeed buy them. Not only does jealousy bring loyalty affects but also affects people talking positively about the loved brands to others and also to engage with the brand actively via brand communities, social media blogs or PR events. All this makes a base case for companies to explore more on these ideas and devise strategies to convert these worthy feelings into real actions via using their marketing mix decisions effectively and efficiently.

7.1 Limitation and Future Scope

Since this study has studied the brand love and brand jealousy feelings especially for premium clothing brands, hence one major limitation of the present research is the use of convenience sampling. Future studies can be undertaken on longitudinal or cross-sectional data samples to add more robustness to the literature findings. Also, the study has exclusively looked into the premium brands, a kind of niche segment, thus the findings cannot be generalised for other ordinary brands. Thus, one can make an attempt in future to study the ideas of brand love and brand jealousy for other product categories and services besides premium brands. The study has not studied brand jealousy behaviours with respect to materialistic tendencies exhibited by the consumers as found in existing literature (Chairy & Syahrivar, 2018; Verma, 2021). This study has studied brand love as an antecedent of brand jealousy. Further, more investigation can be made into the impact of antecedents like self-esteem and self-expression on brand jealousy and related behaviour.

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Annexure

Scale items used in the study

Brand love- adapted from Carroll and Ahuvia (2006)

- This is a wonderful brand.
- This brand makes me feel good.
- This brand is totally awesome.
- I have neutral feelings about this brand. *
- This brand makes me very happy.
- I love this brand!
- I have no particular feelings about this brand. *
- This brand is a pure delight.
- I am passionate about this brand.
- I am very attached to this brand.

Brand jealousy- adapted from Sarkar and Sreejesh (2014)

- I feel really hurt when I see that others are using the brand and I don't have it.
- I feel very possessive about the brand when I see that others are using the brand and I don't have it.
- The thought that others are using the brand and I don't have it always scares me.

Attitudinal loyalty- adapted from Halim (2006)

- I will not switch to other brand even though there are lots of other brand options.
- I am willing to pay more to get this particular brand.
- I will never use this brand. *

Action loyalty- adapted from Halim (2006)

- I will buy this brand in the future.
- I will fulfil the everlasting purchasing relationship for this brand.
- I wish to continue purchasing over this brand.

Word of mouth- adapted from Carroll and Ahuvia (2006)

- I have recommended this brand to lots of people.
- I 'talk up' this brand to my friends.
- I try to spread the good-word about this brand.
- I give this brand tons of positive word-of-mouth advertising.

Active brand engagement - adapted from Bergkvist and Bech-Larsen (2010)

- I always try to follow the news about the brand.
- I want to be a part of the online brand community for this brand.
- I frequently visit the brand's website.
- I am always interested in buying merchandise with the brand name on it.

* - reverse coded

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Investigating Reasons for Non-Performing Assets from Banker's Perspective: Factor Analytical Approach

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Abstract

The immensity of non-performing assets (NPAs) is the cyclical issue at hand and a colossal impediment to fostering a thriving banking system. The problem of delinquent assets is becoming more severe in the present phase of the Indian economy. The extant literature concerning the problem of NPAs is overriding finding the bank-specific or macro-economic determinants of NPAs and there seems to be a dearth of comprehensive studies addressing a holistic approach concerning reasons for NPAs. Hence, the present study is an endeavour to fill this void by putting light on the reasons for the occurrence of NPAs considering the perspective of the bankers who have been directly involved in lending decisions. Based on a survey of 303 bankers from 35 banks, the data was empirically analyzed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The results show that poor entrepreneurial aptitude, intentional default by the borrowers, inefficient resource management, bureaucratic hurdles, non-optimal allocation, inadequate appraisal skills, bias and prejudice, regulatory lapses, global impact, political circumstance, and economic slump are the major initiators for mounting NPAs. This calls for banks to make suitable structural changes and mitigation strategies to minimize the impact of such factors along with signalling pragmatic efforts at the regulator level to curtail the enormous burden of NPAs.

Keywords: *Non-performing Assets, Indian Banking System, Banker's Perspective, Reasons for NPAs, Factor Analysis.*

1. Introduction

"Financial pollution" is the label quoted for the menace of NPLs by Zeng (2012), due to its unpredicted economic repercussions. Investigating the issue of non-performing loans is of considerable significance for the regulators as the intensification of the same has always supposed to be the precursor to the banking crisis and leading banks to failures worldwide (Barr & Siems, 1994; Reinhart & Rogoff, 2010). The delinquent asset quality of a bank is the actual barometer of the vulnerability of a financial system (Sorge, 2004). Timely reports relating to NPAs work as a useful tool in examining the asset quality of banks (Meeker & Gray, 1987). Therefore, for a stable financial system, it is imperative to identify the factors that affect asset quality and to make efforts to reduce NPLs (Stijepović, 2014). The issue has attracted the attention of policymakers all over the world, as the piling up of NPLs has led to the banking crisis, ultimately resulting in bank failures and insolvencies (Hou & Dickinson, 2007).

The deteriorating asset quality is emerging as a notable menace to the Indian banking industry also (Gopalakrishan, 2004; Heid & Kruger, 2011). The Indian banking sector has faced two prime banking crisis episodes during the post-liberalization era and it is proposed that timely identification and initiation on the resolution can reduce the untoward effects of the same (Sengupta & Vardhan, 2017). Since the implementation of the reforms process, the policymakers have placed the resolution of the NPAs problem as a National Priority. Resultantly, the Gross NPAs Ratio (Gross NPAs to Gross Advances ratio) declined gradually from 15.7 percent in 1996-97 to 2.5 percent in 2010-11. However, the situation again started deteriorating and NPAs rose to 4.62 percent in 2014-2015 (Gandhi, 2015). Further, the same trend has been witnessed in the financial years ending March 2017 to March 2019, where Scheduled Commercial Banks (SCBs) posted NPA figures of 9.32 percent, 11.8 percent, and 9.8 percent respectively (RBI). Therefore, to manage the problem of delinquent assets, one needs to find out the root causes of the same.

Henceforth, the present study is an endeavour to put light on the reasons for the occurrence of NPAs in the Indian banking sector, considering the perspective of the bankers who have been directly involved in lending decisions and also in credit risk management in banks. The paper has been structured into six sections as follows: Section 2 and Section 3 are related to the literature review and framing the theoretical framework respectively, followed by Section 4, which explains the methodology. Section 5 presents and discusses the results of factor analysis concerning Reasons for NPAs. Based on the findings of the study, the last section concludes and gives suggestions for overcoming the problem of NPAs

2. Literature Review

Over the period, researchers worldwide have made many efforts, to find out the reasons for loan delinquencies, as it is widely accepted that these delinquencies lead to bank failures and insolvencies. Contemporary literature has distinguished two sources of factors responsible for mounting NPAs; bank-level and macro level. Berger & DeYoung (1997) used the Granger-causality approach while focussing on efficiency indicators and the non-performing loans (NPLs) and hence found that extra cost has to be borne to administer the problem loans. However, Rajaraman and Vasishtha (2002) used panel regression on NPAs of 27 public sector banks (PSBs) and found a significant relationship between operational efficiency and NPAs. Keeton and Morris (1987) found that local economic conditions and abject performance of some particular industries could increase the problem of NPLs. Podpiera and Weill (2008) taking Czech banks from 1994 to 2005, estimated a causal relationship between NPLs and cost efficiency, signalling the bad management symptoms. Espinoza and Prasad (2010) used a dynamic panel estimation, over 1995-2008 and found that the NPL ratio worsens as economic growth becomes lower and interest rates and risk aversion increase. Jimenez and Saurina (2006) found that rapid credit growth during an economic boom increases the loan losses and evidenced that during upturns, riskier borrowers get bank loans, while collateralized loans decrease. Arpa, Giulini, Ittner and Pauer, (2001) evidenced that risk provisions increase with a decrease in real GDP growth and a rise in real estate prices, consumer prices, and operating income. Babouček and Jančar (2005) found that inflation and unemployment levels worsen non-performing loans. However, Pain (2003) concluded that lending to sensitive sectors and real interest rates along with real GDP growth are some of the factors which determined the NPLs in major UK banks. Klein (2013) scrutinized the bank-specific factors as well macro-economic factors for 1998-2011 and concluded that unemployment, inflation, exchange rate depreciation, GDP, ROA, and equity to assets

ratio are some of the prominent factors explaining the variations in NPLs. The extant literature concerning the problem of NPAs is overriding finding the bank-specific or macro-economic determinants of NPAs and there seems to be a dearth of comprehensive studies from banker's perspective addressing a holistic approach concerning reasons for NPAs.

3. Theoretical Framework

This section reviews the extant literature with the motive of formulating a theoretical framework for identifying the major reasons for the occurrence of NPAs. Cheriye (2013) and Koti (2013) stated that borrower related factors such as loan diversion and misutilization of funds are positively related to poor loan performance. Further, such factors, which depict the character of a borrower, are wilful default, bad intentions of the borrowers, borrower's orientation towards loan obligation, and deceiving in the declaration of collateral (Kangimba, 2010; Koti, 2013; Ahmad & Jagadeeshwaran, 2013; Vigano, 1993) intensify NPAs of the banks. Geletta (2012) asserted that weak management, lack of business and entrepreneurial abilities, and high competition are the major reasons for non-performing loans, at the borrower's end.

Vigano (1993) and Petersson (2004) found that the credit risk appraisal process requires to carefully examine the repute of the borrower to estimate the probability that the amount borrowed will be repaid regularly. A strong credit assessment that assesses a borrowers` character, collateral, capacity, capital, and condition (referred to as the 5C`s in the banking circles) is the prerequisite to reduce credit risk (Kapoor et al., 2009). Ewert et al. (2000) examined the lending performance of banks in Germany and found that a weak lending performance is positively related to inadequate collaterals. Moreover, many researchers stated that a banker with good qualifications is more capable of judging the creditworthiness of a borrower than a banker with lesser eligibility (De Juan, 2003; Masood et al., 2010). The study of Jimenez and Saurina (2006) points out that moral hazard and compromising behaviour of bankers is also one of the prime reasons for NPLs in banks. Hughes et al. (1996) advocated that although spending more on monitoring by banks is a sign of inefficiency, but it results in lower NPLs. It has been observed that excessive lending, ineffective monitoring, and unhealthy competition give borrowers a chance to relax and leads to higher NPLs (Sinkey & GreenWalt, 1991; Cheriye, 2013; Agresti et al., 2008; Aballey, 2009; Kangimba, 2010).

Many studies found that a poor and depressed economic scenario is a significant determinant for NPLs (Keeton & Morris, 1987; Sinkey & Green Walt, 1991; Rajan & Dhal, 2003). However, Vogiazas and Nikolaidou (2011) while examining the NPLs of the Romanian Banking System, stated that external debt, unemployment, and inflation do affect the NPLs ratio positively. Dinc (2005) asserted that change in the political scenario of a country positively affects NPLs and governments usually give priority to some particular sector, many times due to its political benefits and not for the well-being of the banks. However, Chijoriga (1997); Khwaja and Mian (2005) investigated that state-owned banks are more ill-affected by political interference than private ones, as the attitude of the governments toward these private banks is unpersuasive. Kalirai and Scheicher (2002) examined that the stock market and exchange rate movements are also significant factors to determine loan quality.

Thus, the above literature formulates that three major aspects viz; borrower specific, bank-specific, and macroeconomic related, lead to the loan defaults in banks. However, there is a dearth of comprehensive studies to investigate the banker's perspective related to delinquencies of loan accounts leading to the burgeoning burden of NPAs. The present study has tried to explore and confirm the various factors leading to NPAs so that the problem can be understood from the banker's perspective and mitigation strategies can be framed thereof. The study is delivering a holistic approach concerning reasons for NPAs, as a banker's perspective can significantly address this issue at the grass-root level.

4. Research Methodology

The research methodology is a procedure to fathom a research problem systematically or we can say that it chalks out the framework based on which the entire research is completed. In the present paper, the study is explorative as it examines the different aspects of NPAs, and the data analysis has been done based on primary data collection from the officers of different banks in India.

4.1 Research Instrument

A structured questionnaire, drafted based on previous literature and also consulting the experts in the field, has been used to get the primary information from the

respondents. The questionnaire is divided into two parts. The first part (Part-A) includes the questions relating to the demographic features of the respondents. The second part (Part-B) contains questions relating to various reasons for NPAs, which is subdivided into three parts as *'Borrower Related Reasons of NPAs', 'Bank Related Reasons of NPAs',* and *"General Scenario Related Reasons of NPAs'.*

4.2 Scope and Sample Size

Data has been collected from officers working in different banks in India (Public sector banks, Private sector banks, and foreign banks) especially from the persons employed in the credit division of the banks. The respondents have been asked to express their opinion on various reasons for NPAs. A total of 350 bankers from 40 banks have been approached, out of which only 303 bankers from 35 banks, responded properly. A good response rate is due to constant follow-up for the same.

4.3 Data Analysis Tools

To achieve the objective, the data collected has been analyzed using SPSS 20, Microsoft Excel, and AMOS 26. Demographics are examined using average and percentage. The questionnaire includes statements drafted with a five-point scale. The bankers are asked to express their level of agreement/disagreement on a five-point Likert Scale ranging from 'strongly disagree' (1) to 'strongly agree' (5), concerning various statements as to the reasons for NPAs included in the questionnaire. Exploratory Factor Analysis (EFA) has been used to reduce the data and identify the factors responsible for causing non-performing assets. Principal component analysis along with orthogonal rotation (Varimax) has been performed, as it is the most commonly applied method, in the extant literature, to extract factors (Thompson & Daniel, 1996; Henson & Roberts, 2006; Tabachnick & Fidell, 2007). Confirmatory Factor Analysis (CFA) has been applied using AMOS 26, to validate whether measures of a construct are consistent with a researcher's understanding of the nature of that construct (or factor). CFA has been applied based on the factors/ constructs extracted through EFA as theoretically there is no established or pre-defined measurement model for investigating the reasons of NPAs.

5. Data Analysis And Discussions

Before applying any type of data analysis, it is essential to check the reliability of the data. In this paper, the internal consistency has been measured using reliability test Cronbach's alpha (Cronbach, 1951) value of which comes to 0.675 which is above the value of 0.60, the acceptable reliability coefficient (Nunnally, 1978; Straub et al., 2004).

5.1 Results of Exploratory Factor Analysis

Factor analysis is known as an orderly simplification of various interrelated measures using some statistical and mathematical procedures that can summarize or regroup variables in clusters based on shared variance (Yong & Pearce, 2013). A total of twenty-five statements have been taken to apply factor analysis. The items have been drafted based on a review of the literature and the researcher's intuitive knowledge.

From the perspective of many previous researchers, the thumb rule is that the sample size should be five times the number of items (Hair et al., 1995). So sample size of 303 against 25 statements speaks of the sample adequacy. Kaiser-Meyer-Olkin measure of sampling adequacy indicates the proportion of variance in the variables under the study that might be caused by underlying factors. The value of the Kaiser-Meyer-Olkin Measure or the KMO should exceed 0.50 to signify the dataset is adequate for conducting factor analysis (Kaiser, 1974). Here, the KMO value is 0.586 as shown in Table 1 which indicates that the sample is adequate and we may proceed with the Factor Analysis. Moreover, Bartlett's test of Sphericity is significant at $p<0.05$, which also assures the suitability of the sample for factor analysis (Bartlett, 1950) as per Table 1.

Table 1 : KMO and Bartlett's Test

Reasons for NPAs	**Kaiser-Meyer-Olkin Measure of Sampling Adequacy.**	0.586	
	Bartlett's Test of Sphericity	$\chi 2$	1502.77
		df	325
		Sig.	0

Source: SPSS Output – Data Analysis

At the preliminary stage of the analysis, using EFA, all the 25 statements were employed to assess the pattern of loadings of the items under consideration of their resultant factors/constructs. However, the results elucidated the 11 factors solution, along with the standard criterion for keeping the factors demonstrating the Eigenvalues larger than 1.00. Table 2 presents a synopsis of the results of EFA relating to reasons for NPAs, depicting factor loadings, Eigenvalues, percentage of variance explained, cumulative % variance of the various factors, and Cronbach's Alpha values of all the constructs. The factor loadings for all the items ranged from 0.605 to 0.855, in case of reasons for NPAs, therefore verifying that the constructs are one dimensional and factorially idiosyncratic (Hulland, 1999; Hair et al., 2010; Truong & McColl, 2011). Total variance explained by the eleven factors extracted comes to 68.44%, which has been elaborated as under:

Table 2 : Mean Importance, Percentage of Variance Explained, Eigen Values and Cronbach-alpha for various Factors extracted for NPAs in India

Sr. No	Factor wise Dimensions	Mean Importance	Factor Loading	Eigen Value	% of Variance Explained	Cumulative % of Variance	Cronbach -Alpha
Borrower Related Reasons							
	F_1- Entrepreneurial Inaptitude	**3.56**		**1.983**	**7.627**	**7.627**	**0.705**
B1	Lack of entrepreneurial ability in borrowers affects the capacity to service loans	3.42	0.826				
B2	Lack of experience in business venture leads to NPAs	3.53	0.815				
B3	Strained labor relations affect the smooth working of the organizations leading to NPAs	3.72	0.679				
	F_2- Conscious Abstention	**3.89**		**1.663**	**6.397**	**14.024**	**0.697**
B4	Lack of payment culture affects loan performance	3.99	0.855				
B5	Deliberate intentions of not repaying the loan worsen the asset quality	3.78	0.821				
	F_3- Inefficient Resource Management	**3.81**		**1.656**	**6.368**	**20.392**	**0.556**
B6	Loan diversion into unrelated activities fuels NPAs	3.80	0.834				
B7	Failure to infuse owned funds as expected affect project completion, leading to non-servicing of loans	4.01	0.652				
B8	Pretentious /over-ambitious projects sometimes lead to NPAs	3.59	0.594				

Bank Related Reasons							
	F_4- Bureaucratic hurdles	**4.18**		**1.633**	**6.281**	**26.674**	**0.641**
B9	Compromised loans boost future NPAs	4.12	0.812				
B10	Non-collateralized loans comparatively default more	4.23	0.794				
	F_5- Non-optimal allocation	**3.64**		**1.613**	**6.206**	**32.879**	**0.533**
B11	Aggressive lending leads to NPAs	3.55	0.751				
B12	Over/under financing is the reason for NPAs	3.75	0.680				
B13	Unhealthy competition among bankers give rise to NPAs	3.62	0.605				
	F_6- Inadequate Appraisal skills	**3.82**		**1.570**	**6.037**	**38.916**	**0.626**
B14	Laxity in credit risk assessment leads to default	3.95	0.852				
B15	Lack of appraising skills for projects which require specialized skills usually default	3.67	0.776				
	F_7- Bias and Prejudice	**3.73**		**1.568**	**6.032**	**44.948**	**0.567**
B16	Compromised integrity while granting loans causes loan default	4.01	0.788				
B17	Patronizing clients lead to NPAs	3.45	0.767				
General Scenario Related Reasons							
	F_8- Regulatory Drift	**3.76**		**1.562**	**6.008**	**50.956**	**0.650**
B18	Priority sector lending leads to NPAs	3.53	0.835				
B19	Changes in taxation laws affect loan performance	3.98	0.806				
	F_9- Global impact	**3.42**		**1.553**	**5.971**	**56.927**	**0.430**
B20	Appreciation in the exchange rate leads to an increase in the levels of NPAs	3.51	0.712				
B21	Foreign direct investment negatively affects NPAs	3.32	0.711				
	F_{10}- Political circumstance	**3.89**		**1.542**	**5.931**	**62.858**	**0.617**
B22	The political instability of an economy increases NPAs	3.73	0.828				
B23	Unpersuasive attitude of the govt. augments NPAs	4.05	0.708				
	F_{11}- Economic Slump	**3.82**		**1.453**	**5.587**	**68.445**	**0.571**
B24	Weak supply and demand scenario adversely affect businesses and enhances loan defaults	3.90	0.830				
B25	Uncertain market and monsoon conditions cause NPAs	3.74	0.805				

Source: SPSS Output – Data Analysis

5.1.1 Entrepreneurial Inaptitude

The reasons for the high NPAs level in India are an outcome of the borrower's inabilities and intentions. Entrepreneurial Inaptitude is the most important factor that explains 7.627 percent of the variance of the data set along with an Eigenvalue of 1.983 and indicates its supremacy over other factors. The variables constituting this factor are lack of entrepreneurial ability in borrowers (.826), lack of experience in a business venture (.815), and strained labour relations in the borrower's organization (.679) (Table 2). This factor explains that much of the problem of NPAs emanate from borrower's entrepreneurial inabilities and inexperience in business ventures, as with the help of an auditor, borrowers succeed in gaining access to bank funding, but thereafter their inabilities come to the fore, making them incapable to see the bigger picture and they often end up pursuing the wrong projects.

5.1.2 Conscious Abstention

The second factor is the intentional default by the obligor. This factor is constituted by two attributes and explains 6.397% of the variance with an Eigenvalue of 1.437. The variables constituting the mentioned factor comprises of lack of payment culture (0.855) and deliberate intentions of not repaying the loan (0.821) (Table 2). In general, Indian borrowers seem to lack a repayment culture. Some borrowers have the notion that there is no obligation on their part to repay money to the bank and turn wilful defaulters or usually, the borrowers involved in such misuse of funds, open multiple accounts in different banks.

5.1.3 Inefficient Resource Management

The third important factor is inefficient resource management. This factor is constituted by three variables and explains 6.368% of the variance with an Eigenvalue of 1.656. The highest loading is for the variable 'Loan diversion into unrelated activities' with a loading of 0.834 followed by 'Failure to infuse owned funds as expected to affect project completion' with the loading of 0.652 and 'Pretentious /over-ambitious projects' with the loading of 0.594. (Table 2). The inference from the factor loading is that most entrepreneurs have no grounding in financial management, which is an essential skill for the viability and survival of the business. In some cases, the loan amount is diverted into unproductive ventures, or the capital that is sanctioned for a particular purpose is misused, leading to the creation of problems and then to NPAs. Sudden liquidity crisis due to non-injection of their funds in time or over-ambitious project planning which leads to non-realization of estimated profits, ultimately resulting in incapacitation to honour payments.

5.1.4 Bureaucratic Hurdles

The first bank-related factor is the bureaucratic hurdles. This factor comprises of Compromised loans that boost future NPAs (.812) and Non-collateralized loans that comparatively default more (.794) and explains 6.281% of variance along with an Eigenvalue of 1.633 (Table 2). This factor reveals when there is a slowdown in business, borrowers get into the mindset of deferring repayments to the bank expecting a waiver or concession and the compromised loans in the present give a boost to future defaults as the borrowers start assuming that there would be no problem in making defaults. On the other hand, if a banker extends a non-collateralized loan, the borrower would have the notion that there is no obligation on his part to repay money to the bank and will turn defaulter.

5.1.5 Non-optimal allocation

The next bank-related factor is the non-optimal allocation of funds. This factor is constituted by three attributes and explains 6.206% of the variance with an Eigenvalue of 1.613. The variables include viz; aggressive lending leads to NPAs (.751), over/under financing is the reason for NPAs (.680), and unhealthy competition among bankers (.605) (Table 2). The inference from the factor loading is that if bankers are to be held responsible for the high levels of NPA equally so is the Regulator. In a condition of abundance in liquidity, the zest of the banks to lend boundlessly and compromising asset quality raises thought about the detrimental choice of borrowers and prospective risk of such additions to existing NPA levels. Keeton (1999) and Salas and Saurina (2002) also found that loan delinquencies are related to speedy credit growth. Moreover, when the banks provide finance more than the requirement of the borrowers, they reroute the money borrowed to other motives and in case of under-financing, there are chances of projects being delayed, and resultantly, to avoid such situation, borrowers raise money from the sources where the rate of interest is more than the bank (unorganized sector) and ultimately it becomes difficult for them to repay the same.

5.1.6 Inadequate Appraisal Skills

The third bank-related factor is inadequate appraisal skills. This factor comprises Laxity in the credit risk assessment which leads to default (.852) and Lack of appraising skills for projects which require specialized skills usually default (.776) and explains 6.037% of the variance with an Eigenvalue of 1.570 (Table 2). This factor reveals that while vetting credit proposals, sometimes managers tend to adopt a very casual approach, which could be due to the rising workload of managers. In branches where the staffing is inadequate, credit risk assessment turns poor, and sometimes by hoodwinking their important role, the credit department indirectly fails to pick up early warning signals.

5.1.7 Bias and Prejudice

Another bank-related factor is bias and prejudice, which comprises of two attributes, one is compromised integrity while granting loans with a loading of 0.788 and the other is patronizing clients having a loading of 0.767 and explains 6.032% of variance along with an Eigenvalue of 1.568 (Table 2). Sometimes officers, who are not scrupulously honest, compromise their integrity and grant loans without assessing the degree of risk involved in the same, or they are inclined to some of their specific clients, ignoring their creditworthiness. Such behaviour generally leads to NPAs.

5.1.8 Regulatory Drift

The first general scenario-related factor is comprising of Priority sector lending (.835) and changes in taxation laws (.806) and explains 6.008% of the variance with an Eigenvalue of 1.562 (Table 2). In many of the studies, government policies and changes in taxation laws are ranked as moderate, whereas, giving loans to the priority sector is ranked behind as reasons for NPAs.

5.1.9 Global impact

The second general factor is the global impact which comprises of appreciation in the exchange rate as a reason for NPAs (.712) and foreign direct investment (.711) and explains 5.971% of the variance with an Eigenvalue of 1.553 (Table 2). Different researchers have different views about the relationship between exchange rate and deteriorating asset quality, Khemraj and Pasha (2009) found it as positive whereas, Fofack, (2005) asserted that it can positively affect the capability to repay loans, of those persons who borrow in foreign currency.

5.1.10 Political Circumstance

Another general factor is the Political Circumstance comprising of the political instability of an economy that increases NPAs (.828) and the unpersuasive attitude of the govt. augments NPAs (.708) and explains 5.931% of the variance with an Eigenvalue of 1.542 (Table 2). An economy having an unstable political system discourages business growth and prosperity and also if the Govt. is lenient regarding the defaulters, it ultimately gives a boost to future NPAs.

5.1.11 Economic Slump

Another general scenario related factor is the economic slump. This factor comprises of weak supply and demand scenario adversely affect businesses and enhances loan defaults (.830) and uncertain market and monsoon conditions cause NPAs (.805) and explains 5.587% of variance along with an Eigenvalue of 1.553 (Table 2). A weak supply and demand scenario affects the commodity prices, which eventually impacts the repaying capacity of the borrowers and thereby influences the quality of the loans. In India, agriculture is majorly dependent upon the unpredictability of the monsoon. Failure of crops and poor harvest affects economic conditions and resultantly drops farm prices leading to low incomes and ultimately loan defaults.

5.2 Results of Confirmatory Factor Analysis (Reasons)

After EFA was performed confirmatory factor analysis was employed and the model was developed as depicted in Figure 1.

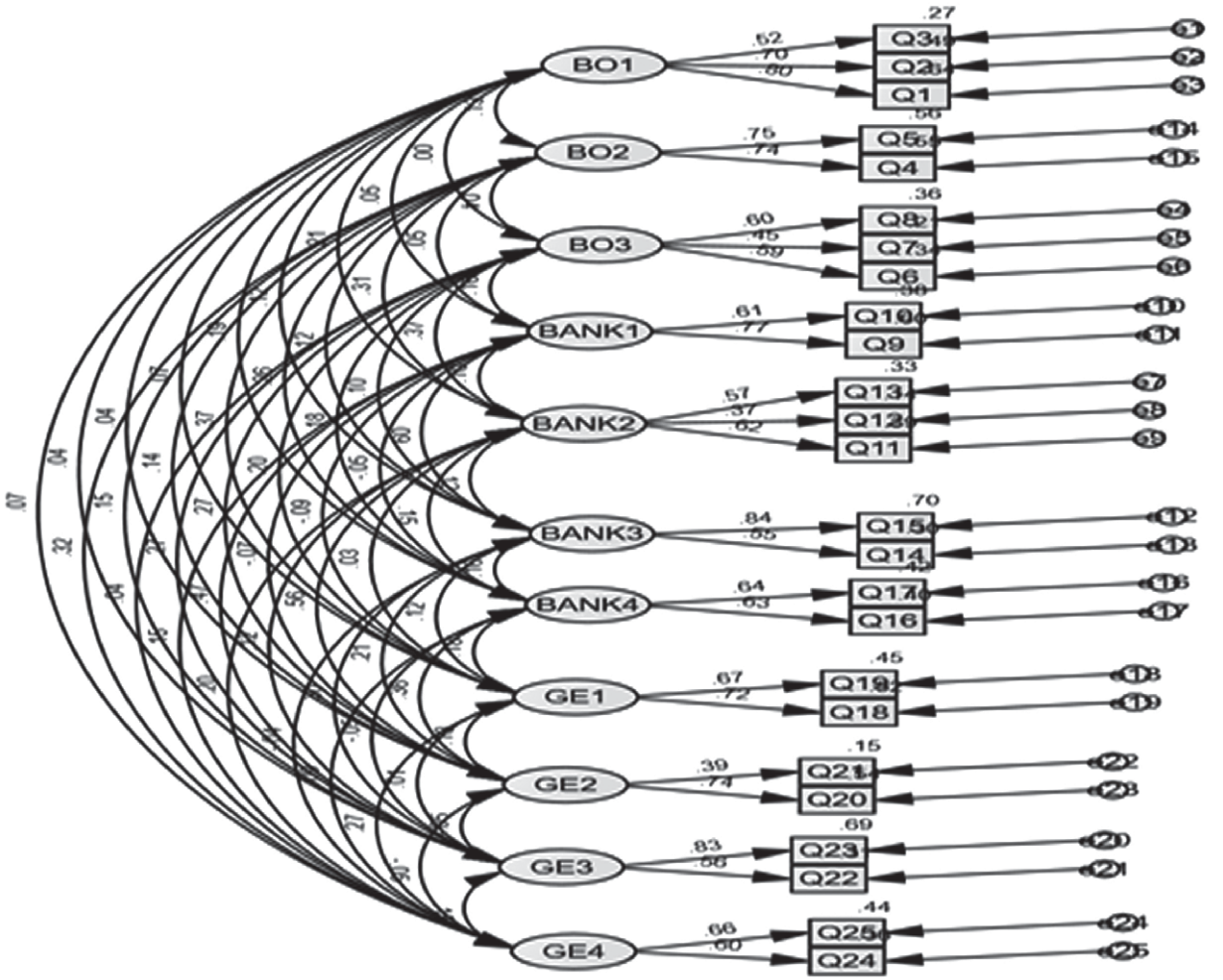

Figure 1 : Final Model for Reasons for NPAs

Here in Figure BO= Borrower Related Reasons for NPAs

BANK = Banker Related Reasons for NPAs

GE = General Scenario Related Reasons for NPAs

Rectangle = Observed Factors

Ovals = Unobserved Variables

Curved Double Headed Arrows = Correlations/ Co-variances among the unobserved variables

Straight Headed Arrows = Factor Loadings of the Observed Variables

Small Circles with arrows = Errors/unique factors

The reliability of the items was scrutinized using composite reliability (CR), the standard threshold for the same is 0.70 (Hair et al., 2010). Composite reliability (CR) is calculated for each construct, which is the variance shared among the indicators or observed variables. The composite reliability of all the constructs comes out to be more than 0.70 as shown in Table 3. The convergent validity of the construct, measures have been demonstrated by the average variance extracted (AVE). Table 3 shows that AVE values were 0.5 or more than that, as suggested by Fornell and Larcker (1981), which implies that each latent variable explains equally or above 50 percent of the variance of its respective indicators. Further, the Content validity has been ensured with extant literature, pilot survey, and interaction with the experts in the field while framing the questionnaire.

Table 3 : Composite Reliability & Average Variance Explained (Constructs for NPAs)

Sr. No.	Factors	AVE	CR
1	Entrepreneurial Inaptitude	0.60	0.81
2	Conscious Abstention	0.70	0.82
3	Inefficient Resource Management	0.50	0.74
4	Bureaucratic hurdles	0.64	0.78
5	Non-optimal allocation	0.50	0.72
6	Inadequate Appraisal skills	0.66	0.79
7	Bias and Prejudice	0.60	0.75
8	Regulatory Drift	0.67	0.80
9	Global impact	0.51	0.67
10	Political circumstance	0.59	0.74
11	Economic Slump	0.66	0.80

Source: AMOS Output – Data Analysis

The regression output of CFA (Table 4) depicted that all the factors proved significant and well able to explain its statements as the p-value is less the .05 in all the cases. The model fit has been studied from proprietary indicators and goodness to fit indices.

Table 4 : Fit indices of Structure Model (Reasons for NPAs)

Propriety Indicators	Research Findings
$\chi 2$	396.256
DF	220
P	0.000
Normed $\chi 2$	1.801
Goodness of Fit	
GFI	0.911
AGFI	0.868
CFI	0.852
Badness of Fit	
RMR	0.039
RMSEA	0.052

Source: AMOS Output – Data Analysis

Table 4 reveals that the **$\chi 2$** of the model is 396.256 with 220 degrees of freedom and a $p<0.05$. The $\chi 2$/df value is 1.801, which is well below the threshold limit of three. A Comparative Fit index (CFI) value of .90 or higher is presently accepted as an indicator of good fit (Hu & Bentler, 1999). The fit indices values for the Comparative Fit Index (CFI) for the model developed are equal to 0.852. The GFI and AGFI range between 0 and 1, with a value of over .9, generally indicating an acceptable model fit (Hombur, C., 1996). The goodness to fit index (GFI) is equal to 0.911 and the Adjusted Goodness to Fit Index (AGFI) is equal to 0.868 for the present study. Further, the badness to fit index Root Mean Square Error of Approximation (RMSEA) is equal to 0.052 for the model. RMSEA ranges from 0 to 1, with smaller values indicating better model fit and a value of .06 or less is indicative of acceptable model fit (Timothy, 2015) and Root Mean Square Residual (RMR) is 0.039, which is below 0.08 (Bentler, 1990; Byrne, 2001), revealing good model fit. Hence, all these indices prove that it is a good model fit.

6. Conclusion And Suggestions

Concludingly, the study identifies three major reasons for the NPAs fiasco namely borrower, bank, and general scenario related and the researchers expounded the measures to button up the issue based on the observations made during their research.

Analogising the perception of bankers in Indian banks, the analysis revealed that the NPAs, primarily, stem from the entrepreneurial inabilities and inexperience of the borrowers in business ventures coupled with their intentional malefaction, as generally, the borrowers in India seem to lack a repayment culture or they have the notion that there is no obligation on their part to repay money to the bank and turn willful defaulters. Moreover, siphoning off the loan amount into unproductive activities also leads to defaults as such diversions bring repayment burdens rather than generating income. As per the perspective of bankers, most of the time borrowers start with positive intentions of repaying on time, but due to unavoidable circumstances, they fail in their financed ventures, in such situations, bankers should cooperate with them by giving moratorium period or waiving off some of the interest portions just to avoid a complete loss.

The results of bank-related causes depict that most of the time, NPAs originate from internal incompetencies of the banks, as banks extend non-collateralized loans or get involved in unhealthy competition in the form of aggressive lending, which eventually turns bad. Moreover, laxity in credit risk assessment as well as the compromised integrity of the bankers to oblige their own, sooner or later results in defaults. Therefore the credit department should not turn a blind eye while extending loans and simultaneously banks need to be extra vigilant while sanctioning loans for pretentious /over-ambitious projects. Proper training as to appraisal techniques should be provided to the banking staff involved in vetting credit proposals.

Furthermore, the pressure of regulations like social/ directed lending, etc. forces banks to indulge in unproductive loans, and also if the Regulator is lax in taking stringent actions against the defaulters, the borrower would certainly assume that the public money is their own and they can misuse the same. Additionally, many global and domestic factors like currency exchange rate fluctuations, uncertain weather conditions, political instabilities, etc., which are beyond the control of banker as well as the borrower, do affect the repayments severely. Besides, although banks cannot control directly, other macroeconomic factors such as changes in taxation laws, exchange rate, FDI, Political instability, Economic Slump, etc., have an impact on the NPAs of the bank, yet banks need to make suitable structural changes and mitigation strategies to minimize the impact of such factors. Last but not the least, strengthening the recovery measures is the best possible way-out to decrease the NPAs ratio, and only then we can expect a robust financial environment in our economy.

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Work-Family Conflict: Gender Customised Support to Boost Faculty Satisfaction

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Abstract

Previous work-family research was inconsistent. This study aims to investigate gender differences concerning work-life satisfaction among faculty in academia. Initially, it compared faculty as per their gender, marital status, and family structure. It observes that male (mean=490.56) faculty experienced a higher degree of *family-to-work conflict* than their female (mean=417.97) counterparts (U=81891.5, p=.000). Following that, regression analysis manifests that *support* and *work-to-family conflict* predicted *work-life satisfaction* for both male and female faculty. However, s*upport*, *work-to-family conflict,* and *family-to-work conflict* predicted *work-life satisfaction* for nuclear family female faculty. The findings of this study are likely to stimulate research in other regions and help identify reasons and remedies for faculty work-family conflicts.

Keywords: *work-family conflict, work-life balance, faculty gender, faculty satisfaction*

1. Introduction

Work-life balance (WLB) is a phenomenon representative of perceptions that the employees of an organisation have regarding how their professional and personal lives are balanced. WLB is neither the allocation of equal time nor prioritisation between work and life aspects/activities. It is about gratification that is experienced by individuals in their work and family lives. Jones (2016) uses the idea of *work-life satisfaction* (WLS) instead of WLB because he feels that this is a healthier approach towards improving our satisfaction in all domains of our lives. Jessica (2017) also views that 'satisfaction' is a way of re-describing the concept 'WLB'. The author thinks that WLB is a kind of non-concept because people feel successful WLB only when they are pleased with the circumstances existing at work as well as home and living a perfect life. Thus, WLS is an individual's feeling of pleasure in his/her work and family domains that increases when one has no work-family conflict. A recent study (Lakkoju, 2020) employed this new idea of WLS realising its wide-ranging character, thoroughly studied the same by adopting pertinent items whose reliability and validity were confirmed statistically. The present study follows this tradition. Maybe, these two are pioneering studies in popularising this new idea scientifically.

Work-family conflict is an imbalance or incompatibility between the work and family roles of an employee (Greenhaus & Beutell, 1985; Kinnunen & Mauno, 1998; Frone, 2003). This inter-role conflict is viewed by Duxbury et al. (1994) and Friedman and Greenhaus (2000) as conceptually and empirically two distinct constructs viz. *work-to-family conflict* (WFC) and *family-to-work conflict* (FWC). WFC and FWC are two different sources of work-life imbalance as opposed to WLB. Acknowledging the interdependence between 'work' and 'family life', Kanter (1977) highlighted the work aspects affecting family life and family aspects affecting work. The literature on WLB hints that women and men experience job and home demands differently (Maria et al., 2005). In academia, nowadays, teaching jobs have become more stressful. Often, faculty members work extra hours for accomplishing accreditations and rankings for their institutions. Major, Klein, and Ehrhart (2002) have reported that the number of work hours was related to increased work-family conflict, decreased mental and physical health, and reduced family functioning. Similarly, an audit conducted at Oxford Brookes University observed that due to substantial intensification of work, the academic staff was least satisfied with their WLB conditions (Manfredi & Holliday, 2004). Noor et al. (2009) also observed that the ability to balance work-life needs is perceived as an important problem among faculty in higher educational institutions. Perhaps, they face complexity in prioritising their professional and personal roles. Moreover, Burke (2002) identifies that women and men prefer to work with organisations that support WLB. But, other researchers observe that WLB conditions and resulting job satisfaction differ by gender (Duxbury & Higgins, 1991; Connell, 2005; Smithson & Stokoe, 2005; Zou, 2015). Thus, while dealing with work-family conflicts regardless of gender, faculty members must obtain *support for WLS* (SWLS). Noor (2011) observed that perceived WLS among academics was negatively correlated with the intention to leave the organisation. Nevertheless, achieving an ideal WLB is a shared responsibility of employers and employees (Sur et al., 2012). Thus, policies, programmes, and work systems aiming to enhance WLS must be gender customised.

2. Literature Review

A cross-impact analysis between work-stress and parental demands and their influence on job satisfaction, marital satisfaction, and overall life satisfaction of accounting professionals in the USA has revealed minor gender differences. The relationship between parental demands and life satisfaction was mediated by satisfaction with childcare arrangements for women, but not men, with kids at home (Bedeian et al.,1988). A Canadian study of single-parent and dual-income married with children' employees has discovered that individuals with higher perceived control had lower levels of overload and work-family interference. Women perceived a higher degree of overload and interference than did men. While the current research considers 'overload' as an element of WFC, this study has considered the same aspect independently to predict work-family conflict (Duxbury et al., 1994). A Finland study has identified that WFC was more prevalent than FWC among both genders but no gender differences in experiencing these conflicts (Kinnunen & Mauno, 1998). However, this study measured WFC and FWC concepts with only three statements each, in contrast to eight and four items used in the present study, respectively. A study among U.K. academics has noticed that the high-ranked female faculties were more satisfied with the jobs than their male counterparts (Oshagbemi, 2000). However, this study did not throw light on the relationship between job satisfaction and life satisfaction. Thus, this section of review identifies

operational problems in the previous research, mainly shorter instruments that might provide a limited measurement of the concepts studied.

Duxbury et al. (1994) have discovered that for both genders, high quality of life (QoL) was attributed to the supportive supervisor, and low QoL was attributed to long working hours. Differently, in the USA, Phyllis and Yan (2000) have examined the dual-earner families in managing their work/life pressures and found that their strategies and also QoL were gendered. Women not only reported more stress and overload but also lower levels of coping than men. A longitudinal study conducted in Finland has revealed that women's WFC perceived in 1999 significantly predicted their job discontent, parental distress, and psychological symptoms in 2000. Similarly, among men, a low level of satisfaction in 1999 acted as a source of perceived WFC in 2000. However, the experience of WFC was relatively stable for both genders during the study period (Kinnunen et al., 2004). Consistent with the studies of Phyllis and Yan (2000) and Duxbury et al. (1994), a study among U.S. academics has found that women have experienced relatively more academic and family stress and a less degree of institutional support in balancing their work and family activities (O'Laughlin & Bischoff, 2005). Further, a Hong Kong study of Chinese Protestant Clergy has discovered that WFC and FWC were correlated negatively to perceived organisational support (POS) and positively to work-stressors. (Foley et al., 2005). This study also used only two items each to measure WFC and FWC. Greenhaus and Beutell (1985) viewed that the concise scales increase reliability problems and may not accurately portray the nuance of a complex variable. Indeed, scales should use different dimensions (e.g., time, strain, behaviour) of the role-pressure incompatibility and consist of items that denote WFC and FWC. Overall, the present study uses twelve statements to measure WFC and FWC and aligns them with the abovementioned three expressions in their measurement. Further, a cross-sectional study conducted by Kato and Yamazaki (2009) in the Japanese chemical industry has observed that high job demands, low job control, and unsupportive work-family culture were associated with a high degree of WFC. Further, WFC was positively associated with fatigue and depression, regardless of gender and parental status. However, maintaining family togetherness was slightly yet significantly associated with fatigue in the father group. This section of review finds disagreement between studies concerning work-family research, some highlighting gender similarities, and some highlighting gender dissimilarities.

To sum up, in work-family research, there were only a few studies focused on gender (Parasuraman & Greenhaus, 2002) and many other studies have ignored gender in their analyses (Barnett, 1998). Kim and Gong (2017) suggest that firms have to pay close attention to gender differences in predicting the demand for flexible work arrangements to decrease work-family conflicts. Further, several studies focused merely on the notion of WFC (Frone, 2003) and ignored the importance of 'support' and 'FWC' ideas in predicting the WLS of professionals. According to Lewis et al. (2007), developing nations require new WLB research. In this context, the present study aims to fill this potential research gap in academics.

3. Objectives

The main objective of the study is to investigate gender disparities concerning the WLS of faculty in higher education. Thus, the study purposely acknowledges the below-mentioned objectives:

i) to evaluate the WLS conditions of female and male faculty in different settings;

ii) to analyse factors influencing faculty WLS of both genders; and

iii) to converse on the implications of the outcomes.

4. Methods

4.1 Sample

This work is an outcome of the minor research project sponsored by the Southern Eastern Regional Office (University Grants Commission). Obtaining information from the website of the Convener, Andhra Pradesh Engineering Agriculture and Medicine Common Entrance Test – 2018 and subsequently visiting the websites of the forty engineering colleges that existed in the selected region of the study i.e. Krishna District, the researcher understands that the faculty population was approximately 4000. Thus, the target set for the sample was 20 percent. During the academic year 2018-2019, the survey was conducted in eleven engineering colleges (seven rural and four urban/semi-urban) employing the simple random sampling technique. The sample achieved was 23 percent (931) of the population, which includes 315 females and 616 males. The sample comprises 384 respondents belonging to joint families (121 females and 263 males), 547 belonging to nuclear families (194 females and 353 males), 722 married respondents (254 females and 468 males), and 209 unmarried respondents (61 females and 148 males) (Table 1).

Table 1: Distribution of sample respondents as per their group and gender

Faculty Group		Faculty Gender	Sample (N)	Total	Grand Total
A	--	Female	315	931	931
	--	Male	616		
B	Joint Family	Female	121	384	931
		Male	263		
	Nuclear Family	Female	194	547	
		Male	353		
C	Married	Female	254	722	931
		Male	468		
	Unmarried	Female	61	209	
		Male	148		

4.2 Reliability and Validity of the Instrument

The questionnaire (Lakkoju, 2020) used for the faculty WLS survey has four constructs, viz. *SWLS* (6 items), i.e. support from family, management, colleagues, management WLS policies and programmes, etc.; *WFC* (8 items), i.e. quantity and quality of time spent, work pressure, worries, fatigue, stress-related diseases, etc.; *FWC* (4 items), i.e. family responsibilities, personal worries, etc.; and *WLS* (7 items), i.e. happiness with the job/career, working hours, sleep, livelihood, time spent with the family, etc. For the measurement of responses, the study used Likert's five-point scale. 'Strongly Agree (5)' is the highest point and, 'Strongly Disagree (1)' is the lowest point in the continuum. The study uses SPSS for performing statistical computations and free calculators available at https://www.danielsoper.com/. Reliability and validity statistics are provided in Table 2. Cronbach's alpha was calculated to .773 or even greater in every instance, indicating good internal consistency. For measuring a construct, Nunnally (1978) suggested a reliability score of 0.70 is sufficient. Regarding construct validity, KMO measures were estimated between .751 and .907. KMO values between 0.5-0.7 are average, 0.7-0.8 are superior, 0.8-0.9 are significant, and above 0.9 are very good (Field, 2009, p.647). Further, Bartlett's tests are highly significant (p0.000<0.01). This outcome shows sample adequacy for Factor Analyses (Kaiser, 1974). Principal Component Analysis confirms the unidimensionality of the constructs for both genders based on the commonly used criterion 'Eigenvalue greater than 1' (Table 3). Thus, the subsequent measurement of the concepts under study is unquestionable.

Table 2: Reliability and validity measures of WLS constructs for both genders

Construct	Female (N=315)				Male (N=616)			
	Cronbach's Alpha	Factor Analysis result (PCA)		UD**	Cronbach's Alpha	Factor Analysis result (PCA)		UD**
		KMO	Bartlett's Test*			KMO	Bartlett's Test*	
SWLS (6 items)	.773	.804	χ^2 (15) = 482.464	Yes	.825	.830	χ^2 (15) = 1304.791	Yes
WFC (8 items)	.871	.901	χ^2 (28) = 1007.507	Yes	.890	.907	χ^2 (28) = 2388.674	Yes
FWC (4 items)	.808	.751	χ^2 (6) = 467.757	Yes	.830	.789	χ^2 (6) = 938.674	Yes
WLS (7 items)	.870	.882	χ^2 (21) = 948.752	Yes	.876	.897	χ^2 (21) = 1864.253	Yes

*For all eight tests p.000<.01 is significant; **UD=Unidimensionality (see Table 3 for construct validity)

Table 3: Eigenvalues and variances explained for construct validity of the instrument

Initial Eigenvalues					
		Female		Male	
Construct	Component[a]	Total	% of Variance	Total	% of Variance
SWLS	1	2.858	47.626	3.214	53.571
	2	.984	16.392	.908	15.139
	3	.769	12.820	.657	10.949
	4	.514	8.568	.506	8.442
	5	.466	7.762	.430	7.161
	6	.410	6.831	.284	4.739
WFC	1	4.239	52.990	4.567	57.092
	2	.878	10.973	.871	10.889
	3	.639	7.986	.581	7.266
	4	.602	7.525	.503	6.290
	5	.482	6.026	.449	5.617
	6	.432	5.401	.416	5.202
	7	.405	5.068	.338	4.230
	8	.322	4.030	.273	3.414
FWC	1	2.581	64.521	2.662	66.539
	2	.693	17.334	.572	14.305
	3	.447	11.164	.453	11.316
	4	.279	6.980	.314	7.840
WLS	1	3.984	56.919	4.036	57.654
	2	.801	11.439	.736	10.514
	3	.594	8.485	.559	7.989
	4	.520	7.435	.531	7.579
	5	.431	6.164	.425	6.069
	6	.364	5.198	.378	5.395
	7	.305	4.359	.336	4.800

Extraction Method: Principal Component Analysis; [a]One component was extracted

4.3 Hypotheses

Previous research on WLS identifies that men confront less difficulty than women in combining work responsibilities and family relations (Scott, 2001) and have significantly higher levels of life satisfaction than women (Beutell & Wittig, 1999). This implies that essentially faculty WLS is gender-based. Hence, the present study plans to explore gender-wise similarities and dissimilarities of faculty WLS by postulating that:

$H1_0$: Female and male faculty members have the same level of WLS

$H1_A$: Female and male faculty members have different levels of WLS.

Consistent with Gary et al. (1996), Murugan and Jayanth (2017) also recognised that family support not only reduces family interference with work but also increases faculty WLS. Phyllis and Yan (2000) also confirm that a supportive supervisor tends to increase the quality of life. Similarly, Foley et al. (2005) identify that WFC and FWC decrease with increased organisational support. Deepak and Neena (2011), Tara and Jyotsna (2010) also explain that inconsistency and/or mutual influence among 'work' and 'life' domains have a significant bearing on a professional's WLS. Thus, *support* can have a positive impact and *WFC and FWC* can have a negative impact on faculty WLS, respectively (Figure 1). Hence, it is hypothesised that:

$H2_0$: SWLS, WFC, and FWC do not predict faculty WLS.

$H2_A$: SWLS, WFC, and FWC do predict faculty WLS.

Thus, $H2_A$ gives the following expression of the Regression Model for predictive analysis:

$$WLS = f(SWLS, WFC, FWC)$$

In this manner, the study deals with the 1) comparative and also 2) predictive analyses.

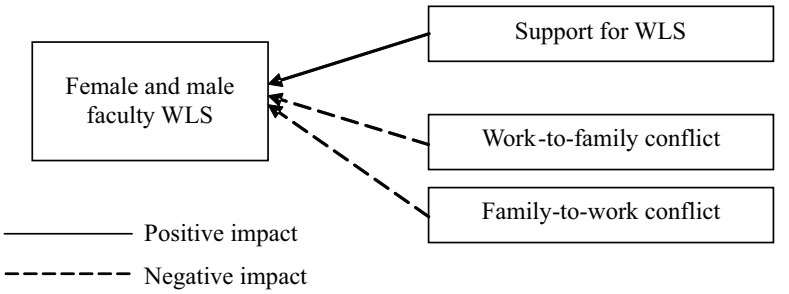

Figure 1 : Theoretical model of female and male faculty WLS

4.4 Techniques of Data Analyses

Initially, normality tests were conducted on the original data for both genders. Results indicate non-normality of data as Kolmogorov-Smirnov and Shapiro-Wilk statistics found significant at P≤0.01 (Table 4). Hence, for comparative analysis, non-parametric techniques like Kruskal Wallis H tests (K-W H) and Mann Whitney U tests (MWU) were employed. In post hoc multiple comparisons, Bonferroni correction was applied to the original alpha value to get family-wise error rate (FWER). For interpretations of significant pair-wise differences, effect sizes (Lenhard & Lenhard, 2016), post hoc statistical power using G*Power software (Faul et al., 2007), statement-wise mean values, and corresponding percentage scores using formula {(Mean Value-1) x 25} (Rao, 1991) were calculated.

Table 4: Statistics of normality tests for sample data of both genders

		*Kolmogorov-Smirnov[a]		*Shapiro-Wilk	
		Female (df=315)	Male (df=616)	Female (df=315)	Male (df=616)
SWLS	1	.434	.385	.578	.649
	2	.224	.222	.846	.872
	3	.230	.244	.854	.870
	4	.197	.214	.892	.890
	5	.181	.181	.916	.918
	6	.243	.241	.858	.883
WFC	1	.180	.175	.909	.913
	2	.175	.195	.916	.911
	3	.157	.180	.916	.911
	4	.179	.185	.912	.912
	5	.170	.196	.915	.909
	6	.180	.183	.913	.912
	7	.199	.219	.883	.864
	8	.255	.212	.832	.872
FWC	1	.242	.193	.887	.909
	2	.258	.209	.851	.899
	3	.267	.237	.831	.878
	4	.232	.203	.886	.896

Cont...

		*Kolmogorov-Smirnov[a]		*Shapiro-Wilk	
		Female (df=315)	Male (df=616)	Female (df=315)	Male (df=616)
WLS	1	.233	.238	.843	.853
	2	.257	.284	.836	.827
	3	.216	.260	.888	.879
	4	.181	.247	.907	.885
	5	.174	.209	.913	.906
	6	.217	.200	.894	.906
	7	.234	.253	.869	.881

a. Lilliefors Significance Correction; *Sig.=.000

For predictive analysis, the step-wise Multiple Linear Regression (MLR) technique was adopted. To determine the Effect Size, Cohen's f^2 value was derived from the respective R^2 value of the significant regression models (Soper, 2019). Cohen (1988) defined f^2 values near to 0.02 as small, near to 0.15 as medium, and greater than 0.35 as large. Similarly, statistical power was derived from the number of related predictors, observed R^2value, probability level, and the sample size (Table 5). Cohen (1988) proposed a minimum statistical power of 0.80 to feel the *effect* when it truly exists. The study also used Fisher z-transformation (FZT) statistic to compare the 'fit' of the predictors set in each group under study. In this direction, the study analyses the statistical significance of the difference between the two chosen multiple correlation coefficients (R) with the calculator accessible at http://vassarstats.net/rdiff.html. The related Model Summary table presents the resulting value of FZT against each comparison. Regarding all the cases evaluated, the study finds only non-significant differences as $p>.05$. Thus, the study understands that the two predictors SWLS and WFC performed evenly in the WLS Models across all groups examined. Next, to compare the impact of the predictors across different WLS Models, the study looks for signs of any significant difference between the coefficients (slopes) of the two related (female and male) regression lines in each of the study groups (Table 6). For these calculations, the study uses sample sizes, coefficients, and standard errors. As $p>.05$ in all instances of comparison, the study safely concludes that there are no structural differences among different WLS Models.

Table 5: Effect Size (f^2), Confidence Interval (f^2 CI) and Power in multiple regressions conducted

Faculty Group		N	No. of Predictors	P	R^2	f^2	f^2 CI*	Power
A	Female	315	2	.000	.434	0.766	$0.48452 \le f^2 \le 1.17920$	1.00
	Male	616	2	.000	.493	0.972	$0.72210 \le f^2 \le 1.30675$	1.00
B	JF-Female	121	2	.000	.374	0.597	$0.24728 \le f^2 \le 1.21925$	0.99
	JF-Male	263	2	.000	.485	0.941	$0.59225 \le f^2 \le 1.48538$	1.00
	NF-Female	194	3	.000	.487	0.949	$0.55499 \le f^2 \le 1.61045$	1.00
	NF-Male	353	2	.000	.501	1.004	$0.68027 \le f^2 \le 1.48225$	1.00
C	M-Female	254	2	.000	.422	0.730	$0.43228 \le f^2 \le 1.18396$	1.00
	M-Male	468	2	.000	.527	1.114	$0.80388 \le f^2 \le 1.55289$	1.00
	U-Female	61	2	.000	.489	0.956	$0.35584 \le f^2 \le 2.50946$	0.99
	U-Male	148	2	.000	.359	0.560	$0.24862 \le f^2 \le 1.07827$	0.99

*99% Confidence Interval of the Effect Size

Table 6: Statistics for significance of the difference between slopes

Faculty Group		N	Predictor Variable	Slope	Standard Error	t-value	df	Probability
A	Female	315	SWLS	.500	.051	0.477	927	0.63
	Male	616		.471	.033			
	Female	315	WFC	-.328	.042	0.744		0.46
	Male	616		-.366	.029			
B	JF- Female	121	SWLS	.345	.076	1.524	380	0.13
	JF- Male	263		.482	.048			
	JF- Female	121	WFC	-.348	.061	0.317		0.75
	JF- Male	263		-.372	.045			
	NF- Female	194	SWLS	.616	.068	1.864	543	0.06
	NF- Male	353		.464	.045			
	NF- Female	194	WFC	-.237	.064	1.650		0.10
	NF- Male	353		-.359	.037			
C	M- Female	254	SWLS	.512	.057	0.780	718	0.44
	M- Male	468		.459	.037			
	M- Female	254	WFC	-.297	.046	1.463		0.14
	M- Male	468		-.379	.032			
	U- Female	61	SWLS	.467	.115	0.066	205	0.95
	U- Male	148		.476	.073			
	U- Female	61	WFC	-.446	.098	1.080		0.28
	U- Male	148		-.319	.065			

5. Results and Discussion

5.1 Comparative Analysis

In Group A (Table 7), K-W H global test obtains strong evidence of WLS differences (p.000<0.05) between female and male faculty. Thus, four required post hoc comparisons were performed using MWU tests. Results show a statistically significant and meaningful difference regarding the FWC concept at the adjusted alpha level (p.000<0.0125, d=0.258), thereby upholding $H1_A$. Cohen (1992) suggested that the effect size d up to 0.20 is small, from 0.20 to 0.50 is medium, and from 0.50 to 0.80 is large. The observed power for this effect is 93%. Cohen (1988) advised 80% statistical power for a significant difference with any effect size. Retrospectively, the percentage scores of the four statements in this construct are less than 50.00 (Table 8), i.e. desirable for both genders. However, male faculty are relatively more discontent than their female counterparts (37.72>31.51). The former might be having more responsibilities (42.49>35.87), and more worries (37.74>28.89) at home, causing frustration at the workplace (32.87>25.32). Perhaps, male faculty members might be performing increasingly complex roles in and out of their academic space. They may be expecting more support from the concerned stakeholders when compared with their female counterparts (p.037>0.0125<0.05). Hammer et al. (1997) also acknowledged that men have a lower degree of WFC but higher familial responsibilities than women.

Table 7: Statistics for WLS differences between female and male faculty

K-W H Asymp.Sig.	Group A WLS constructs	Post hoc Mann Whitney U Test - Ranks and Statistics					Adj. Alpha	Reject H_o
		Mean Rank		U	Z $\mathbf{d_{Cohen}}$ **Power**	Asymp. Sig.#		
		Female (N=315)	Male (N=616)					
1098.083 .000*	SWLS	491.66	452.88	88937.0	-2.088	.037	.0125 (FWER)	No
	WFC	467.36	465.31	96592.5	-.110	.912		No
	FWC	417.97	490.56	81891.5	-3.915 **0.258** **0.93**	.000**		Yes
	WLS	470.28	463.81	95673.0	-.348	.728		No

*Significant@.05, df=7; **Significant@.0125; #two-tailed

Table 8: FWC scores of female and male faculty*

Item	FWC**			
	Mean value		% Score	
	Female	Male	Female	Male
1	2.43	2.70	35.87	42.49
2	2.16	2.51	28.89	37.74
3	2.01	2.31	25.32	32.87
4	2.44	2.51	35.95	37.78
Average	2.26	2.51	31.51	37.72

*with reference to Table 7; **Ideal % Score < 50.00

In Group B (Table 9), K-W H tests identify significant differences concerning SWLS (p.031<0.05) and FWC (p.000<0.05) constructs. Post hoc comparisons reveal significant and meaningful gender differences in nuclear families concerning SWLS (p.005<0.025, d=0.243, Power=71%) and FWC (p.001<0.025, d=0.276, Power=81%), thereby upholding $H1_A$. Percentage scores (Table 10) indicate that nuclear family (NF)-male faculty perceive a relatively lesser degree of management support than their female counterparts (67.48<72.16). The difference is meaningful but statistically less powerful, requiring replication of the research to verify this outcome. Further, the FWC situation of NF-male faculty is somewhat alarming (36.14>29.77). Maybe they are facing more responsibilities (30.59>23.58), more worries and problems (36.26>27.45) in their families, preventing them from putting maximum efforts and devoting themselves to their jobs (41.86>34.92). This may be due to their independent living. Parents of some of the faculty members are farmers who depend on agriculture and live in villages. Faculty members of this background must live without their parents as their workplaces are located faraway from their native places. Here, it is worth mentioning that the joint family (JF) based faculty do not have these problems (p.037>0.025). Indeed, members of the joint families share works with other members, and children also get love, care, guidance, and education from their uncle, aunts, grandparents. This will reduce loneliness, frustrations, and burden from the parents (The Nation, 2016). This may imply that the FWC of JF-male faculty is better than that of NF-male faculty.

Table 9: Statistics for WLS differences between joint (JF) and nuclear (NF) families based faculty

K-W H Asymp.Sig.	Group B WLS constructs		Post hoc Mann Whitney U Test - Ranks and Statistics					Adj. Alpha	Reject H_o
			Mean Rank		U	Z **d_{Cohen}** **Power**	Asymp. Sig.#		
			Female	Male					
8.849 .031*	SWLS	JF	191.71	192.86	15816.0	-.095	.925	.025 (FWER)	No
		NF	299.67	259.89	29261.0	-2.824 **0.243** **0.71**	.005**		Yes
2.116 .549	WFC		---						---
21.050 .000*	FWC	JF	175.13	200.49	13810.0	-2.089	.037		No
		NF	245.02	289.93	28618.5	-3.196 **0.276** **0.81**	.001**		Yes
3.665 .300	WLS		---						---

*Significant@.05, df=3; **Significant@.025; #two-tailed

NB: JF-Female N=121; JF-Male N=263; NF-Female N=194; NF-Male N=353

Table 10: SWLS and FWC scores of nuclear families based female and male faculty*

Item	SWLS**				FWC***			
	Mean		% Score		Mean		% Score	
	Female	Male	Female	Male	Female	Male	Female	Male
1	4.66	4.54	91.62	88.39	2.40	2.67	34.92	41.86
2	4.01	3.78	75.26	69.55	2.10	2.45	27.45	36.26
3	3.90	3.77	72.55	69.26	1.94	2.22	23.58	30.59
4	3.64	3.41	66.11	60.34	2.32	2.43	33.12	35.84
5	3.29	3.14	57.35	53.40	-	-	-	-
6	3.80	3.56	70.10	63.95	-	-	-	-
Average	3.89	3.70	72.16	67.48	2.19	2.45	29.77	36.14

*with reference to Table 9; **Ideal % Score ≥ 50.00, ***Ideal % Score < 50.00

In Group C (Table 11), though K-W H global tests discover significant differences relating to SWLS (p.013<0.05), FWC (p.000<0.05) and WLS (p.007<0.05) constructs, post hoc comparisons highlight significant and meaningful differences only about FWC of married female and male faculty (p.001<0.025, d=0.246, Power=83%) thereby upholding $H1_A$. Percentage scores (Table 12) disclose that married male faculty experience relatively more degree of FWC than their female counterparts (36.59>30.61). Like NF-male faculty, married male faculty also have more responsibilities (41.40>34.65), more worries and problems (35.95>27.36) at their families, gradually shrinking their devotion towards work (32.00>25.00). Thus, in all the above three contexts analysed male faculty members are experiencing more family-to-work conflict as compared to their female counterparts. This may be due to the remote location of colleges and their substantial travelling time needed. Female faculty members cannot go out and perform family-required tasks after coming back from the college as the light fades in the evening and their safety is endangered. Also, they have to cook food for the family members. In such cases, their male partners are responsible for attending to various family-related tasks outside in the evening. This responsibility displeases the male faculty members as the situation demands more energy, patience and effort to fill this essential gap.

Table 11: Statistics for WLS differences between married (M) and unmarried (U) faculty

K-W H Asymp.Sig.	Group C WLS constructs		Post hoc Mann Whitney U Test - Ranks and Statistics					Adj. Alpha	Reject H_o
			Mean Rank		U	Z **d_{Cohen}** **Power**	Asymp. Sig.#		
			Female	Male					
10.742 .013*	SWLS	M	375.81	353.74	55802.5	-1.361	.173	.025 (FWER)	No
		U	115.25	100.78	3889.0	-1.578	.115		No
1.365 .714	WFC		---						---
23.380 .000*	FWC	M	327.07	380.19	50690.0	-3.285 **0.246** **0.83**	.001**		Yes
		U	93.39	109.78	3806.0	-1.789	.074		No
12.116 .007*	WLS	M	354.54	365.28	57669.0	-.662	.508		No
		U	115.50	100.67	3873.5	-1.615	.106		No

*Significant@.05, df=3; **Significant@.025; #two-tailed

NB: M-Female N=254; M-Male N=468; U-Female N=61; U-Male N=148

Table 12: FWC scores of married female and male faculty*

Item	FWC**			
	Mean		% Score	
	Female	Male	Female	Male
1	2.39	2.66	34.65	41.40
2	2.09	2.44	27.36	35.95
3	2.00	2.28	25.00	32.00
4	2.42	2.48	35.43	37.02
Average	2.22	2.46	30.61	36.59

*with reference to Table11; **Ideal % Score < 50.00

5.2 Predictive Analysis

Firstly, major assumptions of MLR were tested. In the three sample groups (A, B, C), case-wise averages computed for each construct ensured continuous interval data. Similarly, the study has ascertained another prerequisite, i.e. linearity between independent variables viz. SWLS, WFC, FWC, and the dependent variable viz. WLS. Scatter plots characterised by straight lines confirm these linear relationships (Figures 2 to 7). Correlation coefficients less than ±0.60 among independent variables (Table 13) indicate the absence of multicollinearity problem (threshold value is ±0.8). Residuals (prediction errors) were also normally distributed (Figures 8 and 9). After this, the study conducted a step-wise method of MLR for the preferred groups of respondents. Limited statistics viz., Model Summary, ANOVA, and Coefficients were presented in the respective tables against each group of the respondents under study.

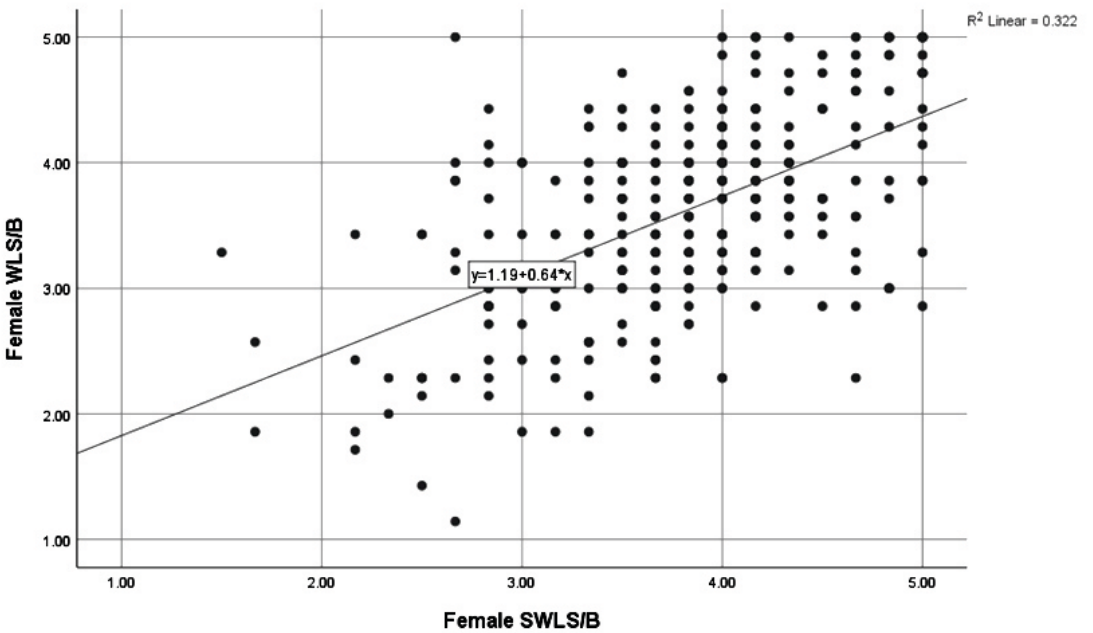

Figure 2: Scatter plot of predictor 'Female SWLS' (x-axis) with 'Female WLS' (y-axis)

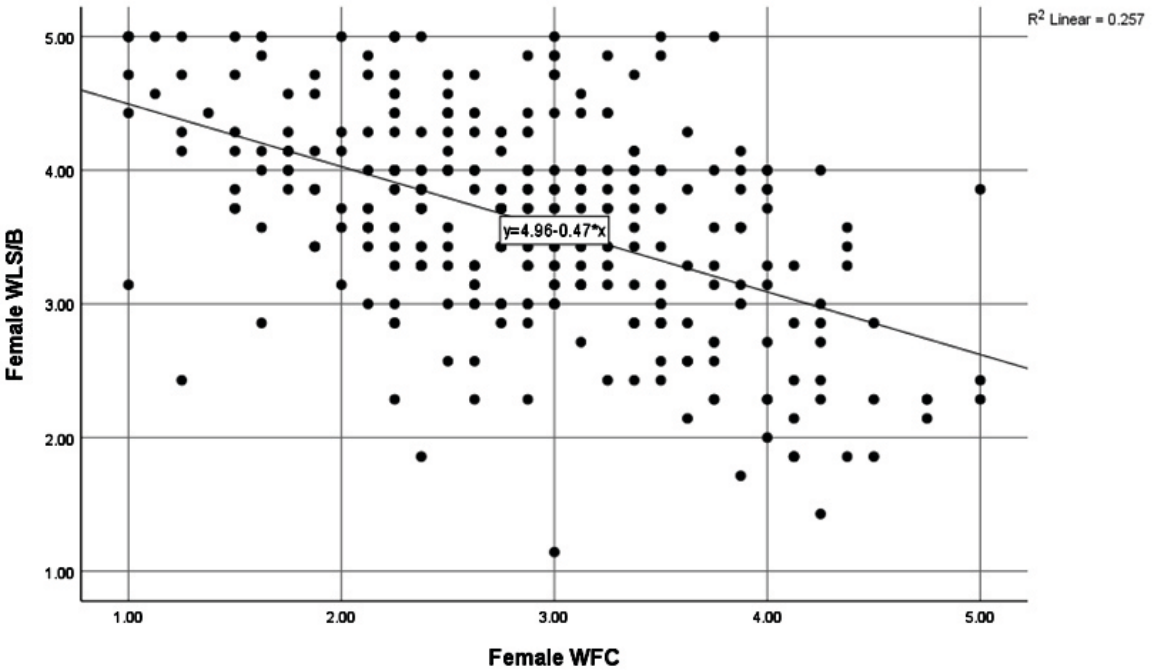

Figure 3: Scatter plot of predictor 'Female WFC' (x-axis) with 'Female WLS' (y-axis)

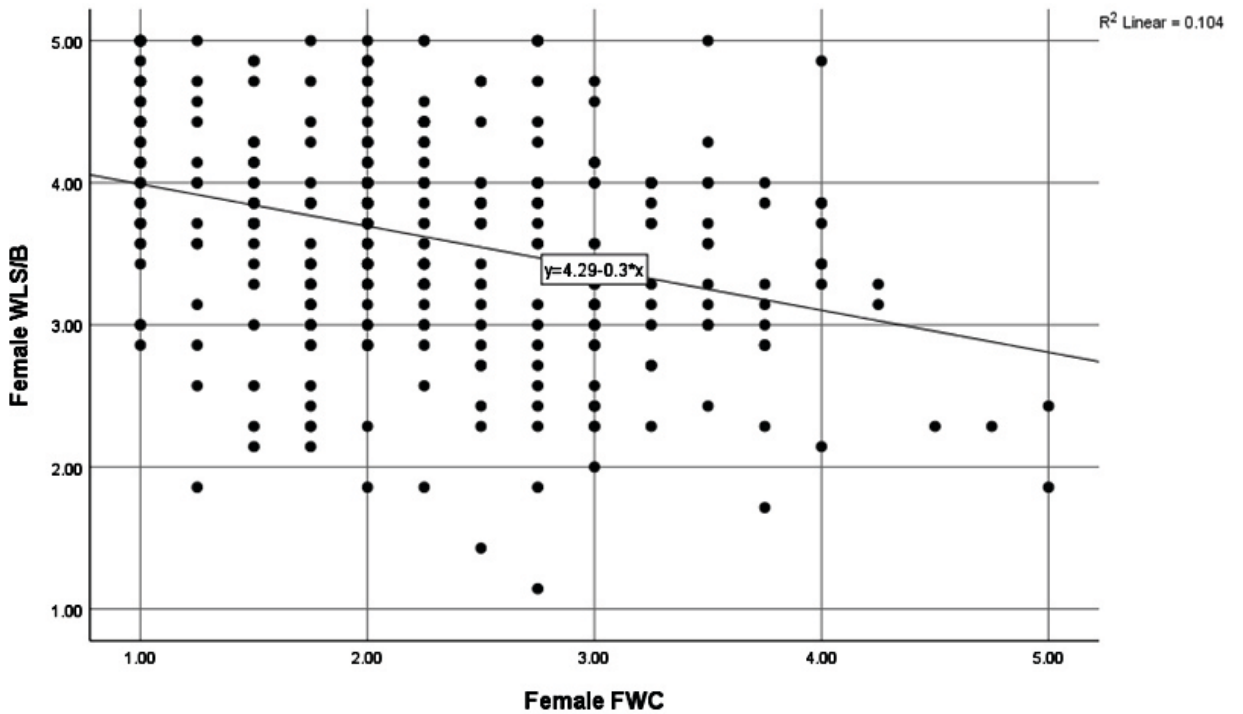

Figure 4: Scatter plot of predictor 'Female FWC' (x-axis) with 'Female WLS' (y-axis)

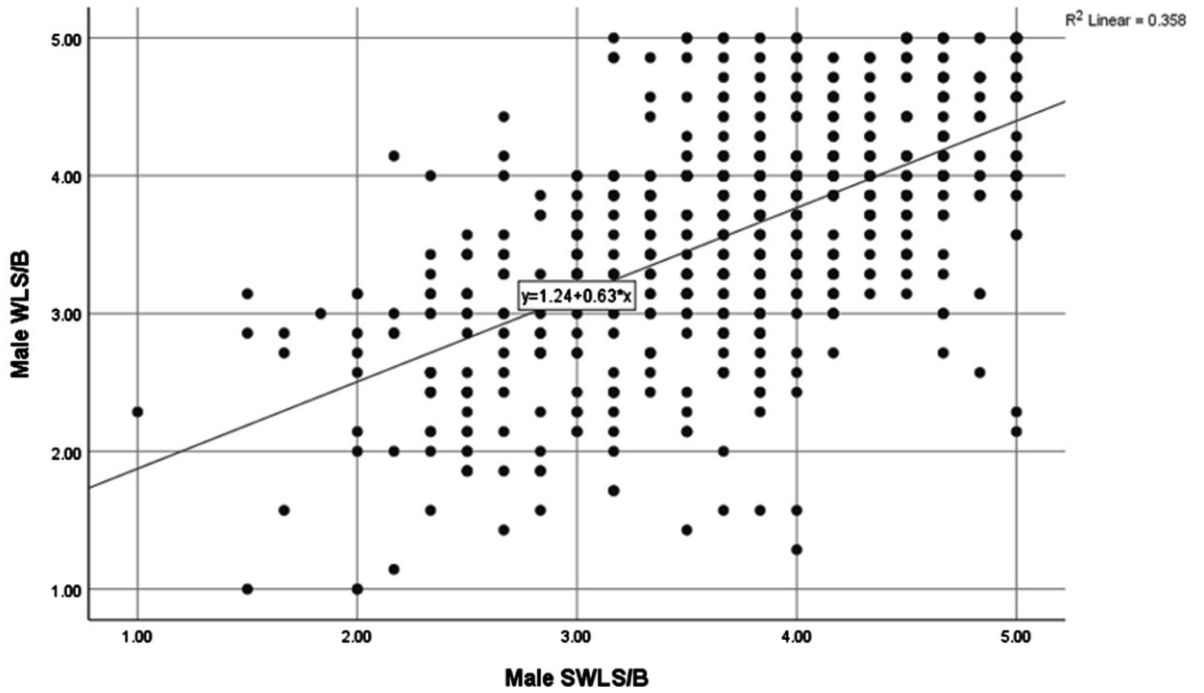

Figure 5: Scatter plot of predictor 'Male SWLS' (x-axis) with 'Male WLS' (y-axis)

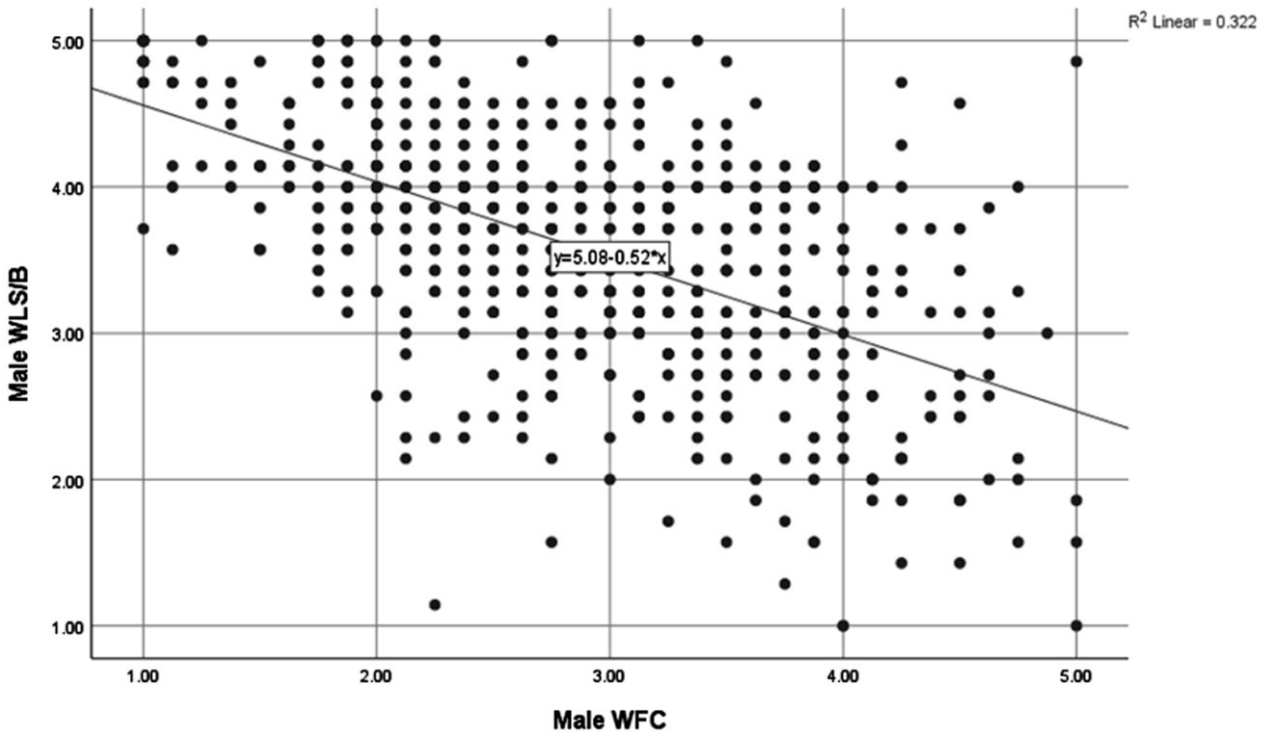

Figure 6: Scatter plot of predictor 'Male WFC' (x-axis) with 'Male WLS' (y-axis)

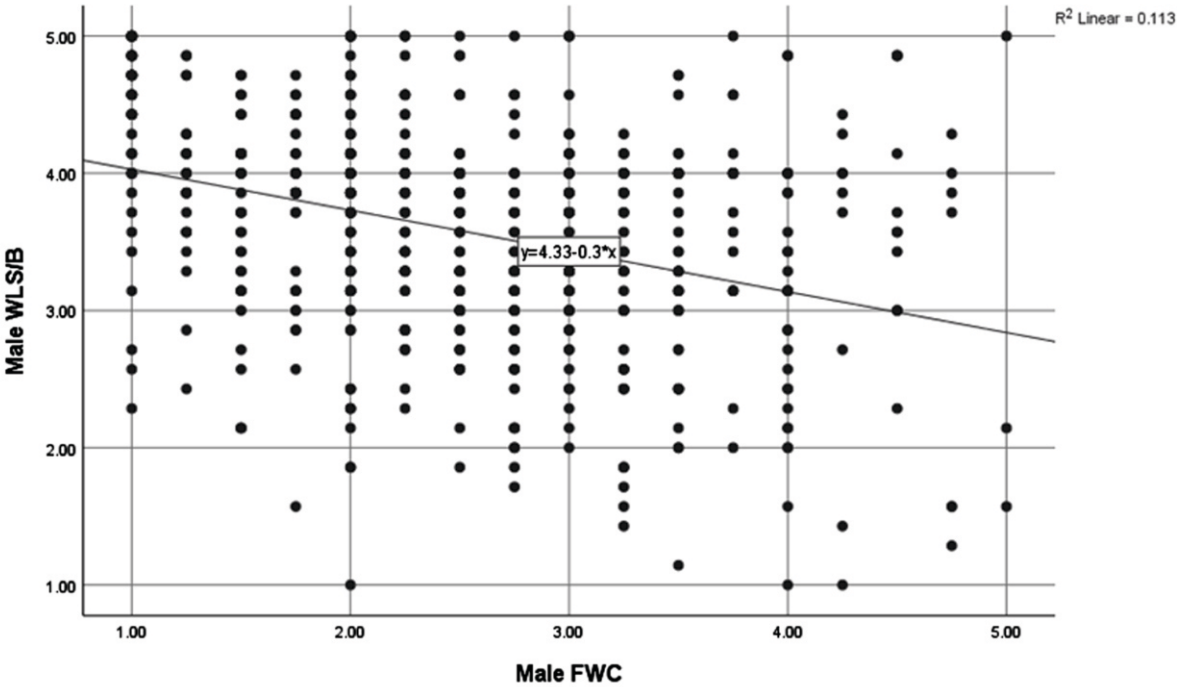

Figure 7: Scatter plot of predictor 'Male FWC' (x-axis) with 'Male WLS' (y-axis)

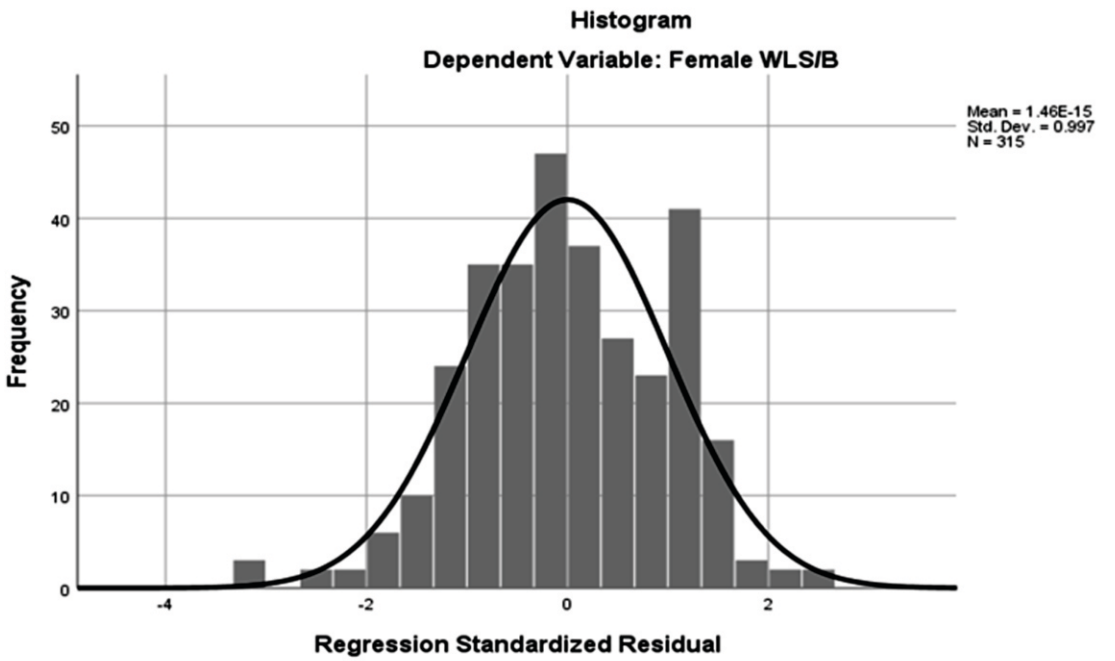

Figure 8: Residual Histogram of Female Faculty WLS

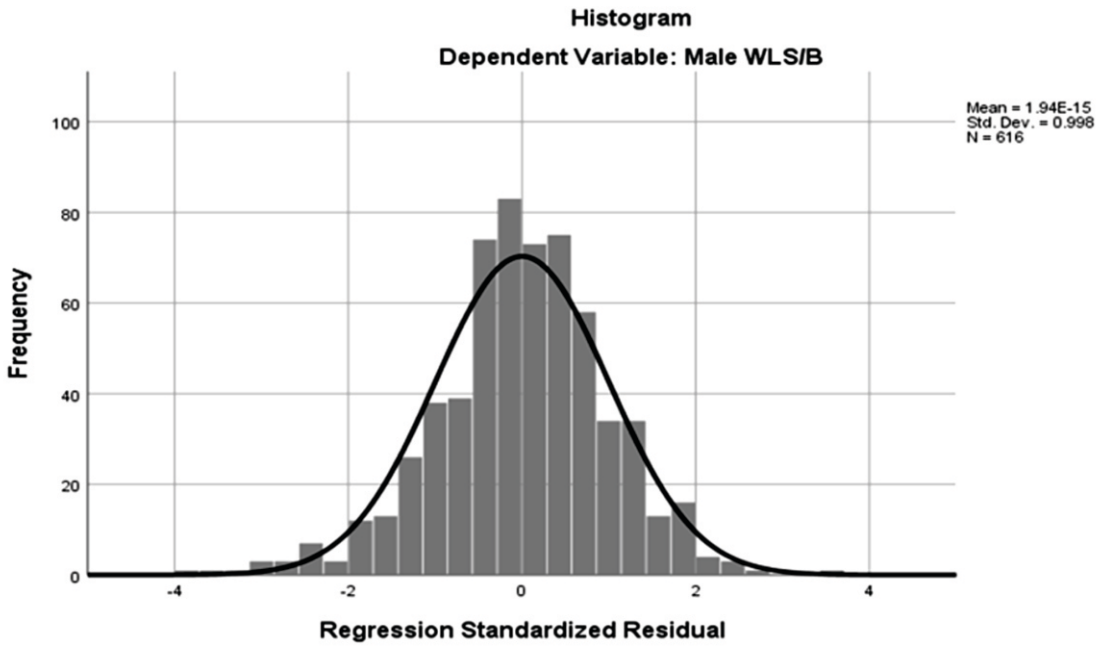

Figure 9: Residual Histogram of Male Faculty WLS

Table 13: Pearson correlations* between WLS variables of female and male faculty

Group A		WLS	SWLS	WFC	FWC
Female faculty (N=315)	WLS	1.000	.568	-.507	-.323
	SWLS	.568	1.000	-.341	-.151
	WFC	-.507	-.341	1.000	.553
	FWC	-.323	-.151	.553	1.000
Male (N=616)	WLS	1.000	.598	-.568	-.337
	SWLS	.598	1.000	-.381	-.215
	WFC	-.568	-.381	1.000	.592
	FWC	-.337	-.215	.592	1.000

*$P \leq 0.01$ Sig. (1-tailed)

In Group A, the study tests two models for WLS of female and male faculty, but it presents only Model 2 with the two variables viz. SWLS and WFC that entered the final equations. The multiple correlations (R) .658, .702 show a considerable association between the predictors and the criterion variable. Further, 43% variance in female WLS and 49% variance in male WLS were explained jointly by SWLS and WFC (Table 14(a)). ANOVA (Sig. 0.000b) explains that Model 2 is a significant improvement in predicting female and male faculty WLS. Thus, coefficients SWLS and WFC are the significant predictors of female and male faculty WLS. These have a positive and negative impact on faculty WLS, respectively (Table 14(b)). This outcome partially supports $H2_A$. Thus, in general, FWC is not a predictor of faculty WLS. Effect sizes are large (female range: 0.48-1.17; male range: 0.72-1.30) and statistically powerful (see Table 5 above). Further, the two variables SWLS and WFC exert the same kind of impact on the faculty WLS of both genders (see Table 6 above). It implies that the WLS of the faculty (female and male) increases with the 'support for WLS' and decreases due to WFC.

Table 14: WLS models of female and male faculty

(a) Model Summary[a]

Group A	Model	R	R Square	Adj. R Square	Std. Error of the Estimate	Fisher *z*-transformation
Female faculty (F=119.418)[@]	2	.658[b]	.434	.430	.58594	Z=-1.18, *p*=.23
Male faculty (F=297.705)[@]	2	.702[b]	.493	.491	.58549	

[@]ANOVA: Sig. 0.000[b]
a. Dependent Variable: WLS
b. Predictors: (Constant), SWLS, WFC

(b) Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
Group A	Model		B	Std. Error	Beta	t	Sig.
Female faculty	2	(Constant)	2.651	.263		10.095	.000
		SWLS	.500	.051	.447	9.856	.000
		WFC	-.328	.042	-.355	-7.835	.000
Male faculty	2	(Constant)	2.886	.172		16.736	.000
		SWLS	.471	.033	.447	14.353	.000
		WFC	-.366	.029	-.397	-12.770	.000

a. Dependent Variable: WLS

In Group B also, two models were tested for WLS of JF-Female, JF-Male, and NF-Male faculty. But, only Model 2 is presented with the two variables (SWLS and WFC) which entered the final equations. Interestingly, three models were tested for WLS of NF-Female faculty, and Model 3 is considered decisive, as all the three study variables entered the final equation in this Model. The multiple correlations (R) .612, .696, .698, and .708 indicate a substantial degree of association between the predictor (experimental) variables and the criterion variable. Further, 36% variance in JF-female faculty WLS, 48% variance in JF-male faculty WLS, 48% variance in NF-female faculty WLS, and 50% variance in NF-male faculty WLS was explained by the respective variables entered into each model. In predicting faculty WLS, ANOVA explains that Model 3 is a significant improvement for NF-female faculty and for the remaining three groups, Model 2 is a significant improvement (Table 15(a)). Thus, all three experimental variables (SWLS, WFC, and FWC) are significant predictors of NF-female faculty WLS upholding $H2_A$. However, for the remaining three groups under study, only SWLS and WFC were significant predictors partly supporting $H2_A$. Wherever applicable, SWLS has a significant positive impact and, both WFC and FWC have a significant negative impact on faculty WLS (Table 15(b)). Further, the effect sizes of WLS models ranging from 0.24-1.21 (JF-female), 0.59-1.48 (JF-male), 0.55-1.61 (NF-female) and 0.68-1.48 (NF-male) respectively, are almost large and statistically powerful (see Table 5 above). Besides, the resulting variables exert the same degree of influence on faculty WLS across divergent Models, irrespective of the family status (see Table 6 above). Thus, the WLS of NF-female faculty increases with the 'support for WLS' and decreases owing to both 'WFC' and 'FWC'. But, the WLS of the remaining faculty groups increases with 'SWLS' and decreases with WFC, but not FWC. Here, it is evident that both JF-female and male faculty are not experiencing FWC. There is a common belief that in joint families elderly support is available for working people. But in nuclear families, successors do not have elders. So is the support for WLS. Perhaps, NF-female faculty in this study might belong to a family system of dual-career couples with kids who need regular parental attention. Thus, in the absence of elderly support, females in the dual-career NF- system have to play dual roles meticulously, entailing them to effectively balance their work-life domains. Earlier, Parasuraman and Simmers (2001) also identified that women are predisposed to family commitments and expend additional time with their families. Similarly, Young (2015) recognised that work-family conflict (WFC and FWC) is largely associated with the dual-career couples in the NF-system having young children. Besides, Joplin et al. (2003) viewed that demands and support in the family domain vary in different family structures.

Table 15: WLS models of joint (JF) and nuclear families (NF) based faculty

(a) Model Summary[a]

Group B	Model	R	R Square	Adj. R Square	Std. Error of the Estimate	Fisher *z*-transformation
JF-Female (F=35.275)[@]	2	.612[b]	.374	.364	.54900	Z=-1.33, *p*=.18
JF-Male (F=122.448)[@]	2	.696[b]	.485	.481	.60683	
NF-Female (F=60.189)[@]	3	.698[c]	.487	.479	.59686	Z=-0.22, *p*=.82
NF-Male (F=175.436)[@]	2	.708[b]	.501	.498	.56805	

[@]ANOVA: Sig. 0.000[b]
a. Dependent Variable: WLS
b. Predictors: (Constant), SWLS, WFC
c. Predictors: (Constant), SWLS, WFC, FWC

(b) Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
Group B	Model		B	Std. Error	Beta	t	Sig.
JF-Female	2	(Constant)	3.314	.369		8.981	.000
		WFC	-.348	.061	-.431	-5.742	.000
		SWLS	.345	.076	.343	4.568	.000
JF-Male	2	(Constant)	2.808	.256		10.982	.000
		SWLS	.482	.048	.471	10.043	.000
		WFC	-.372	.045	-.385	-8.195	.000
NF-Female	3	(Constant)	2.185	.363		6.027	.000
		SWLS	.616	.068	.516	9.093	.000
		WFC	-.237	.064	-.239	-3.684	.000
		FWC	**-.120**	**.060**	**-.120**	**-1.989**	**.048**
NF-Male	2	(Constant)	2.932	.235		12.453	.000
		SWLS	.464	.045	.430	10.254	.000
		WFC	-.359	.037	-.405	-9.657	.000

a. Dependent Variable: WLS

In Group C, the present study tests two models for WLS of married and unmarried faculty of both genders and presented only Model 2 with the two variables (SWLS and WFC) entered the final equations. The multiple correlations (R) .650, .726, .699, and .599 for all the Group C Models reveal a significant association between the predictors and the criterion variable. Further, 42% variance in Married-Female (MF) faculty WLS, 53% variance in Married-Male (MM) faculty WLS, 47% variance in Unmarried-Female (UMF) faculty WLS, and 35% variance in Unmarried-Male (UMM) faculty WLS were explained jointly by SWLS and WFC. ANOVA explains that for all the four Group C respondents, Model 2 is a significant improvement in predicting WLS (Table 16(a)). Thus, in Group C, the coefficients SWLS and WFC are significant predictors of faculty WLS. Further, these predictors have a significant positive and negative impact on faculty WLS (Table 16(b)), partly upholding $H2_A$. Effect sizes of WLS models in this Group ranging from 0.43-1.18 (MF), 0.80-1.55 (MM), 0.35-2.50(UMF) and 0.24-1.07 (UMM) are also statistically powerful (see Table 5 above). Besides, the predictor variables have the same effect on the WLS Models of both genders irrespective of the marital status (see Table 6 above). Thus, WLS of married and unmarried faculty of both genders increases with the 'support for WLS' and decreases due to WFC.

Table 16: WLS models of married (M) and unmarried (U) faculty

(a) Model Summary[a]

Group C	Model	R	R Square	Adj. R Square	Std. Error of the Estimate	Fisher *z*-transformation
M-Female (F=91.734)[@]	2	.650[b]	.422	.418	.57637	Z=-1.85, *p*=.06
M-Male (F=258.803)[@]	2	.726[b]	.527	.525	.56996	
U-Female (F=27.705)[@]	2	.699[b]	.489	.471	.62820	Z=1.12, *p*=.26
U-Male (F=40.552)[@]	2	.599[b]	.359	.350	.62885	

[@]ANOVA: Sig. 0.000[b]

a. Dependent Variable: WLS

b. Predictors: (Constant), SWLS, WFC

(b) Coefficients[a]

Group C	Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
M-Female	2	(Constant)	2.509	.293		8.554	.000
		SWLS	.512	.057	.461	9.019	.000
		WFC	-.297	.046	-.327	-6.406	.000
M-Male	2	(Constant)	2.998	.197		15.205	.000
		SWLS	.459	.037	.439	12.421	.000
		WFC	-.379	.032	-.420	-11.877	.000
U-Female	2	(Constant)	3.158	.595		5.304	.000
		WFC	-.446	.098	-.453	-4.560	.000
		SWLS	.467	.115	.403	4.057	.000
U-Male	2	(Constant)	2.645	.354		7.465	.000
		SWLS	.476	.073	.442	6.527	.000
		WFC	-.319	.065	-.332	-4.907	.000

a. Dependent Variable: WLS

6. Conclusions

The present research recognises that work-life satisfaction in academia is gender different. Scott (2001) identified that men experience less difficulty than women in combining work and family responsibilities. It implies that relatively men have significantly higher levels of WLS than women. (Beutell & Wittig, 1999). Contrary to this, the present study (comparative analysis) identifies that male faculty have a relatively lesser degree of SWLS and a greater degree of FWC. However, this finding is in conjunction with Hammer et al. (1997), who stated that men have higher family responsibilities than women. Besides, predictive analysis discovers that SWLS and WFC are the factors influencing WLS of female, male, married, unmarried, and joint family faculty. Thus, in general, FWC is not a predictor of faculty WLS of both genders, including NF-male faculty (Figure 10a). Earlier too, Gutek et al. (1991), Williams and Alliger (1994), and Frone (2003, p.149) found that WFC arises more commonly than FWC, and its impact is more than FWC. Further, Noor (2002) and Cristian and Rodney (2011) examined that WFC was strongly correlated to job stress and negatively to job satisfaction. Indeed, work is not everything. Its effect should be minimal on any individual's life. Life is meaningful when people have social dealings, entertainment, relief, and of course fitness. But in reality, the reverse is true. Work is more overriding and stressful, causing professionals psychological dissatisfaction. These days, this tendency is more common in academia. There may be too much exploitation of faculty resources without any concern, keeping them away from these natural and essential social wants. This should be looked into with integrity by all the concerned stakeholders.

Differently, all three variables under study viz. SWLS, WFC, and FWC have been the predictors of the NF-female faculty WLS (Figure 10b). Research in Bangladesh among female teachers has proved that work interfering with family life and *vice versa* (Uddin et al., 2013). There may be a reciprocal effect between WFC and FWC in both these cases. Usually, professionals give priority to work-related obligations over family responsibilities. The present study reveals that NF-female faculty have two sides of responsibility. They might be playing more equally responsible roles in their work and life domains. Beforehand, Boles et al. (2001) also discovered that WFC and FWC predict job satisfaction, though WFC proved to be a better predictor than FWC. In the present context too, WFC seems to have more impact on WLS of NF-female faculty [2.185 + 0.616 (SWLS) - 0.237 (WFC) - 0.120 (FWC)], than FWC. Since, WFC is unavoidable as per the preceding finding and discussion, NF-female faculty must have more *support* (SWLS) than their male counterparts to minimise the effect of FWC on their WLS. Hence, in addition to various WLS policies and programmes like family-friendly work culture, management support for faculty WLS, flexible work schedules, and leaves, semester breaks, health support (e.g. establishing on campus fitness centres), etc. the present system should have a five-day work-week to enable faculty, particularly NF-female faculty, balance their work and personal life demands effectively (Kim, 2014; Miryala & Chiluka, 2012). Similarly, colleges located in remote areas have to plan and implement their daily class-work early to facilitate quick commuting of the faculty members to their places of living. This will help them spend more time with their families. It is also useful to establish full-fledged H.R. departments and conduct faculty WLS surveys periodically, to help managements identify reasons and remedies for faculty work-family conflicts and design faculty oriented WLS policies and programmes depending on the situation. Governments both at the Centre and State can also make 'WLS-spending' mandatory for reputed and autonomous institutions to help reduce faculty stress and work-life imbalance. They can make 'WLS-spending' a criterion in NAAC and NBA accreditations. Since this research has a geographical limitation, prospective researchers can reassess the present empirical model in other relevant Indian contexts and contribute their WLS ideas for the continuous improvement of quality in academics.

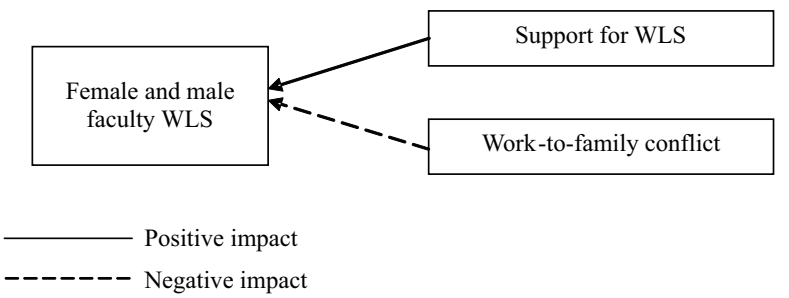

Figure 10a: Empirical model of female and male (except nuclear family female) faculty WLS

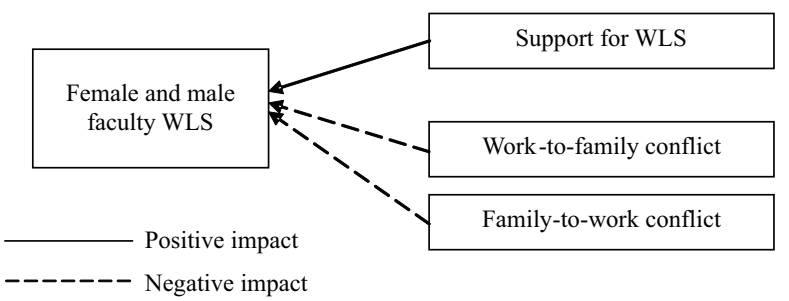

Figure 10b: Empirical model of nuclear family female faculty WLS

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Linkage Between Ownership Structure and Firm's Financial Performance: An Empirical Analysis of Indian Software Companies

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Abstract

The study investigated the impact of ownership structure on the financial performance of 32 Indian software companies. Promoter ownership, financial institutional ownership and foreign institutional investors ownership are used as ownership structure variables. Return on assets, return on equity and Tobin's Q are used as performance measures. Results found that promoters ownership has a positive and insignificant impact on firm performance. It is also found that foreign institutional investors have a positive and significant influence on the firm market and accounting value. The study's results draw the interest of company shareholders and policymakers to learn more about the role of ownership structure in improving a company's performance. They can also be used by policymakers and regulatory bodies to develop good corporate governance practices that will improve a company's profitability and market value.

Keywords: *Financial performance, Indian software sector, Corporate governance, Ownership structure, Promoter ownership, Foreign institutional investors, Tobin's Q*

1. Introduction

The concept of corporate governance (CG) emerged largely after economic liberalisation and market deregulation, as well as industry liberalisation (Panchasara, 2016). Corporate governance is a system of rules and regulations that direct and control businesses. Literature has shown that the growth and development of modern businesses depend on good corporate governance practices being introduced. By applying good CG practices in all respects, a business may become a leading company. Good corporate governance practices enable a business to accomplish its targets, preserve and maximise the value of shareholders and satisfy all legal requirements. A country can develop its capital market and build up a favourable environment for investors through a good CG structure. It also helps to get capital at a low cost from domestic as well as foreign investors. Moreover, it promotes transparency, fairness and accountability in the functions of an organisation and ensures that investors receive a fair return on their investment (Manna et al., 2016).

In emerging markets, corporate governance policies have been found to be associated with firm success (Klapper & Love, 2004; Gibson, 2003; Arora & Sharma, 2016 and Young et al., 2008). "If a country does not have a reputation for strong corporate governance practices, capital will flow elsewhere. If investors are not confident with the level of disclosure, capital will flow elsewhere. If a country opts for lax accounting and reporting standards, capital will flow elsewhere."- Arthur Levitt (Former Chairperson: US Securities Exchange Commission). The Indian market reforms of 1991 opened the door to foreign investment in the Indian economy. Which results in the need for a good Indian CG structure similar to the structure of western governance (Jackling & Johl, 2009). One of the elements of market reform in India, liberalisation, has led to the need for capital to fund the expended market space created by foreigners. The need for capital has led to reforms of the CG and significant steps in this direction. Clause 49 of the Independent Director's Listing Agreement, adopted by SEBI (Securities and Exchange Board of India), was the first step toward corporate governance. With the passage of the Companies Act (2013), corporate governance became mandatory.

The central issue of governance in established (Anglo-American) economies is to discipline management that can stop being accountable to the widely dispersed shareholders. In India, however, the dominant and majority shareholders need to be disciplined to protect the interests of minority shareholders. In general, Indian businesses are affected by the ownership of the promoter, with or without a big stake (Pande & Ansari, 2013). This poses a significant corporate governance problem in India (Varma, 1997). To address this problem, the Indian economy is moving towards the Anglo-American economy's corporate governance system, which considers that shareholders are more relevant than stakeholders. Therefore, it is important to analyse the utility of this model of CG in the Indian economy. This study considers three ownership structure variables such as: ownership of promoters, institutional ownership, foreign institutional ownership and three variables to measure the firm's financial performance such as: ROA, ROE and Tobin's Q.

The Indian software industry is well-known around the world for providing competitive information technology and solutions to a wide range of business issues. In 1955, the "Computer Usage Company" became the first company in the world to provide software services. Every year the Indian software industry contributes almost 60% to the Indian economy's growth. The Indian software sector currently serves more than 95 countries through the provision of IT services (Indian Software Market). It is important to have more clarity and improvement in Indian CG practises in terms of ownership structure due to the importance of the software industry in order to make this sector competitive in the domestic as well as global market. The current study, therefore, investigates the impact of a company's ownership structure on its financial results in India, after taking into account 32 software firms with 224 observations from 2011-2018.

2. Literature Review

The structure of ownership is the most significant determinant of CG. Morck et al., 1988; Thomson and Pederson, 2000; Wei et al., 2005 and Dwivedi and Jain, 2000 indicate that a company's success or failure is primarily determined by the structure of ownership. According to Jensen and Meckling (1976) ownership structure is a commitment of capital that involves directors or managers (inside investors) and equity or debt holders (outside investors). Saleh et al. (2017) defined ownership structure by the distribution of shares and by shareholder's identity

having voting rights and capital. While Bansal (2005) provided that a committee of individuals, groups and institutions having different objectives, interest, goals and investment horizons are termed as ownership structure.

Various theoretical models are developed in order to examine how the performance of the firm is influenced by ownership structure. The most common approach of ownership structure "Agency Theory", developed by Jensen and Mackling (1976) suggest that firm management and ownership should be separated as company's management is done by managers on behalf of shareholders. Managers are only shareholder's agents. Agency theory focuses on two types of disputes that are disputes between managers and shareholders and between bondholders and shareholders (Jensen & Mackling, 1976).

Donaldson and Davis (1991) introduced "Stewardship Theory" to study the existing association between management and ownership of the firm. Patoriza and Arino (2008) found this theory opposite of "Agency Theory". Bathula (2008) depicted managers and directors as stewards of the firm. Such stewards being the experts and decision-makers, protect their integrity by handling the business in a way which increases the financial returns of the shareholders which directly impacts the perception of managers performance as an individual.

Cyert and March (1963) initiated "Transaction cost theory" to examine how the different types of costs associated with different types of actions by a firm impacts its behaviour. And "Principal Agent Theory" considers the disputes between management and shareholders which arise due to the divergence of agendas of management and shareholders, specifically their control and cash flow right (Chen, 2012). This theory gives the first priority to profit maximisation followed by utility maximisation where such conflicts arise between them.

2.1 Research on Ownership Structure

Several studies have been conducted to examine the impact of ownership structure on firm performance such as Dwivedi and Jain (2005) who carried out a study on 340 Indian firms from 1997-2001 and found that it is the foreign shareholding that increases the market performance of the firm, while Indian institutional investors do not have any significant relation with firm's performance. The study also concluded that public shareholdings have negative addition to the value of the firm. Demsetz (1983) provided that a change in ownership structure does not change the performance of the firm. Kao, Hodgkinson and Jaafar (2019) found that institutional ownership, blockholders ownership, family ownership and foreign ownership all are positively associated with profits of Taiwan listed firms. Shleifer and Vishny (1986) and Agrawal and Mandelker (1990) showed that price of the firm's share increases with the increasing percentage of shares held by the largest shareholders. Their findings argued that a firm's performance and ownership concentration are positively related.

Hermalin and Weisbach (1991) investigated the effect of managerial ownership on Tobin's Q of the firm and found that a positive and significant relationship exists when percentage of shareholding of management is between 0-1% followed by a decreasing percent and significant relation between 1-5%, which further increases when shareholding increases to 5-20% and beyond this percentage, managerial shareholding has negative addition in Tobin's Q. Mueller et al. (2003) and Shyu (2013), on the other hand, found that managerial ownership is positively correlated with firm return. Similar results are provided by Tawfeeq and Alabdullah (2017). Cosh and Hughes (1997) have failed to find any significant impact of institutional ownership on pay sensitivity.

Mcknight and Weir (2009) provided that board ownership is important in lowering the agency cost which results in bettering the firm's performance. A study conducted by Cheng et al. (2015) in China, suggest that executive compensation has a favourable association with family ownership which is inversely related to a firm's success. Amran and Ayoib (2013) found that family ownership increases the firm's ROA and ROE which represents the firm's performance. Wiranata and Yaterina (2013) investigated the impact of institutional, family and government ownership on the profitability of firms and discovered that only foreign ownership has a substantial positive impact on a firm's profits. Yeh (2018) studied the impact of institutional shareholding, ownership discrepancy and cash flow rights of controlling owners on the performance of tourism listed firms. The findings showed that the use of institutional shareholding and cash flow rights of shareholders increases the firm's returns while ownership discrepancy negatively impacts the firm's returns.

Wei et al. (2005) studied China's partially privatized firms for the time period 1991-2001. The study analysed the relationship of institutional and state ownership with the firm's market value measures Tobin's Q. The results of the study showed that both state and institutional have convex and significant relation with Tobin's Q. Caves (1996) provided that corporate ownership results in the transfer of knowledge which led to the generation of more value for the firm. Laporsek, Dolenc, Grum and Stubelj (2021) provided that ownership concentration plays no role in affecting the profits of Slovenian joint stock companies.

3. Development of Hypotheses

3.1 Promoters ownership

Two theories proposed the relationship of promoter's ownership (insider ownership) with the performance of the firm. Convergent of interest hypothesis (Hudson et al. 1992; Chang, 2003, Jensen & Meckling, 1976) provides that when the stake of insiders increased, their interest would merge with value creation activities for the company. Contrary to this, the conflict of interest hypothesis (Fan & Wong, 2002 and Jensen & Ruback, 1983) provides that with the increasing stake insiders would extract more benefits compare to their proportional share. On the basis of these two-hypotheses following hypothesis is generated:

$\mathbf{H_{01}}$: There is no significant relationship between promoter's ownership and performance of Indian software companies.

3.2 Financial institutional ownership

Three hypotheses provide the relationship between institutional ownership and performance of the firm. The efficient monitoring hypothesis (McConnell & Servaes, 1990) says that institutional investors are experts and better monitor the managers' behaviour which creates a positive relationship of institutional investor with the firm's performance. The conflict of interest hypothesis (Fan & Wong, 2002) says that institutional investors have a short investment horizon as compared to other shareholders, accordingly their time horizon of value creation varies which leads to a negative link between institutional ownership and a firm's performance. Another hypothesis strategic alignment (Barnhart & Rosenstein, 1998) propounded that investments of institutional investors are for short term gains which leads to a negative relationship of institutional ownership with firm performance. On the basis of these studies, the following hypothesis is developed:

$\mathbf{H_{02}}$: There is no significant relationship between financial institutional ownership and the performance of Indian software companies.

3.3 Foreign institutional investors ownership (FIIs)

In the words of Douma et al. (2006) FIIs improved firm performance because the funds invested by them is from developed countries and apply their own corporate governance standards. Barbosa et al. (2003) say that foreign ownership does not play any role in increasing the performance of multinational corporations. On this basis, the following hypothesis is developed:

$\mathbf{H_{03}}$: There is no significant relationship between foreign institutional investors ownership and the performance of Indian software companies.

4. Research Methodology

4.1 Data collection

To examine the impact of a firm's ownership structure on its results, we carried out a content study on Indian software firms for the time period 2011-2018. The data for the study is collected from the Prowess database, which is maintained by CMIE (Centre for Monitoring Indian Economy) and from the corporate governance reports and annual reports of the companies. A total of 32 Indian software companies were chosen for the study out of a total of 153. The unavailability of the necessary data resulted in the exclusion of 121 firms.

4.2 Dependent variables

Both market-based and accounting-based measures are used to analyse the financial performance of the Indian software firms. Accountancy-based measure ROA and ROE, as well as market-based metrics Tobin's Q is used to assess a company's efficiency (Bansal & Singh, 2021).

ROA is measured as:

ROA = Operating profit / Total assets

ROE is measured as:

ROE= Net Profit / Equity Capital

Tobin's Q is measured as:

Tobin's Q = Market capitalisation + Total borrowings of the firms / Book value of Total assets

4.3 Independent variables

This study used the following independent variables

Promoters ownership = shares held by promoters / Total shares of the company.

Financial institutional ownership (INS) = shares held by (mutual funds & UTI + banks & financial institutions + insurance company) / Total shares of the company.

Foreign institutional investors ownership (FII)= shares held by foreign institutions / Total shares of the company.

4.4 Control variables

The control variables in this study are DER (Debt Equity Ratio), Firm age, and Firm size.

DER is a representation of a company's leverage and is measured as follows:

DER = Total debt / Total equity

Firm age is calculated by taking the log of the total number of years between the year of observation and the year of incorporation.

Firm size is calculated as a log of the company's total assets over the years in study.

4.5 Empirical Analysis Model

The impact of ownership structure on a software company's output is examined using a panel regression model based on panel data. The following regression equations are constructed to analyse the study's findings and to evaluate all of the hypotheses:

$$ROA_{it} = \alpha_{it+}\beta_1 PO_{it} + \beta_2 FI_{it} + \beta_3 FII_{it} + \beta_4 DER + \beta_5 AGE + \beta_6 SIZE + €_{it}.$$

$$ROE_{it} = \alpha_{it+}\beta_1 PO_{it} + \beta_2 FI_{it} + \beta_3 FII_{it} + \beta_4 DER + \beta_5 AGE + \beta_6 SIZE + €_{it}.$$

$$Tq_{it} = \alpha_{it+}\beta_1 PO_{it} + \beta_2 FI_{it} + \beta_3 FII_{it} + \beta_4 DER + \beta_5 AGE + \beta_6 SIZE + €_{it}.$$

5. Discussion of Findings

The descriptive statistics has been shown in Table 1. From this table, it is found out that promoter's ownership (PO) has major stakeholding with a minimum and maximum value ranging from (0.170) to (80.360) and average value (39.212). Out of financial institutional (INS) and foreign institutional investor (FII) ownership, FII shows high variation having minimum and maximum value of (0.00) to (51.650). Which shows that FII has high controlling stakes. Leverage in the form of DER has an average value of (0.367), which implies that sampled firms use more of equity and owned funds instead of debt funds for their capital requirement. The minimum age of company in the sample is (2.197) which means some of the firms are newly established. Return on assets (ROA) and return on equity (ROE) also show wide variations. Tobin's Q has a mean value (1.928) which entails that the market success of most of the firms sampled is low.

Table 1: Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
PO	0.170	80.360	39.212	21.061
INS	0.010	25.540	6.111	5.498
FII	0.000	51.650	15.064	12.872
DER	0.000	19.250	0.367	1.603
FA	2.197	4.290	3.247	0.364
FS	6.037	13.729	9.637	1.802
ROA	-61.160	37.530	8.997	11.171
ROE	-63.110	49.510	11.938	18.107
TQ	0.047	7.853	1.928	1.723

5.1 Correlation analysis

The findings of the correlation analysis is provided in Table 2. From the table, it is found that promoters ownership has a positive and significant relationship with return on assets, return on equity and Tobin's Q having coefficient value (0.404), (0.454) and (0.451) which supports the fact that if in a firm, the promoter has more ownership stake, it will positively increase the performance of the firm. Financial institutional ownership has a positive and significant association with return on equity and Tobin's Q. Foreign institutional investor ownership is found to be positively and significantly related with all three performance measures variables return on assets (0.429), return on equity (0.417) and Tobin's Q (0.330) at 1% level of significance.

Table 2: Correlation matrix

	PO	INS	FII	DER	FA	FS	ROA	ROE	TQ
PO	1.000								
INS	-0.155*	1.000							
FII	-0.104	0.506**	1.000						
DER	-0.213**	-0.140*	-0.193**	1.000					
FA	0.439**	0.110	-0.001	-0.016	1.000				
FS	0.347**	0.293**	0.512**	-0.007	0.431**	1.000			
ROA	0.404**	.0126	0.429**	-0.210**	0.216**	0.514**	1.000		
ROE	0.454**	0.136*	0.417**	-0.505**	0.195**	0.420**	0.897**	1.000	
TQ	0.451**	0.144*	0.330**	-0.155*	0.344**	0.535**	0.737**	0.676**	1.000

**. Correlation is significant at 1% level

*. Correlation is significant at 5% level

5.2 Checking the stationarity of data

Before applying the regression model, it is found out whether the data is stationary or have an influence of time-series. Levin, Lin and Chu unit root test is used to check the stationarity of the data. According to Levin, Lin and Chu test.

H_0 (Null Hypothesis): If p>0.05, data has unit root, data is non stationary.

The results of the test are presented in Table 3. From this table, it is found that all variables are significant at 1% as the p-value is zero. Therefore, the null hypothesis of unit root is rejected. Hence, the data is stationary.

Table 3: Levin, Lin & Chu unit root test

Variables	Test-statistics (at level)	p-values
PO	-64.541**	0.000
INS	-249.699**	0.000
FII	-14.540**	0.000
DER	-49.978**	0.000
FA	-15.392**	0.000
FS	-6.371**	0.000
ROA	-12.525**	0.000
ROE	-15.374**	0.000
	-9.288**	0.000

Note: ** denotes a significant value at 1% level.

5.3 Results of panel regression analysis

Table 4 provides the results of regression analysis when ROA is considered as a dependent variable. Due to panel nature of data, both fixed and random effect model is used. Hausman specification test helped in selecting the true model out of both fixed and random effect. The value of adjusted R^2 is 0.115 which implies that the return on assets is changed by 11.5% because of independent variables. This means, independent variables do not explain a lot of variance in the dependent variable that is the return on assets. Results of the Hausman specification test provided an insignificant value (8.664) which means that the random effect model is more fit to be used. Value of F-statistics (5.147) is significant at a 1% significant level having a p-value of 0.0000, which shows a linear relationship between the independent variable and return on assets. Out of all the variables of ownership structure, only FII (foreign institutional investors) (0.230) have a positive and significant impact on the return of assets of the company. Which means that the investment of foreign shareholders and their ownership rights help a firm to generate more profits. The reason being that foreign shareholders belong to developed countries and have good knowledge of market and corporate governance practices. Size (1.421) of the firm has a positive and significant impact on return on assets. If a firm increases 10% in size it will correspondingly increase 1.421% in profits. Return on assets is negatively and insignificantly explained by DER (Debt Equity Ratio) and firm age.

Table 4: When the dependent variable is ROA, regression occurs

	Fixed effect	Random effect
Intercept	13.107	-14.581
	(0.591)	(-1.455)
PO	0.047	0.184
	(0.414)	(2.992)
INS	-0.243	-0.114
	(-1.412)	(-0.797)
FII	0.117	0.230**
	(1.142)	(2.978)
DER	0.080	-0.078
	(0.181)	(-0.191)
SIZE	-1.209	1.421***
	(-0.675)	(1.797)
AGE	1.497	-0.185
	(0.281)	(-0.059)
Adjusted R^2	0.649	0.115
F statistic	11.880**	5.147**
Hausman test	$X^2(7) = 8.664$	

Note: **, *, and *** denotes significance levels of 1, 5, and 10%, respectively. The t-statistics values are in parenthesis.

Table 5 provides the results of regression analysis when ROE is considered as the dependent variable. It has been found out from the table that adjusted R^2 is 0.715 which means a 71.5% change in return on equity occurs due to independent variables. The value of the Hausman test is (17.252) which is significant at a 1% level of significance, which implies that the fixed effect model is more fit to be used. The value of F-statistics (15.783) is significant which shows a linear relationship between return on equity and independent variables. From the table, it is found out that all

three variables of ownership structure do not have any significant relationship with return on equity. These results are supported by Gugnani, 2013. Financial institutional ownership has a negative impact on return on equity having a coefficient value of -0.339 which shows that if a firm has more institutional investors, their ownership leads to a negative change in return on equity. Change of 1% in Debt equity ratio (DER) correspondingly changes 1.722% in return on equity but the change is negative. Firm size (-3.192) and firm age (-0.620) have a negative effect on a firm's return on equity.

Table 5: When the dependent variable is ROE, regression occurs

	Fixed effect	Random effect
Intercept	37.538	-15.251
	(1.160)	(-1.119)
PO	0.136	0.355**
	(0.807)	(4.20)
INS	-0.339	-0.115
	(-1.350)	(-0.563)
FII	0.236	0.416**
	(1.567)	(3.832)
DER	-1.772**	-2.535**
	(-2.727)	(-4.300)
SIZE	-3.192	1.083
	(-1.222)	(1.013)
AGE	-0.620	-0.855
	(-0.079)	(-0.199)
Adjusted R^2	0.715	0.229
F statistic	15.783**	10.501**
Hausman test	X^2 (7) = 17.252**	

Note: **, *, and *** denotes significance levels of 1, 5, and 10%, respectively. The t-statistics values are in parenthesis.

Source: Author's Analysis

Table 6 provides the results of regression analysis with Tobin's Q as the dependent variable. This table shows that adjusted R^2 is 0.805 which entails that an 80.5% change in Tobin's Q occurs due to change in independent variables which is good enough. Results of the Hausman test shows (19.614) significant value which implies that the fixed effect model is more appropriate to be used. F-statistics (25.275) is significant at 1% level. This indicates that the dependent and independent variables have a linear relationship. All three variables of ownership structure promoter's ownership (PO), financial institutional ownership (INS) and foreign institutional investors ownership (FII) having coefficient value (0.056), (0.010) and (0.053) have a positive impact on firm's Tobin's Q. But only PO and FII have a significant impact. Similar results are concluded by Dwivedi and Jain, 2005 and Mishra and Kapil, 2017. Debt equity ratio (DER) and firm's size have a negative impact on Tobin's Q, coefficient values being (-0.006) and (-0.160) which means that change in these variables will have a negative change in Tobin's Q. Firm size (3.915) has a positive impact on firm's Tobin's Q but the impact is not significant.

Table 6: When the dependent variable is Tobin's Q, regression occurs

	Fixed effect	Random effect
Intercept	-12.443**	-7.677**
	(-4.881)	(-4.923)
PO	0.056**	0.037**
	(4.275)	(4.020)
INS	0.010	-0.002
	(0.508)	(-0.154)
FII	0.053**	0.043**
	(4.476)	(4.264)
DER	-0.006	0.006
	(-0.012)	(0.138)
SIZE	-0.160	0.007
	(-0.778)	(0.059)
AGE	3.915	2.259
	(6.399)	(4.856)
Adjusted R^2	0.805	0.212
F statistic	25.275**	9.605**
Hausman test	$X^2(7) = 19.614$**	

Note: **, *, and *** denotes significance levels of 1, 5, and 10%, respectively. The t-statistics values are in parenthesis.

6. Conclusion and Implications

This study explores the impact of the ownership structure on Indian software companies' financial performance. The study's findings showed that not all ownership structure variables have a strong relationship with Indian software sector performance measures. Ownership of promoters has a positive relationship with accounting measures such as ROA and ROE, but this relationship is not significant, although ownership of promoters significantly explains the software company's market value. Financial institutional ownership has a negative relation with performance measures, which shows that it is not a critical factor of the performance of the firm. Foreign institutional investors are found to have a positive and significant relationship with a firm's performance measures.

In order to extend good corporate governance practices throughout developed and developing economies, the results of the present study can be used. The results showed that financial institutional investors play a significant role in raising the success of the company, so it can be inferred that a software company can improve its performance by inviting more foreign investment. Our findings, however also indicate that institutional investors lead to a negative addition to the firm's valuation.

7. Limitations

Along with the contribution of the present study, there are some limitations also. To begin with, the analysis did not take into account other ownership structure variables such as government ownership, corporate ownership, and so on. Secondly, the study only looks at IT tech companies, limiting the analysis to this industry only. Further research could look at the entire IT industry, as well as other industries. Further study may consider complete IT sector and other sectors as well.

Table 7: Results of hypothesis testing

Serial no.	Hypothesis	Sign	ROA	Acceptance/ rejecton of hypothesis	ROE	Acceptance/ rejection of hypothesis	Tobin's Q	Acceptance/ rejection of hypothesis
H_{01}	There is no significant relationship between promoter's ownership and performance of Indian software companies.	+, -	Positive and insignificant	Accepted	Positive and insignificant	Accepted	Positive and significant	Rejected
H_{02}	There is no significant relationship between institutional ownership and performance of Indian software companies.	+, -	Negative and insignificant	Accepted	Negative and insignificant	Accepted	Positive and insignificant	Accepted
H_{03}	There is no significant relationship between foreign institutional ownership and performance of Indian software companies.	+, -	Positive and significant	Rejected	Positive and insignificant	Accepted	Positive and significant	Rejected

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Managing Flows and Risks in Supply Chains - A Page from Ancient Silk Route

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Abstract

Three flows – material flow, fund flow and information flow – define the reach of a supply chain to the customer. Each of these flows encounters different types of risks while fulfilling the objective of a supply chain. For the global supply chains of modern-day, flows are complex and risk perceptions are challenging. Technology aided information flows are critical for managing risks and sustaining supply chains. This study explores the theoretical aspects of flows and risks in modern-day supply chains and highlights the nature of flows in the ancient Silk Route trade. Further, it describes the nature of risks that the Silk Route trade encountered and their sources. This study explains the mitigation strategies pursued by the key actors of the Silk Route from time to time which facilitated its sixteen centuries-long sustenance.

Keywords: *Material flow, financial flow, information flow, risks, Ancient Silk Road, bullwhip effect, mitigation*

Introduction

A supply chain depicts all the activities associated with the procurement and flow of raw materials, the process of transformation, formation and flow of final goods and services to the end-user (Handfield & Nichols, 2002). The supply chain objective is set as serving the end consumer by delivering the right quantity of a product with the right quality at the right place, at the right time, at the right price, in the right condition, integrating activities of suppliers, manufacturers, transporters, warehouses, retailers, and end-customers involved (Li, 2014) by synchronised decisions and acts. According to Lambert (1988), any supply chain is the integration of three flows, namely- information flow, product flow and fund flow- between its connected players, adding value to the end-user. The Supply Chain Operations Reference (SCOR) model categorises material flow as the physical movement of products between suppliers and customers, financial flow as the flow of letters of credit, timely payment of bills, issues of bankruptcy, payment schedules, credit terms and suppliers' contract, and information flow as communication regarding order status, order delivery and inventory status which directly impact inventory control, production plans and delivery schedules. The other two flows are dependent on information flow. It keeps all the supply chain elements updated, and hence, information flow provides resources for decision making. Material flows and financial flows are aided and controlled by information flow (Sakli, 2014).

Logistics: Kotler et al. (2012) defines logistics as "Planning, implementing and controlling the physical flow of materials and finished goods from point of origin to point of use to meet customer`s need at a profit." The Council of Supply Chain Management Professionals (CSCMP) defines Logistics Management as "that part of SCM which plans, implements, and controls the flow and storage of goods, services and related information efficiently between the point of origin and the point of consumption in order to meet customer's requirements." Transportation and warehousing are the key elements in logistics.

Supply Chain Risks: Risk is defined as "an issue associated with negative consequences of impact" (Christopher & Lee, 2004). The structural and operational practices of supply chains make them vulnerable to risks. In a supply chain, risk may be associated with all the three flows namely, flow of materials, flow of information and flow of funds. Supply chain risk is a matter of concern because materialised risks may disrupt or hinder the transactions through the supply chain. Supply chain risks can be categorised as pertaining to the supply side or the demand side. The supply-side risk originates with the flow of raw materials, production and supply of finished goods and flow of information while the demand-side risk is linked to the flow of information about the product availability, demand and funds (Sakli, 2014).

1. Material flow risks*:* It is concerned with risks of physically moving materials within the supply chain, risk perspectives of which can be categorised as pertaining to stages of sourcing, making and delivering (Tang & Musa, 2011).

1a. Sourcing risks: The sourcing of materials for a supply chain has elements of risks associated with it. Sourcing risks are classified as single sourcing risks, sourcing flexibility risks, supplier selection and outsourcing risks, supply product monitoring/quality risks, and supply capacity risks. While single-sourcing brings in a high risk of supply disruption owing to the availability of a single supply source, flexible supplier sourcing brings in switching costs and risks, though it reduces supply disruption risks considerably (Kamrad & Siddique, 2004). Levary (2000) suggests that supplier selection criteria may be based on the reliability of suppliers, country risk, reliability of transporters and reliability of supplier's supplier. Global outsourcing is cost-driven but it brings in tax issues, currency exchange rate fluctuations, import and export duties, high logistics costs and suppliers' inspection costs into the picture with different elements of risks (Crone, 2006).

1b. Make risks: Product design and development risks, process design risk, manufacturing capacity risk, and disruption risks are matters of concern in the making stage. When suppliers are not involved in new product development, supplier capacity limitation forms a risk (Khan et al., 2008). Product and process design risks are also manifested in association with new product development and launch caused by an inability to make changes in the prevalent systems (Handfield et al., 1999). Production capacity risk, in general, emanates from issues related to technology, skill levels, quality and manufacturing capacity (Handfield et al., 1999). In addition to the above, operational disruption is a risk originating from the development of systemic contingencies, natural disasters and political upheavals (Kleindorfer & Saad, 2005).

1c. Delivery risks: These risks originate from volatility or seasonality of demand, unmet demand and surplus inventory. The excess inventory may bring in obsolescence risk caused by rapidly changing technology and short product life cycles (Narayanan & Raman, 2004).

2. Financial flow risks*:* It refers to the inability to settle payments or honour contracts. Price and cost risks may be due to fluctuations in the exchange rate and also due to non-availability of raw materials (Papadakis, 2006), fluctuating fortunes of participants in the supply chain (Peck et al., 2003) and changes in the practice of handling finances which are the main sources of financial flow risks.

3. Information flow risks*:* Among the three flows of a supply chain, information flow is the thread between material flow and financial flow. Information flow related to market demand, customer perceptions, stock position, product and process changes and capacity triggers value addition activities in the supply chain. It has a key role in ensuring that the right quantity of materials with the right quality and the right price reaches the right place at the right time. It is difficult to achieve effective and efficient supplies without a reliable, well-designed and enterprise-wide information system (Davenport & Brooks, 2004). EDI (Electronic Data Interchange), RFID (Radio Frequency Identification), and ERP (Enterprise Resource Planning) systems make the information flow fast and reliable. Information Technology effectively reduces the cycle time, inventories, possibilities of the bullwhip effect, and thus improves the performance of channels of distribution (Levary, 2000). The term 'bullwhip' denotes a large swing in supplies at one end of the supply chain caused by the perception of fluctuating consumer demand at the other end (Xun Wang, 2016).

The bullwhip effect is a risk caused by information distortions moving upstream from the demand centre (Fransoo, 2000). It is a demand amplification phenomenon in which minor fluctuations of demand generates larger variations in orders upstream and in inventory (Gilbert, 2005). The flow of authentic information shifts decision making from the realm of speculation to exactitude. Inadequate communication facilities, communication distortions, lengthy lead times and poorly documented contracts are few causes of information risks.

Managing risks in a supply chain: Supply Chain Risk Management (SCRM) is an evolving field of study with the objective of protecting the supply chains from risks that can adversely affect their performance and continuity (Khan & Burnes, 2007). SCRM is defined as the identification and evaluation of risks and possible losses in supply chains and the positioning strategies to mitigate them through coordinated action among supply chain members (Manuj & Mentzer, 2008). Three major elements dominate the definition of SCRM. They are risk identification, assessing the relationship between the source of risk and the supply chain and developing risk management strategies (Bandaly et al., 2012). A typical strategy for mitigation of risk will have the following flow chart for action before developing risk management strategies; Risk classification – identification of risk and its source - risk assessment and measurement.

1. Identification of risk pertaining to a supply chain is conceived to be a function of the characteristics of the industry and the perception of the manager about the risks (Juttner et al., 2003). Personal factors like emotions and mental dispositions of the manager influencing the identification of risk by him cannot be ruled out (Cohen & Kunreuther, 2007). The identification of risks may also be decided by objective factors like 'item, market and supplier risk characteristics' (Zsidisin, 2003).
2. Risk assessment identifies components of the chain that are most prone to risks and then projects the damage that can be caused by the occurrence of the undesirable event (Cohen & Kunreuther, 2007). Assessment of the identified risk has two main components, namely nature and impact of the impending outcome and probability of occurrence of this outcome (Moore, 1983). In short, risk assessment requires the evaluation of the probability of occurrence of an adverse event and the effect of its impact on the supply chain's performance (Chopra & Sodhi, 2004)
3. In risk measurement, that component that is most severely impacted by the risk is identified and the form of damage that it will be subjected to is estimated and projected from financial, operational and strategic angles.

The complexity of the current globalised structure of supply chain is considered a risk. Capabilities of supply chains for managing structural risks are affected if supply chains are not acquiring 'infrastructural' capabilities demanded by supply chain practices. Knemeyer et al. (2009) opined that modern-day global supply chains are exposed to a host of natural or man-made disasters owing not just to their physical spread but also because of the lower 'slack' in inventory caused by 'Just in Time' practices.

Information sharing is a capability that integrates the supply chain. Information sharing can significantly reduce the possibility of a 'bullwhip' effect by efficiently exchanging the actual demand data from the point-of-sales to the

multiple upstream suppliers. Eliminating distorted information makes the supply chain better prepared to respond to the changing market needs (Masson et al., 2007). Inventory in the supply chain insulates production function from fluctuations in market demand to a great extent. It also facilitates the producer to avail economies of scale and reduces the cost of production (Blanchard, 1983). The bullwhip effect can be reduced by other improvements such as reduction of lead time, revised reorder procedures, and integration of planning and the procedure for reorder (Lee et al., 1997a; 1997b). The establishment of a supply chain strategic alliance between the players is considered as a key element in the strategy to counter the bullwhip effect in modern-day supply chains. An alliance between a producer like Procter and Gamble and Walmart the seller is cited as an example of a strategy that effectively quelled the bullwhip effect (Jianhua Dai & Shibiao Li, 2016).

The above study summarises the various dimensions of risks in a supply chain and the importance assigned to managing risks. Risk management in supply chain is still an evolving field. Human progress is achieved through learning from history. It will be interesting to know about the elements of risks faced by the ancient Silk Route trade, heralded as one of the earliest inter-continental supply chains, and how they were mitigated by the collective efforts of producers, traders, rulers, slaves and transporters assisted and resisted by a whimsical nature on a continual time frame sustaining it for sixteen long centuries.

Silk Route: Established in B.C. 138 by the Han Dynasty of China, the 6500 km long Silk Route connected the East to Europe. The term 'Silk Route' was introduced by a German geographer - Ferdinand von Richthofen way back in 1877, which stood for a wide phenomenon of trans-Eurasian exchanges between ancient civilizations and nomadic societies spread over a vast region between Mediterranean Europe and Han China. A web of passages, it weaved its way through a great landmass comprising of Syria, Mesopotamia, the Arabian desert, Persia, the western Indian subcontinent, Afghanistan, Central Asia, Pamir, northern Tibet, the Gobi desert, and the plains of Han China (Millward, 2013). The Silk Road trade was the backbone of the most ancient of international supply chains which transhipped the most precious luxury goods and goods of high impact such as silk, gunpowder, gems, cotton, tea, rubies, satin, musk, jade, lacquer, diamonds, pearls, rhubarbs and spices through different modes of transport in land and water as available at that time (Boulnoise, 2008).

The Silk Route also represented a complex network of webs that facilitated the movement of social practices, religious beliefs, cultural systems, agricultural practices, scientific knowledge and languages across the region built around the underlying motive of trade. The trade trip was never continuous but was fractured. The caravans from the East carrying exquisite goods would rest in many market places developed around many oasis cities of Central Asia, Persia, or Syria after an arduous journey of 15 to 20 days for rest and refit. The goods could be picked on a relay by different teams to be carried to the empires on the Mediterranean coast or big cities in Europe.

The Silk Route was never static. It continuously evolved (Williams, 2015). The rise and fall of nations in its transit roads and the consequent changes in political equations, the climatic and seasonal differences in the expansive landmass through which it traversed, the changing religious, cultural and social beliefs and practices of the people involved - all fostered the ability of the Silk Route to adapt and survive. The Silk Route trade facilitated the growth of wealthy trading cities which supported the development of the infrastructure for production, transportation and distribution of different types of goods and methods to secure them. The trading cities like Kashgarh, Bukhara, Samarkhand, and Xinxiang became the hub of commodity and cultural exchange between the Greeks, Scythians, Chinese, Arabs and Indians. Later, as the navigational skills of the East improved, maritime silk routes developed connecting the East to India and to the Middle East across the Indian Ocean passing through many of its coastal states in the process. The trading materials in the sea route were different from those in the land route.

Logistics in the Silk Route: People seldom traversed the whole length of the Silk Route in a single stretch. The goods were transported by a series of roads and agents akin to the multi-agent, multimodal global supply chains of modern times. It was roughly estimated that the actual travel time for reaching end to end in the Silk Route was about 270 days, not considering delays attributed to inclement weather, other disruptions in the travel, and periods of rest and recoupment (Rossabi, 1990). But various sections in the trade route faced different kinds of difficulties in moving materials owing to climatic, infrastructural and resource availability related issues. Lead times were long and varied, posing severe challenges to the reliability and security of supplies. Caravans formed the backbone of the Silk Road trade and caravan-serais built along the Silk Route absorbed the supply shocks.

Features of silk route transportation: The topography of regions that the Silk Route covered was varied and so also were the climatic and ecological conditions. The physical and climatic zones of the long passage were very challenging and diverse which included mountains and valleys, grasslands and deserts, steppes and deltas (Waugh, 2008). The 'trans-ecological' nature of the routes was of major significance. Goods were transported on horses, donkeys or mules. Traders joined caravans to benefit from the safety of moving in groups and for availing economies of scale. Caravaneers gathered experience through frequent trade expeditions. Camels were used when the caravans were crossing the desert and in the colder regions in mountains yaks were used. They selected different types of animals to suit the geographic stage of the journey. The caravans carried goods in packs that weighed up to 200 pounds (Whitfeld, 1999). The quantity of goods carried and the pace of movement of different types of animals varied. While an Arabian camel could carry about 180 kg of silk, a mule carried about 150 kg and an ass could carry only 100 kg (Matthee, 1999). The pace of a Bactrian camel was about 2.5 miles per hour (Foltz, 1999) but they would warn the rest of the caravan about an impending sand storm. A camel in its prime commanded a price worth 14 bolts of silk. The availability of water, fodder, the temperature and the terrain decided the carrying capacity of a caravan.

Though Europe lies to the west of Asia, the Silk Roads moved zig-zag in the North-South direction often (T. Willamson, 2015). The political stability prevailing at that time in the region, the security perceptions of a specific route, climatic conditions and topography – all played their part in formulating a flexible transportation strategy along the Silk Route with respect to the path and mode.

The freight charges, customs charges and city tolls constituted the transportation costs. It fluctuated depending on the season, condition of the roads, travel time, type of animals used, availability of fodder, etc. (Matthee, 1999). One will get a fair idea about the transportation cost from an estimate given by Rossabi (1990). For transporting goods worth 25,000 golden florins the transportation costs alone would be 1000–1500 florins (which included – payment for 60 men employed, 40–60 animals used to carry the goods and the supplies for the caravan) during the 13thCentury AD. About 1600 golden florins would be incurred as the total duty - 400 florins for round-trip duties and 1000 for customs @ 5% of the value of the goods on average. 200–300 florins would be the transit charges for passing through various cities at five florins per pack animal. Thus the total charges to be paid to the caravans would be 3,500 golden florins. In short, the transportation charges across the Silk Route from East to West used to be about 14% of the cost of goods.

Warehouses in the Silk Route: The land through which the Silk Road traversed was controlled by grand empires and dynasties - such as the Han, Tang, Kushan, Mauryan, Sassanid, Roman, Parthian, Abbasid, Seljuk –for long periods of time. They provided security and other facilities for trade (Canepa, 2008). Many of the cities in the Silk Route were fortress cities with strong walls. Bukhara, Bactra, and Kunduz were major walled cities on the Silk Road in addition to Merv and Palmyra. These walled cities functioned as warehouses for the trade where large amounts of valuable inventory were stored, away from the risk of raiding bandits and tribes. Maintaining warehouses was costly as the construction of walls and maintenance of soldiers for the protection of the city were costly. Caravanserais (rest houses) were built along the trade roads in the 13th century. The role of caravanserais was not just for hosting caravans. They functioned as military stations, royal guesthouses, prisons, places for refuge, religious meeting points and warehouses (Yavuz, 1997). Waystations were utilised for storage, distribution, and exchange of goods and they recharged the caravans with food, fodder and drinking water. The distance between waystations and the types of services they provided were conditioned by factors such as terrain, aridity and facility for grazing and type of shelter required (Cinzia Tavernari, 2013).

The land and maritime Silk Route trade was seasonal and cyclical and was adjusted according to natural conditions. Weather conditions in the passes of Central Asia, the monsoon system in the Indian Ocean, and the seasonal winds and currents in the Mediterranean played a great role in the seasonality of trade (Jacoby, 1997).

Handling material flow and associated risks: Goods traded through land routes had high value per volume. Luxury goods were associated with the exotics and were sought for their scarcity and exquisite workmanship (Oka & Kusimba, 2008). Silk making technology was a secret held close by the Chinese for centuries and the supreme artistic skills that were associated with weaving silk clothes ensured a monopoly power for Chinese silk. The manufacture of silk thrived under the strong successive dynastic rule of China. Goods like gunpowder and paper were technology products whereas for natural items like spices and tea, the East was the only home. All these goods of luxury - such as silk cloths

and gemstones- of advanced technology – such as gun powder and weapons- and of exquisite breeds of flora and fauna – such as horses, perfumery – aligned with the rich and powerful and were elements in maintaining political power (Allsen, 1997).

Different groups gained political and military ascendancy along the landmass of the Silk Route and controlled the trade during the 16 centuries of its existence. They set their own priorities in selecting the goods to be traded.

The Chinese agricultural society required different types of animals and was dependent on the western regions for their supply. Uyghur nomadic society positioned in the strategic transit point of modern-day Xing Jiang engaged in silk and horse trade with the Chinese (Liu, 2001). During the Tang Dynasty, Chinese demand for horses was very high as horses provided high mobility and military advantage. Records reveal that 500,000 pieces of silk per year were exported to the Uyghur nomads in exchange for horses during 820-830 AD (MacKerras, 2000). The price of one bolt of silk also varied based on location - from 200 copper coins in Central China, to 450–470 coins in West China, which indicated much higher prices further west, towards Europe (Liu, 1996).

In addition to land routes, maritime roads also developed later, which connected coastal regions more easily to the Mediterranean and Europe via the East Indian islands, Sri Lanka, and the South Indian Malabar coast. Land route and maritime routes required fundamentally different infrastructures, as they carried different types of goods. Different political and economic organisations were associated with them. The sea-based trade roads handled commodities like porcelain, spices, medicines, and timber (Lewis, 2009) while land routes handled silk and exotic goods.

These goods moving along the silk road from east to west bore the geographic indication of the East and faced no competition in the European markets as climatic conditions, availability of raw materials, vastly superior skill levels and the scientific knowledge of the East, all added to make them unique (Adshead, 2000). The nature of products from the East thus created a monopoly market for them in the West. These materials had reliable supply sources in terms of quality and quantity mitigating associated risks. Successive regimes which had military authority over the trading routes ensured that the movement of those goods was secured. Throughout the life period of the Silk Route, the demand for Eastern goods by the West was much higher compared to the demand for Western goods by the East. It created a positive trade balance for the East (Morineau, 1999).

Risks of robbery and piracy varied over different stretches. Concern for safety was a key factor in deciding the choice of routes over time (Steensgard, 1974). Elements of risk were high. Local princes, tribal chieftains and chiefs of nomads could act both as tax-gatherers, and as robbers incognito. Caravans inducted armed guards into their party to handle the problem of bandits, adding to the cost of transportation. They also employed local tribesmen as guides in the frontier towns before they crossed into their territories (Cinar, 2015). Caravans paid premiums for travelling safer roads. Land and sea route cities competed among themselves to prove their safety credentials (Steensgard, 1974). The Yüan (Mongol) Dynasty of China provided and maintained shelters along routes and offered written guarantee to travellers "for security, safe accommodation, and transportation and exemption from local taxes or duties for travel through areas under their command" (Weatherford, 2004). Chinese merchants had pioneered risk-sharing pools by issuing stocks akin to the formation of Joint Stock Companies that emerged in the West for promoting overseas trade in the 16thcentury.

Many models of material movements prevailed along the Silk Road in its 16 centuries-long life span. Some merchants travelled with their goods practising paddling trade while many served as agents. Some others settled down abroad and learned the language and trade customs of the hosts. They acted as cross-cultural brokers between the merchants of their homeland and merchants of the host country (Curtin, 1998). In modern times many global supply chain service providers operate as brokers and agents.

Financial flows in the Silk Route: Barter economy prevailed over the Silk Road in the early days of trade. Around 580 AD, silver coins were introduced to the Silk Road economy. Moneylenders offered silver coins at the interest rate of 10% per month to traders. In the eighth century, silver coins were replaced by bronze coins (Hansen, 2007). By 1100 AD, banking instruments were employed by Christian and Muslim merchants for making payments remotely, which are akin to the modern-day bill of exchange (Curtin, 1998). The Mongol Empire introduced paper currency for trade.

Silk Route traders extensively used supply chain contracts for purchasing goods and borrowing money. Prices of goods were clearly documented. As per these contracts, charging a 6%–10% penalty or interest for delayed shipment or

payment as the case may be, was normal. During the reign of the Tang Dynasty, travel passes were issued to caravan owners as documentary proof that he owned the slaves and animals travelling with him. Labour contracts, such as contracts for hiring someone to transport goods to a given destination, were also in vogue (Hansen, 2007).

Information flow in Silk Route: Information flow is the mechanism for coordination in a supply chain (Lee et al., 1997a). People living along the 7000 km long Silk Route passage spoke different languages, followed different religions and maintained different cultural practices (Cinar, 2015). Communication between them was a problem, be it for trade-related transactions, for exchange of information about route details, weather conditions or for enjoying the hospitality offered in the trading hubs/caravanserais. Interpreters played a key role in communication along the Silk route. Caravans engaged guides who knew the land and the climate to lead them through inhospitable sections of the route. They duplicated as translators or interpreters. Translators translated written texts of contracts while interpreters helped in oral communication. These men were bilingual or multilingual by birth. They not only knew vernacular languages but were also familiar with the customs and religious practices of different regions.

Initially, the trade with the West was felicitated by the Byzantine Empire. After the fall of the Byzantine Empire, the East engaged in direct commerce with the West and interpreters with the knowledge of Latin were more in demand. While Tang China needed people who knew the languages of inner Asia to maintain political and commercial contacts, the rise of the Mongol Empire in the 13th century saw the wide engagement of interpreters who knew the Mongol tongue and Turkic languages. Living in proximity, the Uyghurs had commercial and cultural relationships with the Chinese from pre-Silk Road days. Thus Uyghurs were well suited to serve as middlemen in political and commercial exchanges between Mongols and the Chinese. Along the western frontiers, Armenians did the job for the Mongolian empire (Sinor, 1997). The caravanserais along the Silk Route engaged musicians and dancers widely who were paid 16,000 cash per evening (Whitfeld, 1999).

Bullwhip effect in the ancient Silk Route: The bullwhip effect manifests in a supply chain when the inventory level in the system is low and the level of coordination along the length of the supply chain is inadequate. Significant delays or lag times in information and product flow compound the problem (Lee et al., 1997a; 1997b). These conditions were certainly present on the Silk Road.

In Xian, at the starting point of the Silk Route in China, silk is gathered and loaded onto caravans for the journey to the West. In Dunhuang the Silk Road is split into two - one path moved along the eastern boundary of the Taklimakan desert while the other took the southern boundary - to join back at Kashgar which was the boundary of the Chinese empire. From Kashgar, the road traversed to the city of Merv – a city established by Alexander the Great in Turkmenistan. Merv was the central meeting point of the web of roads on the Silk Route. The next key point in the Silk Route was the city of Palmyra, the biggest oasis city on the eastern boundary of the Roman empire. From Palmyra, materials moved to the cities of Tyre and Antioch from where they were exported to the rest of the Roman empire. They were the starting points of new supply chains within the ancient Roman empire

Figure 1: Depiction of the Old Silk Routes

Source: 'About Ancient Silk Road - Xinhua Silk Road' https://en.imsilkroad.com/

The desert roads connected one oasis to another in the best and shortest route. Travel times used to be 10 to 20 days for each stretch at the most as camels and people needed rest and refit to move on. The requirement of inventory at Palmyra would be communicated to the upstream city of Dura Europos in a week's time (given travel time of a camel caravan) and the shipment would arrive after a week. The communication from Dura Europos would reach Ctesiphon, an oasis city close to today's Baghdad, to deliver more silk, one week later. It would take another two weeks for the supplies to reach Dura Europos from Ctesiphon after Dura Europos raised the demand. There could be delays in intended delivery due to troubles in the way. The story repeats upstream till it reaches Xian situated in the middle kingdom of China. Needless to say, a communication time of 52 weeks taken to traverse the entire distance can create a lot of uncertainties even in modern times. It may lead to inventory build-up at some warehouses in the transit route while few other places can face dry outs. Communications announcing dry outs and overstocks lead to further confusion and breakdown of the supply chain coordination. Shortages at a location would get converted to overstocks as delayed supplies arrive together and efforts to prevent overstocks may lead to dry outs due to delayed communication and late arrival of supplies. Frequent repetitions of this phenomenon affect the reliability and price stability of supply chains. This is the Bullwhip effect at its worst. However, the Silk Route trade apparently overcame this problem and survived for 16 centuries.

The bullwhip effect in the silk road supply chains was efficiently managed by Merv-based traders cum administrators called Barmakids (Bladel, 2011). Originally, Barmakids were maintaining Buddhist Monasteries in Merv and were customers of the Silk Route supply chain for long. This helped them in managing business as traders. The Barmakids were highly educated, respected and influential throughout Arabia, Persia, Central Asia and the Levant and they controlled the Silk Route trade by having strategic alliances with manufacturers of silk, important traders in key trading hubs and retailers on the one hand, and by maintaining sufficient inventory in major distribution centres aided by an accurate demand forecasting method developed by them from their experience.

At the beginning of the new year, the manufacturers in China set their price and communicated it to Burmakids who procured the material directly from them, earning good quantity discounts. Barmakids maintained huge on-hand inventories at four major centres along the Silk Road, namely Dunhuang, Kashgar, Merv and Ctesiphon - an ancient city near Baghdad (Ancient History Encyclopaedia). Barmakids operated the biggest main distribution centre at Merv and entered into contracts with major players in the other two centres. Dunhuang centre in China was maintained by the Chinese empire directly. These centres operated as master distribution centres for Barmakids who sold materials to small distributors at a fixed price throughout the year. Price fixation by Barmakids was based on a demand forecast method mastered by them. Barmakids prices became the standard for smaller merchants who could maintain adequate inventory at minor centres based on demand forecast. This ensured steady supplies at a stable price throughout the year, eliminating the possibility of the Bullwhip effect.

Overall assessment of risk management in Silk Route: The Silk Road supply chains encountered a plethora of risks of different kinds along the route as seen above. The system deployed various kinds of mitigation tools to counter them. Defence against decoity and theft was taken at private and institutional levels. Caravans engaged their own guards for security against robbery (i.e., for security risk). Besides, the Chinese soldiers posted in the army garrisons indicated the occurrence of adverse incidents using smoke and fag signals in real time (Rossabi, 1990). The long Silk Route experienced security and stability of rule during the long reign of Mongols (Yüan Dynasty) from 1273 AD to the latter half of 14th century AD (Weatherford, 2004). It facilitated smooth trade across the region (Fairbank, 1992). The domestic policy of the Yuan Dynasty was very much in favour of promoting trade. They introduced paper money, improved transportation infrastructure and lowered taxes and tariffs to promote trade. With the unification of Eurasia under the command of the Mongols, the threat from tribute gatherers got neutralised and the trade network basked in glory and grandeur.

The Seljuk Sultanate formulated a state insurance policy for managing the security risk faced by land and maritime Silk Route traders (Turan, 2009). Contracts signed between caravaneers and merchants guaranteed the quantity of the goods delivered. These contracts provided for a reduction in the transportation fee against delays that occurred. There was a practice of maintaining a list of goods carried by the caravaneers which detailed the weight, variety and volume of goods to be delivered. (Matthee, 1999) similar to the Bill of Lading documents of the modern-day.

The next major risk was that associated with financial flows. While interest rates and tariff rates added to the total cost of goods, timely payment for goods delivered and services rendered were essential requirements for the continuity of supplies. Money lending was used as a tool to gain control over the Silk Route trade by the Parthians and the Sasanians who charged high-interest rates to cultivators and traders of silk (Hansen, 2007). The Central Asian states hiked passage tariff rates at will (Frye, 1996).

The players along the Silk Route were also exposed to supply and procurement risks in different regions for various products. With the advancement in navigation technology, Chinese merchants explored trading possibilities with Indian Ocean rim states in a big way. In the process, they brought in several innovative risk-management models. There were agents who undertook voyages on behalf of rich merchants who ploughed in the capital required. The model later was improvised to include the shipowner as a third party.

The edifice of the silk trade was built on a strong foundation of trade in many other goods (Whitfield, 2013). The demand for ordinary goods was reliably met by Silk Route supply chains which ensured the long-term viability of regional trade networks (Smith, 1999). It sustained the overall flow of luxury and technical goods from East to West and the flow of silver and gold from West to East. Trade along the Silk Road also supported the economy of intermediate industries and locations that provided services to travellers (Weisbrod, 2008). The immensely diversified trade flows along the Silk route was another demand risk mitigation strategy that contributed to its longevity.

Conclusion

The ancient Silk Route ran efficiently for centuries in spite of its complex geography, transportation modes and underdeveloped communication systems. This was achieved by the patronage and security provided by various regimes, formation of strategic alliances between main actors, development of fairly accurate demand projection methods, maintenance of adequate inventory in main distribution centres along the route, ensuring good turnover of inventory by retailers in local markets, stable price-fixing and maintaining strong trust in the system by the actors. Over and above all this, the luxury goods from the East had very strong demand in the West and the trade was highly profitable for all the actors. Silk Route flows were not merely related to trade but were also exchanges of religious beliefs, scientific knowledge, art and culture between different societies. This complex interplay ensured its sustenance wading through risks of terrain, time and distance to serve humanity as the awe-inspiring intercontinental supply chain for centuries which the present plans to replicate.

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Attitude and Perceptions of Business Profit Taxpayer's Compliance Behavior with Moderating Effect of Financial Condition in Tigray, Ethiopia

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Abstract

The aim of this study is to investigate the attitude and perceptions of Micro and Small Enterprises tax compliance behaviour with the moderating effect of financial condition in Mekelle City, Tigray. It is very essential, particularly, to improve tax service quality by the tax authorities and betterment of tax compliance behaviour amongst business taxpayers. Primary survey data has been applied with cross-sectional study of 185 micro and small enterprises selected using simple random sampling. The descriptive statistics on the surveyed sample show that taxpayers have an unfavourable attitude towards tax evasion and they perceived tax service quality as ineffective. In addition, as per the econometric result, the disapproval towards tax evasion is strong, but moderation transforms this into a negative relationship with tax compliance behaviour. Furthermore, the regression model also revealed that the perception of tax service quality has a significant negative relationship. Likewise, the financial condition has significantly moderated the influences of attitude and perception towards tax evasion on tax compliance behaviour. Besides, as a moderator, it has strong relations with tax compliance behaviour.

Keywords: *Moderated Multiple Regression, Perception, Tax Compliance Behaviour*, *Taxpayer's Attitude.*

1. Introduction

According to Bloomquist (2003), tax is defined as a compulsory contribution imposed by the government to generate public revenue without expectation of direct and equivalent return from the government for the contribution made, through its agencies on the income, consumption, and capital of its subjects. Financial resources which are obtained in the form of tax plays a pivotal role in enhancing government revenue. According to Alabede (2001) and Olaofe (2008), the primary source of government revenue in some countries is income tax. In addition, Hammer, et al. (2005) declared in light of the importance of taxation as the government's primary source of income, 'unless people pay, a government cannot function properly.' Some people do not like paying the tax due to this reason, regional as well as other tax authorities become challenged to collect tax in any area of place and time (Alen, Martinez-Vazguez & Schneide, 2003).

The concept of non-compliance in tax is a worldwide event that is directly or indirectly associated with the administration of tax in developed as well as developing countries (Torgler, 2003; Chau & Leung, 2009). Tax revenue losses due to non-compliance are higher in less developed countries than in developed countries due to the existence of the informal sector. As statistics show, the average of tax revenue losses in less developed countries were ranging between 35 and 55 per cent of GDP in 2008 (Goradnichenko, et. al., 2009). Interestingly, there have been inconclusive debates amongst researchers about what determines tax compliance. Torgler (2003) stated that the relationship between determinants of tax compliance may be moderated by some variables which have contradictory results in the findings of various researchers.

In addition, Kirchler et al. (2007) and Brett et al. (1995) stated in behavioural studies, that there are indications that commitment and performance of taxpayers on tax compliance may be moderated by risk preference, financial condition, and family conditions. In accordance with this, the researcher used financial condition as a moderator, an important factor that is grouped under individual factors on the determinants of tax compliance behaviour to determine the contradicting results. The rationale behind taking personal financial condition as a moderating variable, by itself, it is a determinant factor, expecting other things to be constant with the absence or presence of financial condition which may lead to non-compliance and an increase in the number of dependents or the family size may associate directly or indirectly on constraints of finance. Furthermore, Brett et al. (1995) declared that in some developing countries, there is an observation of tax compliance and its determinants can have the moderating effect on tax of business profit taxpayers as family responsibility and the poverty rate is high.

Therefore, micro and small enterprise owners' willingness to pay may be negatively or positively affected based on the perceptions of tax compliance behaviour with determinant factors. Whereas, tax compliance is involving true reporting of the tax base in complying with tax laws, correct computation of the tax liabilities, timely filing of tax returns and timely payment of the amount due. Any behaviour contrary to the above is noncompliance (Franzoni, 2000; Chaltopadhyay & Das-Gupta 2002). Currently, the main administering bodies of the tax laws in the country, the Ethiopian Revenue and Customs Authority (ERCA) are more responsible for the enforcement of the tax laws relating to income tax as a nation, and region wise. Hence, the law has classified the business income taxpayers into three major categories with respect to their legal personality and annual turnover (Council of Ministers, 2002) as category “A” taxpayers, category “B” taxpayers and category “C” taxpayers of micro and small enterprises. Moreover, according to the current income tax proclamation, tax authorities generate revenue by levying taxes from direct taxes. Amongst other things, business profit tax is one of the major sources and it needs special attention to the parts that make them non-complying with the existing rules and regulations of taxes. Moreover, the evidence is rare concerning the taxpayer's attitude, perception and moderating effect on tax compliance behaviour in Ethiopia, particularly in Mekelle.

Understanding the importance of the equality principle, the Ethiopian government has constantly given attention to guidelines on tax structural changes like reducing the top employment income tax rate, business marginal income tax rate, and dividend tax rate (FIRA, 2010). Moreover, this helps in reducing the burden of tax while taxpayers are paying their obligations within the stated time and amounts. An important issue for any government and revenue collecting authority is, to obtain knowledge and understanding of the reasons for taxpayer non-compliance. Ethiopia is amongst the developing countries which yield lower tax revenue, and this may be attributed to tax provision which is not properly enforced, either due to the inability of tax administration or the lack of straightforward

arrangements. Nevertheless, it is obvious in Ethiopia that some taxpayers are not eager to pay their tax obligation even when treatments have been forwarded. From this, we can observe the attention given to the cultural background of taxpayers, their perception level, attitudes, and financial condition is minor towards determinants of tax compliance while the tax system is designed.

Likewise, the determinants of tax compliance, especially financial conditions, attitude towards tax evasion and perceptions are the factors that need attention to their compliance behaviour. Moreover, although earlier studies have great contributions to the theory of tax compliance behaviour, there is little attention in developing countries like Ethiopia, particularly to the moderating factor. In the Ethiopian context, there are a few studies in relation to the determinants of tax compliance in the absence of moderating factors in addition to the direct effect.

For example, Lemessa (2007) studied tax assessment and collection problems; Asamnew (2012) wrote about federal income tax administration in Ethiopia, the case of employment and business income taxes, Brady and Cronin (2001) emphasised the attitude of rental taxpayers and their compliance with tax system; Redae and Shailinder (2014) shed light on taxpayers' knowledge and tax compliance behaviour in Ethiopia. But it needs a precise study and this encourages the researcher to investigate.

2. Research Gap

As per the literature, there was less emphasis on both the direct effect and moderating effects of financial condition on micro and small enterprises business profit taxpayers specifically. Besides, apart from some studies made outside Ethiopia, most of these studies attempted to test the determinants of taxpayers' tax compliance behaviour separately and collectively with the moderation of risk preference. Hence, these studies didn't take into account other moderation factors, particularly family size, financial condition, and expenses.

Therefore, the unique features of direct and indirect effect are strong grounds for a separate study on the effect of attitudes and perceptions on tax compliance behaviour. The result intends to equip the existing and potential problems of financial conditions, family size and expenses. While the tax system has been adapted to apply rules and regulations which govern taxpayers on tax compliance behaviour on Self-Assessment System (SAS) as well as determining their tax liability so as to attain regional and national Growth Transformation Plan (GTP) and contribute to GDP, the researchers tried to address the following questions:

RQ1: What is the taxpayers' perception of tax service quality, attitudes and financial constraints toward tax compliance?

RQ2: How does the financial condition moderate the relationship between variables?

3. Literature Review

After reviewing relevant theories and related literature, the researchers hypothesize tax compliance, attitude, perception, and financial conditions, and the effect of interaction variables. The following hypothesis was formulated and tested the relationship between attitude towards tax evasion and tax compliance. Empirically, there is much controversy about the relationship between attitudes of taxpayers and tax compliance behaviour. As Kirchler (2007) declared, taxpayers' perception towards tax authority and peer attitudes vary from individual to individual, and the tax system, as well as tax law, varies from country to country.

Some of the factors that influence tax compliance are motivation (Torgler, 2003), punishment (Allingham & Sandmo, 1972) the cost of compliance, enforcement, tax collector, the probability of detection, equity of the tax systems, perceived behavioural control. Taxpayers are less compliant when they have a favourable attitude towards tax evasion whereas if there is an unfavourable attitude towards tax evasion taxpayers may be more compliant (Kirchler et al., 2008).

According to Eriksen and Fallan (1996); Oriviska and Hudson (2002); Trivedi et al., (2005), the reinforcement of desire towards tax evasion and compliance is influenced by the taxpayer's attitude towards the tax system. For both the power and trust dimension, attitudes towards tax evasion is positive and significant (Kirchler et al., 2008). Moreover, where there is a strong belief that tax evasion is not ethical, tax compliance is found higher (Reckers et al., 1994).

According to Donnelly et al. (1995), declaration and primarily tax service quality was used to relate with concepts as the extension of a marketing principle only with private sectors, but currently, it is realized within the public sectors that quality and customer service are the critical strategic issue. Proctor (2007) stated that the essences of service quality are more critical in new public management

and new administrative policy in the public service. Three categories of service are provided by the revenue office, which is identified in OECD (2007) commonly known as the transaction, interaction, and information. Nevertheless, the willingness of taxpayers can influence their interest as the tax offices are rude, inefficient, unhelpful and incapable (Job et al., 2007). The behavioural treatment offered by the tax office to taxpayers may affect their compliance behaviours (Jackson & Milliron, 1986; Tan & Laswad, 2006). This section deals with the arrangements of models and theories of tax compliance behaviour. As economic deterrence theory stated, tax compliance research growth was accelerated four decades back, introducing new disciplines and classical theories of tax compliance (Allingham & Sandmo, 1972) identified audit probability, tax rate, and penalty structure as obstacles of taxpayers' in complying with the tax obligation. For example, Dubin et al. (1987); McKerchar (2001) found a significant positive impact on the probability of detection on tax evasion at least for some income groups. As reported by Jackson and Milliron (1986); Cuccia (1994) due to fear of crime rate and sanctions individual taxpayers can lead to resistance less behaviour.

According to Torgler and Schneider (2001), taxpayers who paid fairly and are later audited will be disturbed more when others who offended legal philosophy are not penalized. Therefore, leading to pay using greater penalties is not effective to enhance tax compliance (Beck & Jung, 1991; Alm et al., 1992; and Alm et al., 2003).

According to James and Allen (2004), the social and physiological theory assumes an individual is not selfish, maximizes utility, and is independent, and interacts with others according to beliefs, norms, roles, and attitudes. Mckerchar (2001) also stated understanding and prediction of people and how they make decisions is determined based on methodological approaches like equity theory and competition and attribution theory. Further, it assumes that intention directly translates into behaviour, without any further influences. The model then seeks to explain how intention is formed (Azjen & Fishbein, 1980). Most studies, like Azjen and Fishbein, 1980; identified factors affecting taxpayer's decision as peer influence due to people having external and internal attributes in deciding the behaviour of others. Kaplan and Rockers (1985) identified individual personal attitudes and McKerchar (2001) own internal attributes as having much more cause to the outcomes of people.

Initially, the theory introduced by Schmolders (1959) focuses on the absence of motivation for taxpayers to levy taxes due to the nonexistence of direct benefit either in public goods or monetary amount when paying taxes. Therefore, this initiates to generate a positive attitude of taxpayers to influence their compliance behaviour. Nevertheless, taxpayer's attitude may be influenced negatively by fiscal ignorance. Schmolders (1970) stated, tax tension, feeling, taxes morale and tax mentality are the three elements that together made up a taxpayer's attitude. Cuccia (1994) described that this theory is unable to identify mechanisms via the link existing as the result of suffering from methodological shortcomings. Ariff and Pope (2002) and Frey (2003) stated that acceptance by the taxpayers and rejection of the tax system are the maximum key ingredients of voluntary compliance.

Ajzen (1991) said that a person's behaviour is determined by her/his volition, intention, perceived behaviour and ability and it describes a person's intention to execute a certain behaviour. This theory has demonstrated as doing well in explaining the intention towards performing certain behaviours such as education, organizational behaviour, marketing, health, recreation options, psychology, sociology, information technology and taxation (Trivedi & Shehata, 2005) and it is the result of the development of the theory of reasoned action by adding perceived behavioural control variables as determinants of intention. McGee and Bose (2007) argued that the intention of reflecting the willingness of individuals to perform certain behaviours, furthermore, Ajzen (2005) commence the theory of planned behaviour by adding perceived behavioural control which is the ease or difficulty. A person who has a positive or negative perception of behaviour is an extension of the attitudes of an individual towards behaviour in relation to tax compliance (Tan & Laswad, 2006). Job et al. (2007) identified factors that force behaviour such as individual background, stimulus, motivation, and personal status, in addition to attitudes that have an imperative role in explaining behaviour. Furthermore, Bobek and Hatfield (2003) found that attitudes have a significant influence on the taxpayer's intention to prove and comply with attitudes towards tax non-compliance. Compliance intention is affected by positive subjective norms (Saw & Sawyer, 2010).

Jackson and Millron (1986) identify the classic model of fourteen key tax compliance determinants and Fischer, Wartick and Mark (1992) classified the same into four categories of constructs- demographic, noncompliance

opportunity, attitudes and perceptions, and tax system/structure. Reinforcing the desire towards tax evasion and tax compliance is influenced by the taxpayer's attitude towards a tax system (Eriksen & Fallan, 1996; Orviska & Hudson, 2002; Trivedi, Shehata & Mestelman, 2005). When taxpayers perceived strongly that tax evasion is unethical intention towards tax compliance would be higher (Recker, et al., 1994). Manaf et al. (2005); Jackson & Milliron (1986); Fischer et al. (1992); Fischer (1992); and Chan et al. (2000) suggested taxpayers who observed evasion as unethical comply more than those who regarded tax evasion as ethical.

According to Jackson and Milliron (1986) tax complexity has tax non-compliance behaviour. In addition, Devos (2006) and Allingham and Sandmo (1972); stated that the effects of the tax rate on compliance include substitution effects and income. On the contrary, Arogundade (2005) discovered that a higher tax rate tied to less tax compliance. According to Asada (2005), taxpayers' behaviour towards a tax system has evoked great attention amongst many revenue authorities in the world, especially in developed countries. People who face personal financial problems are likely to be more prone to evade tax when compared to people in less financial distress (Mohani & Sheehan 2003; Mohani & Sheehan, 2004). The studies of Kirchler et al. (2007); Brett et al. (1995) and Doran et al. (1991) provide support for the moderating effect of financial conditions on individual taxpayer's behaviour. Torgler (2003) and Bloomquist (2003) stated that when payment is made including tax, this may increase the incentive for tax dishonesty because it creates a sense of distress. Financial condition moderates the relationship between perceived tax service quality and tax compliance positively but insignificantly, and with an attitude, it results in a significant relationship, but in a negative direction (Bloomquist, 2003; Alabede et al., 2011a).

4. Hypotheses Formulation

Based on the above-described theories and empirical studies, the research develops the following research hypotheses.

H1: Unfavorable attitude towards tax evasion is more likely to exhibit positive compliance behaviour of taxpayers.

H2: There is a relationship between the financial condition of business profit taxpayers and tax compliance behaviour

H3: There is a relationship between the tax service quality of business profit taxpayers and tax compliance behaviour.

H4: Financial condition moderates the relationship between attitudes of business profit taxpayers towards tax evasion and tax compliance behaviour.

H5: Financial condition moderates the relationship between tax service quality of business profit taxpayers and tax compliance behaviour.

5. Research Methodology

The study design is explanatory and the methodology is a mixed approach as it creates or provides greater confidence in the study even if each strategy has strengths and limitations (Creswell, 2003). The target population of the study consists of micro and small business enterprises, particularly category “C”, “B” and “A” with a total population of 13,723 and sample size determined based on the Yeman (1967) formula. Therefore, the researchers would use both simple random and convenience sampling techniques and data was collected from 185 respondents in a cross-sectional manner in Mekele City (Kidney Weyane, Hawelt, Adi-Haki, and Semen sub-cities) proportionally. The study applied descriptive statistics like tables, pie-chart, graphs, and moderated multiple regression using Stata version 12 econometric model and SPSS Version 20 to indicate the interaction between the dependant and independent variables using cross-tabulation.

In order to achieve the above-mentioned objectives, the researcher collected primary data and reviewed relevant documents. The primary data were obtained through on hand, delivery questionnaires that contained open and closed-ended questions and in-depth unstructured interview to triangulate the results of respondents. The data were collected from self-administered questionnaires and were analyzed using descriptive statistics mainly frequency distribution, percentage value, and cross-tabulation. In addition, moderated multiple regression model has been used to show the interaction of financial conditions between attitudes and perceptions of tax service quality on tax compliance behaviour. In this study, dependent and independent variables have been operationalized so as to clearly identify their meaning for the sake of minimizing confusion. Tax Compliance Behaviour (dependent variable) is operationalised as obeying existing tax rules and regulations involved with the scenario of actual reporting of income; actual claim of deductions; timely payment of the amount due as a tax, and timely filing of tax returns.

Each scenario is measured in terms of somewhat compliance (Red), moderate compliance (Yellow) and full compliance (Green), in parenthesis representing the Ethiopian context. Tax service quality is considered as the difference between what the taxpayers expect from the services of the tax office before their perceptions of the services they received and the service encounter. It is expressed in terms of outcome quality, interaction quality, and the physical environment. Taxpayer's financial condition in regards to this study is defined as the extent of satisfaction/ dissatisfaction with the financial condition of a household. It depends on what has to be paid to first prioritize basic survival needs or contiguous condition on the limited income is enforced rather than tax liabilities. Attitudes towards tax evasion consist of the disposition of taxpayers to respond unfavourably or favourably to tax cheating. Comprises of belief about evasion of tax, and sense of feeling about taxpayers' behaviour and tax evasion. The moderator is a variable, which changes the relationship between the independent and predictor variables. A significant interaction between the moderator and independent variables means that the effect of the independent variables on the dependent variable changes depending on the level of the moderator.

Table 1: Independent variables with variable type, measurement scale, analysis method and expected sign

Independent variables	Variable type	Measurement scale	Analysis method	Expected sign
Attitude towards tax evasion (ATTE)	Categorical	Likert scale	LMR	Positive
Tax service quality (TSQ)	Categorical	Likert scale	LMR	Positive
Moderator: Financial condition (FC)	Dummy	Nominal	MMR	Positive
FC*CATTE			MMR	Positive
FC*CTSQ			MMR	Positive

Note:

"C" in prefix shows centred coding before regression to avoid Multicollinearity, O-Original value, AOV=All Observed Value, "" is the interaction between Financial Condition and Predictors, LMR, Linear Multiple regression, MMR, Moderated Multiple Regression.*

Source: Own computations.

In order to increase the level of precision and quality of research, linear multiple regression models were used in combination with descriptive statistics. The econometric model which was used in this study is moderated multiple regression/ hierarchical. Aiken and West (1991) recommended the main effect model estimated by the predictive power of the first effect of the study and also the second model adds the financial condition as a moderating variable selected due to the nature of one independent variable used as interaction.

$TC=\beta0+\beta1ATT+\beta2TSQ+\beta3FC+U$….....1

Where: β0 is the intercept, β1 – β3 are coefficients; TC= Tax Compliance; U is the error

ATE=Attitude towards Tax Evasion;

TSQ=Tax Service Quality

FC= Financial Condition

$TC=\beta0+\beta1ATT*FC+\beta2TSQ*FC+U$……...…….2

Where β0 is the intercept, β1 – β13 are coefficients; and TC is Tax Compliance; U is the error FC=Financial Condition;

ATE*FC= interaction of Attitude to Tax Evasion and Financial Condition;

TSQ*FC= interaction of Financial Condition and Tax Service Quality

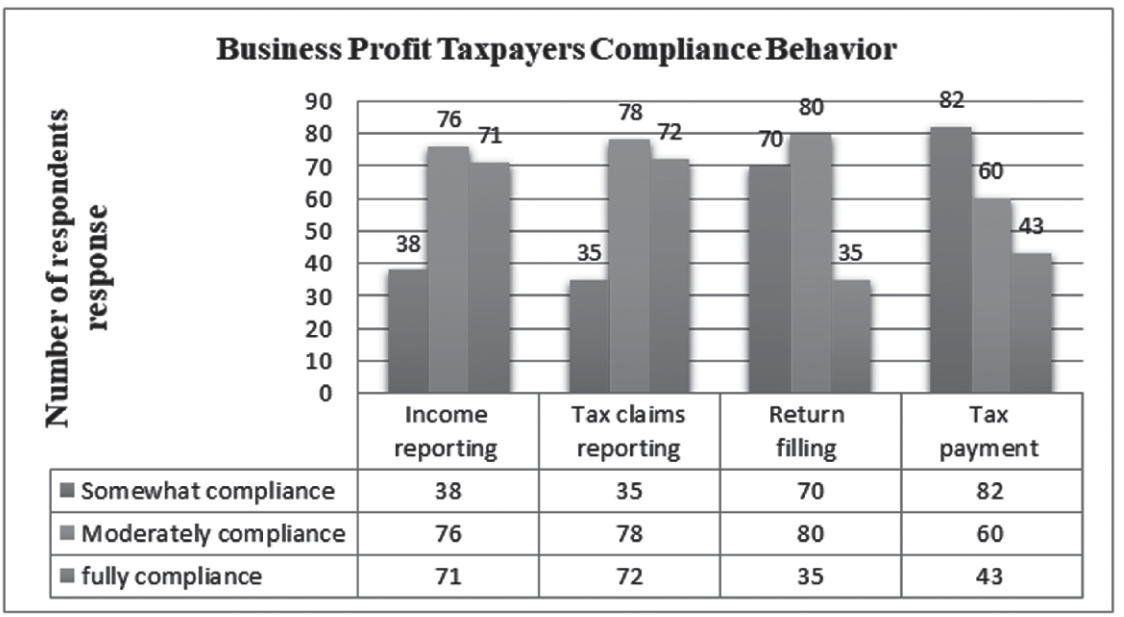
Adopted from an extended of Fisher's model; Eriksen and Fallan (1996); Bobek (1997); Brady and Cronin (2000); Gilligan and Richardson (2005); Manaf et al. (2005) and Torgler and Schaffner (2007); Alabede (2011a) with a little bit modification.

6. Results and Discussion

6.1 Descriptive analysis

To understand whether micro and small business enterprise taxpayers are complying with tax rules and regulations, the researcher presented three scenarios to show their status with regard to Red (somewhat compliance); Yellow (moderate compliance) and Green (full compliance). Therefore, the compliance behaviour of the respondents towards tax rule and regulations were presented in Figure 1. It reveals that from the overall respondents only about 30 per cent of the participants act in accordance with regulations in declaring their income for tax purpose. And tax rule reveals around 70 per cent non-compliance in moderate compliance group. The result in tax claims reporting, income reporting compliance, tax payment, and return filing obtained was 61.1 per cent, 61.6 per cent, 76.7 per cent and 81.1 per cent non-compliance respectively. The leftover respondents replied that 38.4 per cent, 38.9 per cent, 18.9 per cent, and 23.2 per cent complied with these items. In addition, in the responses towards tax compliance behaviour, the comparison using frequency and percentage, the aggregate mean score for the tax compliance behaviour was 1.996 for the score of 1, 2, and 3 assigned to the option under each of the scenarios. This reveals the overall responses from respondents had moderate tax compliance behaviour with a standard deviation of 0.369.

Figure 1: Status of business profit taxpayer's tax compliance behaviour



Source: Survey Result

With respect to the facet of the financial conditions of respondents whether micro and small enterprise owner taxpayers were satisfied or not based on the annual income obtained from the business and additional sources to cover their expenditures as well as tax liabilities. As the survey revealed, as more of the taxpayers were dissatisfied with their financial condition (78 per cent), and the remaining respondents (22 per cent) were satisfied with their financial conditions. Regardless of the taxpayer's financial constraints compared to tax compliance behaviour, 54 per cent respondents who have financial constraints and 15 per cent respondents with absence of constraints was non-compliant, whereas 24 per cent dissatisfied and 6 per cent satisfied taxpayers complied with tax rules and regulations; this indicates that not only the dissatisfied but also the satisfied were non-compliant. On the other hand, there is a significant number of the respondents satisfied and dissatisfied with their basic needs who were noncompliant with a great amount of tendency. Moreover, these satisfied were less compliant compared, whereas dissatisfied justified fully compliance. This result is consistent with the findings of Mohani and Sheehan (2003) and Mohani and Sheehan (2004).

Table 2: Interaction of financial condition of taxpayers with tax compliance

	Alternatives	Noncompliance			Compliance		Freq	%
		Somewhat compliance	Moderated compliance	F.C pr	Full compliance	F.C pr.		
FC	Dissatisfied	42 (23 %)	58 (31 %)	77 %	44 (24%)	80 %	144	78 %
	Satisfied	14 (7 %)	16 (9 %)	23 %	11 (6 %)	20 %	41	22 %
	Total	56 (30 %)	74 (40 %)		55 (30 %)		185	100

Note: FC= Financial Condition F.C pr. = Financial Condition proportion
Source: Survey result

With respect to the attitudes of business profit taxpayers towards tax evasion; the overall mean value and standard deviation on deductions of a tax return, declaring actual income, ethical behaviour, and tax fairness have found 3.98 and 0.21 respectively. It means that respondents have an unfavourable attitude towards tax evasion.

Respondents perception on tax service quality delivered by the tax authorities of the Mekelle city towards tax evasion were evaluated through the items 'physical quality, outcome quality, and interaction quality.' Questions related to the first, second and third scenario reveals a mean of 1.97, 2.62 and 3.11 respectively and an overall standard deviation of 0.425. Moreover, the agreement respondents had expressed with items i.e., 89.7 per cent 'tax office employee friendliness' and 96 per cent 'tax employee's willingness to help taxpayers.' In addition, respondents had not agreed with the items 'taxpayers replied quickly to tax service needs, employees of tax office knowledge on their job, and tax service needs of employees' which have a mean value of 2.5. This is an indication that taxpayers had less interaction quality with the tax authority. It suggests consistency with findings of Torgler and Schaffner (2007) and OECD (2007) that improvement of tax service quality delivered by tax office would result in enhancement on taxpayer's compliance behaviour.

Table 3 describes the relationship among/ between financial constraints of business profit taxpayers and their attitude towards tax evasion, respondents relied on the average of each item summarized as stated below into five alternatives using SPSS cross tabulation. Therefore, 68 per cent replace their agreement with stated items even though they are dissatisfied with their financial conditions. On the reverse, 36 (19 %) respondents are satisfied with their financial conditions as agreed with the stated items.

According to the survey result shown below (Table 3) a significant number of responses (42 per cent) revealed disagreement with services provided and those dissatisfied with his/her financial conditions, while 13 per cent disagreed but were satisfied or have no financial constraints. The majority of the respondent's response reveals that, those who perceived tax service quality as low are also dissatisfied with their financial conditions.

Table 3: The interaction of financial condition and tax service quality

Components	Alternatives	Financial condition Dissatisfied	Satisfied	Frequency	Percent
Tax service quality	Strongly disagree	26(14 %)	7(4 %)	33	18 %
	Disagree	52(28 %)	16(9 %)	68	37 %
	Neutral	10(6 %)	4(2 %)	14	8 %
	Agree	47(25 %)	12(6 %)	59	31 %
	Strongly agree	9(5 %)	2(1 %)	11	6 %
	Total	144(78 %)	41(22 %)	185	100 %

Source: *Survey result*

6.2 Data analysis using Moderating Multiple Regression

In addition to the descriptive analysis, this section also presents the result of the models through multiple regression analysis, such as p-value, R-squares (R^2), adjusted R-square, significance test at 10 per cent, 5 per cent and 1 per cent, F test and beta coefficients using Stata Version 10.

Table 4: Result of Multiple Regressions for the Moderating Effect of Financial Condition

VARIABLES Tax Compliance	Model One Beta Coefficient	T value	Model Two Coefficient	T value
Tax Service Quality	-.0996	-3.54***	-0.122	-3.96***
Attitude towards tax evasion	.3146	26.82***	0.308	14.21***
Financial Condition	.846	10.31***		
Financial condition*tax service quality			0.064	0.94
Financial condition*Attitude towards tax evasion			-.132	-1.82*
Constant	.185	1.99	0.203	1.64
R^2	0.72		0.7516	
Adjusted R^2	0.7069		0.7230	
F value	144		26	
P value	.000		.000	

Note: The following shows significance level: *** P< 0.1, ** P< 0.05 and * P< 0.01
Source: Stata result

Finally, from the survey data regression result (Table 4) above, the estimated regression equation has been developed for the main effect as follows:

TC= 0.185 +0.3146(ATTE)- 0.0996(TSQ) +0.846(FC) +Ui

The regression results on the interaction effect of moderator variables on the independent variables as presented in model two are justified by the conjunction of model one for comparative analysis. As the output of model one shows, the most significant explanatory variables influencing tax compliance behaviour are tax service quality and attitude towards tax evasion at a 1 per cent significance level. Research hypotheses one and two were formulated to estimate the relationship between attitude towards tax evasion and tax compliance and the interaction of financial condition on taxpayer's attitude with taxpayer tax compliance. Accordingly, the main effect reveals that the attitude of taxpayers towards tax evasion (β= 0.3146; P <0.01) has a positive and significant relation to compliance behaviour, other things remaining constant. Especially, the regression analysis provides evidence in supporting the prediction in (H1) which reveals the attitude of taxpayers towards tax evasion is positively and significantly related to their compliance behaviour and this indicates that taxpayers without favourable attitudes towards tax evasion are more likely to display positive behaviour on tax rule and regulations, this finding is consistent with (Ajzen, 1991; Alabede et al., 2012 and Kirchler et al., 2008).

In model two, attitude, financial condition, and tax service quality were entered and the regression result reveals that the financial condition (β= -0.132; P< 0.10) is significant and has a negative interaction with the attitude towards tax evasion and tax compliance behaviour, the evidence provides support for the hypothesis two (H2).

However, it is inconsistent with the previous studies. The remarkable aspect of this finding is that the absence of the taxpayers' financial condition transformed the relationship between the two variables from positive to negative. This reveals the influence of financial condition had less effect on the taxpayer's attitude towards tax evasion on compliance behaviour. Accordingly, the research suggested that in the absence of the financial condition, taxpayers are likely to be less compliant as a result of unfavourable taxpayer's attitude towards tax evasion. Research hypotheses four and three concerned the effect of tax service quality and the

interaction of financial condition to tax compliance behaviour. In this regard, the effect of tax service quality with the tax compliance behaviour result reveals that perceived tax service quality (β= -0.0996; P <.01) has a negative significant relationship with taxpayers' compliance behaviour, this fails to support hypothesis three (H3). Hence, while tax service quality is low, taxpayers compliance behaviour are less, negatively affected.

From model two, the result reveals that the financial condition (β= .064) has a positive effect but is insignificantly related to tax compliance behaviour. In this case, the study fails to support the hypothesis (H5). Furthermore, more than three fourth of the respondents were not satisfied with tax service quality and dissatisfied with their financial condition, but as in model 2, the results show financial condition does not moderate the relationship between tax service quality and tax compliance behaviour. As per the researchers' view, this implies that whether business profit taxpayers are satisfied or dissatisfied with their financial condition, with the existence of less tax service quality, does not affect their tax compliance behaviour. As a determinant and moderating factor, in the main model, financial condition, and the product term regression result shows (0.845; P< .01) Relationship is strong and positive with tax compliance behaviour. This entails that, even though the taxpayers have financial constraints they are able to obey the tax rules and regulations, this result supports Vogel (1974) illustration.

7. Conclusions

The study used the existing rules and regulations of the business profit tax system specifically, actual income reporting, claiming deductions, returns filed, and timely payment. The sampled enterprises were categorized as somewhat compliant, moderately compliant and fully compliant with each of the four scenarios. The aggregate mean scores for tax compliance behaviour are 1.996, which indicated that the overall sample had moderate tax compliance behaviour with a standard deviation of 0.369 on the existing rules and regulations. Considering the financial condition, dissatisfied taxpayers show mixed results compared to the satisfied taxpayers but comparatively the proportion shows full compliance than less compliance.

Furthermore, financial constraints as an explanatory variable regressed in the second model results in a positive and significant influence on tax compliance behaviour. As a result, when financial constraints of taxpayer's increase, their tax compliance behaviour is affected negatively. The measurement of attitude towards tax evasion evaluates the ethical behaviour and respondents had fair ethical behaviour towards tax system. Accordingly, the researcher found an unfavourable attitude towards tax evasion with an overall mean of 3.98 at 1 per cent significance, and it has a strong positive and significant relation with tax compliance behaviour. The financial condition has significance but negatively moderated the relationship between the attitude towards tax evasion and tax compliance behaviour at 10 per cent. It changes the effect of positive to negative due to the interaction variable. Concerning the quality of interaction between employees and taxpayers on tax employees' willingness to help taxpayers, friendliness, tax office employees' knowledge of their job, tax employees quick response to tax service needs, tax employees' responses to tax service needs have on average less quality. The overall mean scores of tax service quality are 2.46 and a standard deviation of 0.425. Generally, the respondent's perceived tax service quality in Mekelle city is ineffective.

Perceived tax service quality has a significant relationship with taxpayers' compliance behaviour strongly negative at the 1 per cent significance level. Specifically, the study found that the absence of financial condition significantly moderated the influence of taxpayers' attitude towards tax evasion (10 per cent significance level negatively) on tax compliance behaviour. There are interesting findings on the importance of the interacting effect of financial conditions on tax compliance and its determinants and this cannot be undervalued theoretically. It provides for proof on supporting suggestions of literature that the relationship between tax compliance and its factors which are moderated by certain interacting variables.

8. Recommendations

Upon the study results, the majority of respondents were found not complying and have financial constraints and perceived a less tax service quality provided by the tax revenue authority. Exceptional attention should be given to the points raised in order to encourage micro and small enterprises business profit taxpayers to be compliant with the existing tax rules, regulations and generate more tax revenue. On the other hand, besides these, the tax revenue authority of Mekelle City should take into account the physical environment like the accessibility of location, appropriate person, comparative mood at the tax office, impression of tax office outlay and importance of atmosphere to the tax office. The tax revenue authority should establish a 'Taxpayers Assistance Centre' common special unit to ensure that taxpayers get prompt service delivery. Furthermore, it is better to take curative measures like providing incentives for those who fulfill the existing rules and regulations of the tax system.

9. Limitations for future study

The findings of the research have some limitations which requires some considerations to be included in the future study. The study has taken only on business profit taxpayers particularly micro and small enterprises and was carried out in Tigray region. Since the study is limited to only micro and small enterprises, it is possible that the findings may be different in other business enterprises and taxpayers. Therefore, future researchers may intend to conduct their studies on other enterprises with regard to direct and indirect taxpayers.

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Stock Return Dynamics and Portfolio Hedging: A Case of Leading Oil Consuming Economies

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Abstract

The paper examines the return and volatility linkages between equity markets of the leading four oil-consuming economies i.e. the US, China, India and Japan and the Crude Oil market from 2014 to 2018. The VARMA-BEKK-GARCH (1,1) and VARMA-DCC-GARCH (1,1) models have been applied. A significant unidirectional return spillover was observed from WTI Crude Oil to India, China and Japanese equity markets. Long term volatility spillover was found from WTI Crude to US equity markets. Japan displayed regional market integration. Indian, Chinese and Japanese markets showed sticking evidence for regional connectedness. The VARMA-DCC-GARCH (1,1) model offered superior results that were used to construct the optimal portfolio weights. Regional and global investors should focus on stock investing with minimum oil investment to reduce the portfolio risk. On average, the Japan/WTI Crude Oil pair offers the most effective hedge and the US/WTI Crude Oil pair offers the least effective hedge.

Keywords: *Volatility Spillover, Crude Oil, Stock Markets, Hedge Ratio*

1. Introduction

Stock market integration has paved the way for investors to participate in the international platform and benefitted them by providing possible opportunities to diversify the risks. However, strong co-movements reduce these diversification advantages. In such a scenario, commodity markets offer immense diversification gains due to weak correlation with equity markets as suggested by Richard (2013) and Silvennoinen and Thorp (2013). The popularity of commodity markets as an alternate asset class has emerged particularly after its financialization. Crude Oil is a strategic commodity that serves as a major economic indicator for any economy. Its volatility substantially impacts the stock market as claimed by Pindyck (1991). Its movement and linkages are important not only for the regulators and policymakers but also for the investors. The apprehension of equity-oil market linkages provides investors with diversification, hedging and risk management insights.

One of the important measures of strong correlation is through volatility (Diebold & Yilmaz, 2012; Malik & Ewing, 2009). The asset market shocks transmission cannot be possible if the markets are strongly efficient. But, the seminal studies done by Fama (1970) withheld the hypothesis of random walk in favour of the observed clustering effect in volatility. Thus, it led to the inception of the idea of ARCH behaviour in the time series. Further, Kyle (1985) had reinforced that market inefficiency does exist due to the delay of private information getting reflected in the security's prices instantaneously. Thus, the market spillover hypothesis was sustained against the market efficiency in the strong form. Bekaert and Hodrick (1992) and Solnik (1983) assumed that markets are interdependent through means of volatility which are more pronounced than returns. Bekaert and Harvey (1995) tested the impact of variance and covariance in the standard asset pricing model that has led to world market integration.

Following the above studies, a vital study was proposed by Engle, Ito, and Lin (1990), where the volatility in intra-day exchange rates and its cross effect on two markets i.e., the New York and Tokyo markets were investigated. This study gave the definition of country-specific influence of past observations onto the current observations as the “heat wave” and cross-country influences on the present values as the “meteor shower” effect. A striking “meteor shower” effect was found. Given the rapid propagation of shocks across different asset classes, the Contagion literature has evolved since the 1997 crisis episode (Forbes & Rigobon, 2002). Summers (2000) have defined the contagion factors like trade and financial interconnectedness as one of the primary factors that transmit income shocks and innovations/ news shocks from one to the other markets. However, the Contagion is different from normal independence and spillover among the international markets (Beirne, Caporale, & Schulze-ghattas, 2013; Forbes & Rigobon, 2002). This difference was visible during the two recent crisis period from 2008-09 and 2010-12. The investors were more concerned about “flight-to-quality” and commodity markets popularity growth was observed since then (Diebold & Yilmaz, 2012; Mensi, Al-yahyaee & Hoon, 2017). Also due to the financialization of commodity markets, it was possible for investors to hedge their investments in financial securities. Thus, finding evidence for the connectedness across different asset classes serves as a vital input for investment decisions and policy formulation.

The objective of the study is to investigate the temporal relationship and volatility spillover among stock markets of four leading oil-consuming economies i.e. the US, China, India and Japan and the Crude Oil market. It further examines the presence of regional and global transmission of shocks across the international equity markets in the context of free fall of crude oil and in the relatively tranquil period. Finally, to investigate whether Crude Oil can serve as an asset class that can be used to hedge the equity market volatility.

The rest of the paper is organised as follows. The second segment presents the previous studies in the form of 'Literature Review'. The third segment presents the 'Data and Methodology' which is followed by 'Empirical Analysis' in the fourth segment and finally presents the 'Conclusion and Implication' of the study.

2. Literature Review

Primary contributions of market co-movement were made by Forbes and Rigobon (2002) where investigation on the nature of comovement among the stock markets of 28 countries during the period from January 1994 to January 1998 was studied. The period also accounts for the Mexican Peso Crisis and Asian Crisis. The two-day rolling dollar returns of each countries' index was considered. For

incorporating the 1987 US stock market crash, a sample of 10 equity markets were considered. The basic proposition was to examine the correlation between different equity markets that differ in size and market cap. The VAR model framework was chosen for the study. In this study, the cross-correlation was treated for heteroskedasticity bias which creeps in due to high volatility during periods of turmoil. Thus, after correcting for the upward biases the results revealed that there was no significant increase in unconditional cross-correlation among the markets during the crises periods.

Diebold and Yilmaz (2009) have investigated the aspects of return and volatility transmission of 19 markets which involves 7 mature markets and the rest emerging for a period from January 1992 to November 2007. A "spillover index" was created reflecting total off-diagonal spillover from innovations in one market to its corresponding forecasted error variance as a percentage of total error variance in a VAR framework. It was observed that return transmission was more continuous and exhibited a rising trend. Thus, intuitively reinforcing the market integration phenomena. But volatility transmission had subsequent bursts corresponding to crisis events.

A further improvement was made by Diebold and Yilmaz (2012) for the computation of spillover index through Cholesky decomposition. The paper overcame the limitation of variable ordering through the Generalised Variance Decomposition method. The study was done to find the linkages among the stock, commodity, bond and currency market from January 1999 to January 2010. The objective was to unveil the directional and total spillover that possibly existed during the crisis period which led to the collapse of the US economy. The result indicated the cross spillover intensified during the crisis but remained lower before that.

Ahmad, Mishra, and Daly (2018) examined the interconnections of BRICS bond markets and bond markets of the US, Europe (EMU) and Japan for the year 1997 to 2016 using weekly observations. The Diebold and Yilmaz (2012) and Diebold and Yilmaz (2009) approach was followed to measure the return and volatility spillover among these markets, which was further confirmed through static and dynamic network settings. The DECO MGARCH model was also constructed to reaffirm the conclusions from the above model. The results found that within the BRICS market, the Indian and Chinese markets offer a scope of diversification. But the volatility transmission was significant in Brazil -Russia and South Africa- Russia pair. While considering the global and BRICS connections, the US and Chinese markets were strongly connected. Japan transmitted shocks to BRICS. But the directional spillover was stronger in the case of the US. The results were in tandem with the recent developments experienced by the BRICS market in its total bond exposure to US and Japanese markets. Golosnoy, Gribisch, and Liesenfeld (2015) investigated the market interdependence with the sample countries like Japan, Germany, and the US from 1996 to 2009. To take into account trading periods as overlapping and non-overlapping separately, the study created four different trading periods with high-frequency data. The crisis period was assumed to be from August 2007 to March 2009. It is based on the Wishart model which adopts a method of moments estimator. The short-term variances and covariances were measured during pre-crisis and crisis periods. It was found that the three markets follow the heat wave hypothesis and the cross-market meteor shower hypothesis in the pre-crisis phase. Strong linkages between the US and Germany were found. The crisis period has led to the burst of cross-market linkages pattern. Striking evidence of increased cross-market linkages was found supporting the contagion effects for all three markets. The decoupling phenomena which was true for the Japanese market, has reversed after the crisis.

Bagchi (2017) have applied the APARCH model for estimating the volatility linkages in the BRIC market and Crude Oil from 2014-2016. The Indian, Brazilian and Russian markets displayed a leverage effect where the negative information creates shocks while for the Chinese market this was the opposite. The presence of long memory and clustering was confirmed for all variables. Malik and Ewing (2009) have found the volatility transmissions between oil and some US sectors for a period from 1992 to 2008. Awartani and Maghyereh (2013) have adopted Diebold and Yilmaz (2012) and Diebold and Yilmaz (2009) to investigate the spillover from oil to GCC economies and vice-versa for a period from 2004-2012. It was found that the oil spillover was present for all GCC countries. For the less dependent oil economies, the return spillover from oil to these markets was less as compared to economies like Abu Dhabi, Qatar, Oman and Saudi Arabia. Returns spillover was more striking than volatility transmission. Panda and Thiripalraju (2018) through the granger causality and EGARCH techniques investigated the spillover across the

BRICS markets. Asymmetric volatility spillover was found from Brazil to Russia, China and from India to Russia and from Russia to China. Junttila, Pesonen and Raatikainen (2018) found via the DCC-GARCH model that the gold futures displayed a negative correlation with the US stock market during the crisis period while crude oil reflected the opposite. Thus, gold proved a safe haven property. Yousaf and Hasan (2019) revealed that during the Chinese Crisis period, the spillover was substantially observed from oil to the Indian as well as the Korean stock market by the VAR-GARCH model. The portfolio weights decreased during the Chinese market crisis epoch indicating oil can effectively hedge the stock market risk. Sarwar, Tiwari and Tingqiu (2020) through the BEKK-GARCH model found bidirectional causality between Oil and the Pakistan stock market, unidirectional relation from Oil to the Chinese stock market and mixed evidences in case of the Indian stock market for daily, weekly and monthly data. Morema and Bonga (2020) found evidence of oil and gold price importance on the volatility of the South African stock market using the ADCC-GARCH technique. It was found that the spillover existed between the two commodities and sectoral and aggregate index level. The importance of gold in hedging the stock price risk was evidenced and found to be greater than oil. Lin, Zhou, Jiang and Ou (2021) using non-linear granger causality found risk spillover from the US to WTI oil market, from Europe to Brent Crude and vice-versa. Further causality existed between Dubai Crude to Chinese stock market. The non-linear dynamics and long memory property provide a hedging opportunity.

In the context of Indian assets markets, the study done by Prosad and Sinha (2017) to measure the magnitude of financial contagion. The commodity derivatives market was linked with gold, bond, stock and foreign exchange markets from 2006-2016. DCC-GARCH and Diebold and Yilmaz (2012) and Diebold and Yilmaz (2009) method was applied. The evidence of contagion was found between bond, currency, equity and commodity markets. But the strongest contagion was observed in the commodity-stock pair. Volatility was transmitted by the commodity market to other markets largely.

From the above literature, the present study attempts to contribute additional knowledge on Stock and Oil market linkages through the multivariate GARCH methods. Most of the studies in the past have not seen the linkages over the time frame from 2014 when the oil prices were falling in particular. Additional knowledge for portfolio hedging is also provided.

3. Data and Methodology

3.1 Null Hypotheses

H1: The Crude Oil market and Stock markets are not connected.

If this is rejected, then striking evidence for spillover among them will be found. Thus, we can conclude that meteor shower effects are present.

H2: Shock transmission does not take place across the markets.

If this is rejected, then one market shall be the net transmitter and the other one will be the receiver.

H3: The regional connectedness is not found among India, China and Japan.

If this hypothesis is rejected, then regional integration can be established among these markets.

H4: The US market has no volatility linkages with other equity markets.

3.2 Data

We have chosen four sample countries i.e. US, India, China and Japan. The West Texas Intermediate Crude Oil (WTI) has been taken for the study. The study is based on the daily closing prices from 1st August, 2014 to 31st December, 2018. The period is considered to be tranquil and observed a historical fall in oil prices. These variables are expressed in logarithmic return terms for the analysis purpose. Calculated as $LR = ln(\frac{R_t}{R_{t-1}})$. R denotes the value of the MSCI indices. The data for WTI Crude Oil has been sourced from investing.com[1] and the country level index data has been sourced from MSCI Inc[2]. The MSCI data are denominated in dollars so that exchange rate movements can be taken care of. The return series of WTI Crude Oil, Chinese Stock Market, Indian Stock Market, Japanese Stock Market and US Stock Market are represented as LRW, LRC, LRI, LRJ and LRU respectively.

[1] WTI data sourced from "http://www.investing.com" www.investing.com accessed on 10th January, 2018

[2] MSCI India, MSCI China, MSCI Japan, MSCI US indices has been accessed from "http://www.msci.com" www.msci.com on 10th January, 2018

3.3 Methodology

The Multivariate Simultaneous Generalized ARCH models have been applied for the study.

VARMA-GARCH model is applied to estimate returns and volatility spillover across the markets under consideration. The VAR model is expressed as:

$$r_{it} = v_{i0} + \sum_{j=1}^{5} \quad v_{ij}\, r_{jt-1} + \varepsilon_{it}, \varepsilon_{it}|\varphi_{t-1} \sim N(0, h_{it}), i = 1,2,3,4,5 \quad (1)$$

$$\varepsilon_{it} = \mu_{it}\sqrt{h_{it}}, \mu_{it} \sim N(0,1) \quad (2)$$

$$h_{it} = K_{i0} + \sum_{j=1}^{5} \quad \alpha_{ij}\varepsilon_{jt-1}^2 + \sum_{j=1}^{5} \quad \beta_{ij} h_{jt-1} \quad (3)$$

The basic GARCH-BEKK model is then specified in the following manner:

$$H_t = C'C + B'H_{t-j}B + A'\varepsilon_{t-i}\varepsilon'_{t-i}A \quad (4)$$

r_{it} is the return vector of four series. ε_{it} is the residuals with conditional variance h_{it} . φ_{t-1} is the lagged market information set. Equation (3) shows the GARCH (1, 1) model in the VARMA framework. The α coefficients specify the effect of innovations from market *i* to *j*. While β shows the volatility transmission from *i* to *j*.

To estimate the time-varying conditional correlation among the variables we use the Multivariate DCC-GARCH model.

The mean equation for the DCC-GARCH model given by Engle, Robert F & Sheppard (2001):

$$r_t = v_t + \lambda 1\ r_{t-1} + \varepsilon_t \quad (5)$$

Where r_t represents the return of WTI Crude Oil in China, India, Japan and US stock markets over t periods. Thus r_t is a 5X1 vector of the variable's return.

ε_t represents (ε_{1t}, ε_{2t}, ε_{3t}….ε_{nt}) where $\varepsilon_t|\varphi_{t-1} \sim N(0, h\_t)$. v_t is the constant mean vector conditioned on φ_{t-1} information set.

h_t is the matrix of conditional variance- covariance. $\lambda 1$ are the lag one autoregressive coefficients of r_t. For estimating the DCC model, a two step process has to be followed. GARCH coefficients are estimated in the first step. Then the correlations are obtained in the final step. h_t can further be written as:

$$h_t = d_t\, r_t\, d_t \quad (6)$$

Where, $d_t = diag(c_{it}^{1/2})$: represents the matrix of standard deviation.

r_t is the matrix representing conditional correlation.

c_{it} follows the GARCH(1,1) specification on conditional volatility.

For DCC- GARCH univariate GARCH(1,1) specification is used.

$$c_{it} = v + \alpha_i \varepsilon_{i,t-1}^2 + \beta_i c_{i,t-1} \quad (7)$$

The estimator for correlation is denoted as $\rho_{ij,t} = q_{ij,t}/(q_{ii,t}q_{jj,t})^{1/2}$ & r_t can be written in terms of $P_t = q_{it,t}$ as follows:

$$r_t = (diag(P_t))^{-1/2} P_t (diag(P_t))^{-1/2} \quad (8)$$

$P_t = (1 - A - B)p + A\varepsilon_{t-1}\varepsilon_{t-1}^T + BP_{t-1}$ & is square (nXn) symmetric matrix

$p = Cov[\varepsilon_t \varepsilon_t^T] = E[\varepsilon_t \varepsilon_t^T]$ is the unconditional standard error covariance matrix

$p = \frac{1}{T}\sum_{t=1}^{T} \quad \varepsilon_t \varepsilon_t^T$ and $A + B < 1$.

4. Empirical Analysis

4.1. Descriptive Statistics Summary

Table 1. Descriptive Summary

	LRW	LRC	LRI	LRJ	LRU
Mean	-0.00069	0.000051	0.000213	0.000046	0.00022
Median	0	0	0.000156	0.000238	0.000236
Skewness	0.150655	-0.10835	-0.64344	0.00587	-0.62961
Kurtosis	2.211626	2.663029	3.43199	4.736336	3.244804
Variance	0.000594	0.00016	0.000103	0.000128	0.00007
Jarque-Bera	232.7046	333.4362	627.5078	1047.808	565.8421
P-value	0	0	0	0	0
ADF Test	-35.7858	-30.485	-31.3383	-41.7668	-33.4335
P-value	0	0	0	0	0
Arch Test	14.7911	11.04931	3.766442	21.47839	21.24198
P-value	0	0	0.0001	0	0

Table 1 presents the summary statistics of each individual series included in the study. The mean returns of WTI Crude Oil is negative and all the equity markets divulge a positive mean return. The US and Indian market display the highest returns in dollar terms. The highest volatility is observed in the WTI Crude market, followed by the Chinese equity market, Japanese Market and Indian Market respectively. The US equity market is the most stable one. The measure of skewness depicts that all equity markets except the Japanese are negatively skewed. This implies that most of the values lie on the left tail of the return distribution of these series. While for the WTI Crude Oil positive skewness is depicted. The kurtosis measure indicates that none of the series are mesokurtic. The skewness and kurtosis measures show that the series are not normally distributed which is further supported by the Jarque-Bera normality test. The Augemented Dicky Fuller test shows that all the return series are stationary. The ARCH test shows that none of the series are homoscedastic. Thus, from the descriptive summary it can be concluded that ARCH and GARCH family tests can be applied for the heteroscedastic time series.

4.2. Unconditional Correlation

Table 2. Correlation Matrix

	LRW	LRC	LRI	LRJ	LRU
LRW	1 --				
LRC	0.10679* (0.0003)	1 --			
LRI	0.0819* (0.0061)	0.46754* (0.00)	1 --		
LRJ	0.038174 0.2015	0.34208* (0.00)	0.24009* (0.00)	1 --	
LRU	0.26444* (0.00)	0.34303* (0.00)	0.26622* (0.00)	0.0697** (0.0197)	1 --

From Table 2, the unconditional correlation between the different combination of variables can be observed. All the equity pairs are significantly positively correlated with WTI Crude Oil, except for the Japanese equity market. The correlation coefficient is least for the Indian equity market and highest for the US equity market but is very less offering diversification advantages. The regional pairs (China-India, India-Japan and Japan-China) are significantly correlated to each other. While all equity markets witnessed a positive correlation with the US equity markets with the Chinese market being the most highly correlated followed by the Indian market.

4.3. Multivariate GARCH Results

Table 3. VAR-BEKK-GARCH (1,1) Results

Mean Equations					
	LRW	**LRC**	**LRI**	**LRJ**	**LRU**
LRW	-0.0653*	0.02925	0.0145	0.0078	0.03765
	0.011	0.5997	0.8271	0.9025	0.617
LRC	0.0401*	-0.0265	0.0507	0.0017	0.4063*
	0.0015	0.3926	0.1386	0.9504	0
LRI	-0.0096	0.00106	0.0092	-0.016	0.36566*
	0.414	0.9623	0.7639	0.4902	0
LRJ	0.0369*	0.04***	0.0926*	-0.2648*	0.52088*
	0.0002	0.0957	0.00105	0	0
LRU	-0.00203	-0.0157	0.0513*	-0.0235	0.0092
	0.8333	0.349335	0.0048	0.46325	0.7639
Variance Equation					
ARCH terms					
	LRW	**LRC**	**LRI**	**LRJ**	**LRU**
LRW	0.21822*	0.00388	0.01228	-0.0055	-0.01607
	0	0.7946	0.2678	0.7204	0.34519
LRC	0.0128	0.1245*	0.03404	-0.059*	-0.10714*
	0.8546	0.00028	0.2165	0.0061	0.0012
LRI	0.0617	-0.0693*	-0.0766*	-0.0734**	0.10211*
	0.4342	0.0151	0.0082	0.0101	0.00456
LRJ	0.0578	-0.01898	0.00601	0.01716	0.01449
	0.6256	0.28609	0.8311	0.63607	0.59609
LRU	-0.14309	0.0043	0.00088	0.01535	0.40372*
	0.2517	0.95106	0.9856	0.8044	0
GARCH terms					
	LRW	**LRC**	**LRI**	**LRJ**	**LRU**
LRW	0.9558*	-0.0034	0.0198	0.0089	0.00669
	0	0.6461	0.2125	0.41402	0.29459
LRC	0.05333	1.0138*	0.00932	0.0996*	0.0408*
	0.2587	0.00	0.5592	0.0007	0.00005
LRI	-0.1968	-0.0485*	0.9386*	-0.2364*	-0.00805
	0.1175	0	0	0	0.61737
LRJ	-0.0448	-0.0266	0.2013*	0.90728*	0.02504
	0.53606	0.5348	0	0	0.1647
LRU	0.13796**	-0.00048	0.00658	-0.00675	0.8721*
	0.0498	0.9849	0.8389	0.78145	0

Parentheses ( ) shows significance at 1% and 5% level. The log likelihood is 17625.6054.

Table 3 depicts the VAR-BEKK-GARCH (1,1) model specifications. The rows represent markets *i* and the columns represent markets *j*. Thus, the transmission takes places from *j to i* The past returns of the WTI Crude Oil and the Japanese equity market negatively influenced their current returns respectively. Past returns of the US equity market positively influenced the current Chinese market returns (2,5). A bidirectional return spillover was observed between the Indian and US equity market pair. Japanese equity market was affected by past returns of all markets. Unidirectional spillover was found from WTI Crude Oil market to Chinese Stock and Japanese Stock market.

The variance specification is bifurcated into ARCH parameters and GARCH parameters. All the ARCH parameters are significant except for the Japanese markets (4,4). The past innovations in the WTI Crude Oil market, Chinese market and US market manifolds the current volatility of their own return series via positive parameters (1,1), (2,2) and (5,5). But the opposite holds for the Indian equity market (3,3). The past squared errors in the Japanese equity market negatively influenced the current period's volatility in the Chinese equity market (2,4) and in the Indian market (3,4). The past squared errors in the US equity market negatively influenced the current period's volatility in the Chinese equity market but positively influenced the Indian equity market. The past squared errors in the Chinese equity market negatively influenced the current period's volatility in the Indian equity market.

The GARCH parameters are significant. The volatility persistence was observed in all the return series through the sum of ARCH and GARCH terms. The volatility persistence is lowest in the Indian market as the sum is 0.8621 followed by the Japanese market with the sum of 0.9244. While in WTI Crude Oil market and Chinese and US equity markets, the volatility is difficult to predict as the sum crosses unity. The own lagged variances have a much stronger effect in predicting the next day's conditional volatility as compared to cross effects. GARCH terms are higher than the ARCH terms in predicting current volatility. The unidirectional volatility spillover was found from Japan to China and from US to China. A bidirectional spillover was observed between India and Japan. A negative unidirectional spillover was found from China to India. Volatility in WTI Crude Oil effects the current US equity market's volatility. Japanese market remained no more segmented. Evidence of integration of the Japanese market with China and India was found. The regional integration was found with the Japanese market leading. The Indian and Chinese equity markets are negatively linked evidencing the scope for International diversification advantages available for the foreign investors. However, the evidence of international integration is limited particularly for the Japanese market. US tend to be linked with the Chinese and Indian markets.

Table 3a. Diagnostics of VAR-BEKK- GARCH (1, 1) Model

	LRW	LRC	LRI	LRJ	LRU
Q (20)	14.0631	16.144	20.105	41.4702	22.3621
P-Value	0.8272	0.7076	0.4513	0.00324	0.32119
Q^2 (20)	6.4313	13.363	10.58013	15.3717	15.9498
P-Value	0.99818	0.86126	0.95639	0.7547	0.7197

Table 3a. presents the diagnostic results for VAR-BEKK-GARCH (1,1) model suggest that for both the standardised residual and standardised squared residuals test none of the fitted series have serial correlation

Table 4. VAR-DCC-GARCH (1,1) Results

Mean Equations					
	LRW	**LRC**	**LRI**	**LRJ**	**LRU**
LRW	-0.0738*	0.0298	-0.049	0.065	0.1228
	0.0029	0.5609	0.454	0.24137	0.1297
LRC	0.0294*	-0.0354	0.0228	0.0427	0.4459*
	0.0224	0.19337	0.4061	0.169	0
LRI	-0.0196**	0.00055	0.0026	-0.00014	0.3473*
	0.0802	0.98003	0.91828	0.995	0
LRJ	0.0221*	0.0421*	0.0853*	-0.2375*	0.5371*
	0.0405	0.0443	0.0001	0	0
LRU	-0.0093	-0.0137	-0.03***	0.0485**	-0.0408
	0.2173	0.3448	0.0905	0.0147	0.1065
Variance Equation					
ARCH terms and GARCH terms					
	A		**β**		**α + β**
LRW	0.0688*		0.9134*		0.9822
	0.000035		0		
LRC	0.068*		0.8965*		0.9645
	0.00002		0		
LRI	0.0534*		0.9155*		0.9689
	0.005639		0		
LRJ	0.1526*		0.7341*		0.8867
	0.08404		0.00024		
LRU	0.1919*		0.7528*		0.9447
	0		0		
A	0.003501*		**B**	0.9887*	
	0.00545			0.0	

( ) parentheses shows significance at 1% and 5% level. Log likelihood is 17633.5214.

Table 4 represents the VAR-DCC-GARCH (1,1) model. The mean parameters suggest that past returns in WTI Crude Oil and Japanese equity market negatively influence the current period's returns. The return spillover was found from WTI Crude Oil to Chinese, Indian and Japanese equity markets. But the past returns of WTI Crude negatively influences the Indian equity market. Unidirectional return spillover was found from all markets to Japanese equity markets. While evidence of a feedback relation between the US and Japan was found. US equity market influences the current returns of China and India. A negative return spillover was found from India to the US equity market. These results corroborate with the VAR-BEKK-GARCH (1,1) model results except with the additional influence of WTI Crude Oil returns over the three regional markets.

The Variance parameters of VAR-DCC-GARCH (1,1) model specifies that all the ARCH and GARCH terms are significant. But the past conditional variance has a more pronounced effect over current volatility than the previous squared residuals. The volatility persistence through the sum of $\alpha + \beta$ was observed to be the strongest in WTI Crude Oil followed by Indian and Chinese equity markets. The lowest volatility persistence was observed in the Japanese equity market. Further, the DCC parameters A and B are significant with the evidence of dynamic correlations which vary with time. The conditional correlation observed a higher degree of persistence in volatility obtained through summation of A+B i.e., 0.992201. The long-term persistence was high than the short-term. However, the summation is less than one implying that the DCC model is mean-reverting.

Table 4a. Diagnostics of VAR-DCC- GARCH (1,1) Model

	LRW	LRC	LRI	LRJ	LRU
Q (20)	14.0631	16.144	20.103	41.4702	22.3621
P-Value	0.8272	0.7076	0.4514	0.00324	0.32123
Q^2 (20)	6.4308	13.356	10.58013	15.3727	15.9478
P-Value	0.99818	0.86155	0.95639	0.7547	0.7198

Table 4a. shows the diagnostic results for the VAR-DCC-GARCH (1,1) model. It can be seen that through both the standardised residual and standardised squared residuals test none of the fitted series have a serial correlation problem except for Japan where the standardised residual shows that the null hypothesis of no serial correlation in the fitted series residual gets rejected. However, the standardised squared residuals test cannot reject the null hypothesis of no serial correlation in the squared fitted residuals of the Japanese market.

On comparing the VAR-BEKK-GARCH (1,1) model with VAR-DCC-GARCH (1,1) model, it was found that the latter is better as the Log- Likelihood of the latter model was higher (17633.5214) than the Log-Likelihood of the previous model (17625.6054). Thus, constructing optimal portfolio weights and hedge ratios using the conditional variances, VAR-DCC-GACRH (1,1) model was adopted.

4.4. Dynamic Conditional Correlation of Equity Markets with WTI Crude Oil

From Figures 1 to 4, the dynamic conditional correlations results present the time-varying correlations of each equity market with the WTI Crude Oil. Fig 1 shows the correlation between China and WTI that ranges from 0 to 0.175 and varies over time. The correlation is positive throughout the sample period but low. From the inception of Crude Oil decline from August 2014 to 2015, the correlation of the Chinese equity market and WTI Crude started weakening, signifying higher scope of diversification. It touched the zero mark during June 2015 when the Chinese equity market plummetted due to "malicious short selling" (Maio, Ramchander, Wang, & Yang, 2017). However, the correlation rose sharply after that and touched 0.15 during the "Black-Monday" stock market event. The correlation stood high during the entire stock market turbulence period till late 2016. This depicts that during the market bursts periods, the cross-asset correlation tends to rise thereby lowering diversification advantages for short term traders.

Fig 2 shows the correlation between India and WTI that ranges from 0 to 0.175. The dynamic correlations vary with time but remained positive throughout the sample period. The correlations were low except for the period during 2016 when the Indian Stock market trembled due to a number of global factors like global economic slowdown, commodity slump and also the mounting NPA's in the Indian banking sector that caused severe capital flights during the first half of 2016. Further, in November 2016 the demonetisation effect was also observed through plummeting stock prices.

Fig 3 shows the correlation between Japan and WTI that ranges from 0 to 0.12. The dynamic correlations vary with time but remained positive. The correlation remained at 0.06 to 0.08 range. The correlation dipped during 2016. In

January, the Bank of Japan followed a negative interest rate policy, followed by other global factors particularly the fear of rising US inflation and rising US bonds yields have led the Japanese stock market to tumble. The correlation strengthens during mid-2016 to late 2016.

Fig 4 shows the correlation between the US and WTI that ranges from 0.25 to 0.35. The correlation seemed to be high as US Shale oil production is contributing to oil supply and one of the prime reasons for lowering of oil prices. Another reason is that the Crude oil is traded in US dollars.

Fig 1. Dynamic Conditional Correlation of China with WTI

Fig 2. Dynamic Conditional Correlation of India with WTI

Fig 3. Dynamic Conditional Correlation of Japan with WTI

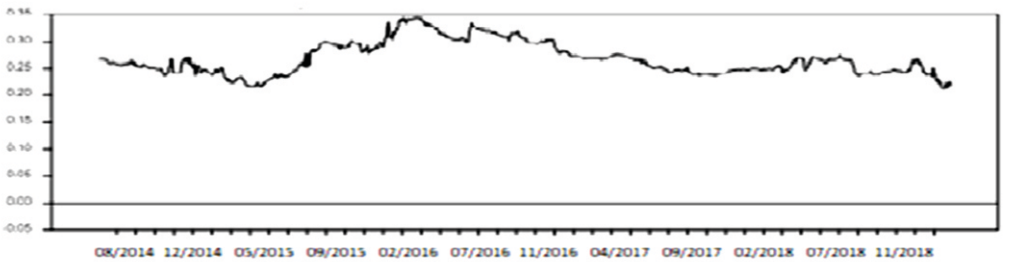

Fig 4. Dynamic Conditional Correlation of US with WTI

4.5. Portfolio Weights and Hedge Ratio Results

The VAR-DCC-GARCH (1,1) model estimates can be used to construct optimal portfolio weights. The investor who holds stock is apprehensive about the price volatility and can hedge this volatility through investment in another asset class, here, Oil. Kroner and Ng (1998), have provided the formula for optimal portfolio weights through the conditional volatilities of the selected multivariate GARCH model as follows:

$$w_t^{ij} = \frac{h_t^i - h_t^{ij}}{h_t^j - 2h_t^{ij} + h_t^i}$$

$$w_t^{ij} = \begin{cases} 0 & ,if\ w_t^{ij} < 0 \\ w_t^{ij} & ,if\ 0 \le w_t^{ij} \le 1 \\ 1 & ,if\ w_t^{ij} > 1 \end{cases}$$

Where, w_t^{ij} represents the weight of stock for a portfolio consisting of one-dollar of WTI Crude and stock at time t. h_t^i and h_t^j are the conditional variance of stock and WTI Crude markets respectively. h_t^{ij} represents the conditional covariance between stock and WTI Crude returns at time t. The weight for the WTI Crude market is $(1 - w_t^{ij})$. Further, the portfolio hedge ratio can also be constructed using the estimates of the model. Kroner and Sultan (1993) have given a formula where an investor can hedge his long position in one asset class (here stock) with a short position in another asset class (here WTI Crude) in order to minimise the portfolio risk. The formula is expressed as follows:

$$\beta_t^{ij} = \frac{h_t^{ij}}{h_t^j}$$

Table 5. Portfolio Weights Summary

	Mean	St Dev	MIN	MAX
China/WTI	0.81	0.1	0.44	0.98
India/WTI	0.86	0.06	0.6	0.98
Japan/WTI	0.86	0.06	0.47	0.98
US/WTI	0.95	0.09	0.27	1

Table 6. Hedge Ratio Summary

	Mean	St Dev	MIN	MAX
China/WTI	0.06	0.02	0	0.12
India/WTI	0.03	0.01	0	0.08
Japan/WTI	0.02	0.01	0	0.1
US/WTI	0.09	0.04	0.03	0.36

Table 5 and 6 represents the average portfolio weights and average hedge ratio respectively. The optimal weights differ from 81% to 95% for Chinese and US markets respectively. The results indicate that for every dollar invested in the portfolio of Chinese stock and WTI Crude Oil, 81 cents should be invested in the Chinese stock market and the remaining 19 cents should be invested in the WTI Crude Oil market. For the Indian and Japanese markets, the weights are 86% in stock and 14% in oil. For the US market, the weights are 95% in Stock and 5% in oil. The regional investors and global investors should focus on stock investing with minimum oil investment to reduce the portfolio risk withaffectingting the market expected return.

The optimal hedge ratio values are less for all the portfolios. This signifies that hedging is effective in the selected markets. The hedge between Chinese stock and WTI Crude is 0.06. This indicates that an investor holding one dollar long position in the Chinese stock market, should invest 6 cents in the WTI Crude Oil market. The cheapest hedge is long Japanese Stock with Short WTI Crude. While the hedge of US stock with WTI Crude is found to be the relatively expensive one. The results of the hedge ratio complement the findings of the DCC model. The correlation of US and WTI was high thus offering lower hedging benefits while the correlation of Japan and WTI was low thus offering the highest hedging benefits.

5. Conclusions and Implications

The paper investigates the return and volatility linkages between four leading oil-consuming economies i.e. US, China, India and Japan and the Crude Oil market. Evidence for regional and global market connectedness is also sought for a period from August 2014 to December 2018 using daily observations. The MSCI indices have been taken for each of the equity markets. The unconditional correlation results highlight that Japan offers the highest diversification advantage with WTI Crude Oil followed by India and the least benefit is provided by the US market. All the equity markets observe a positive correlation with the US. The regional correlation is also significant and positive. The VAR-BEKK-GARCH (1,1) and VAR-DCC-GARCH (1,1) models have been applied. A significant unidirectional return spillover was observed from WTI Crude Oil to India, China and Japanese equity markets as found by Noor and Dutta (2017). Japanese equity market was affected by past

returns of all equity markets. A bi-directional return spillover was found between Indian and US markets and between Japan and US stock markets. Lagged returns of the US market also influenced the Chinese equity market. VAR-BEKK-GARCH (1,1) model provides superior volatility spillover results. Long term volatility spillover was found from WTI Crude to US equity markets as found by Mensi, Beljid, Boubaker, and Managi (2013). Short term volatility spillover was found from all equity markets to the Indian equity market and from the Japanese and US markets to the Chinese stock market. While the long-term volatility spillover was among regional markets i.e., from China to India, Japan to China and bidirectional spillover between Japan and India, unidirectional volatility spillover was found from the US to Chinese markets. Therefore, the evidence of the meteor shower effect was strong for the regional market but limited for the global market. The short-term volatility persistence was found to be weaker than the long-term persistence in volatility. Japan displayed regional market integration but limited global integration as found by Kumar (2012). Indian, Chinese and Japanese markets showed sticking evidence for regional connectedness. Strong linkages were found between US and Chinese and Indian markets. The VARMA-DCC-GARCH (1,1) model offers superior results and the dynamic correlation coefficients are observed to be significantly varying over time. The conditional correlations tend to be mostly affected by global factors as found by Boubaker and Raza, 2017 for the BRICS market. The conditional volatility results from this model were further used for assessing portfolio hedge ratios between oil and equity markets according to Kroner and Sultan (1993). The optimal portfolio weights were constructed as an input for diversified allocation of oil-equity markets portfolio. The regional investors and global investors should focus in stock investing with minimum oil investment to reduce the portfolio risk withaffectingting the market expected return. The time-varying hedge ratios were obtained over the entire sample period indicating that the hedge positions need to be revised. On an average, the Japan/WTI Crude Oil pair offers the most effective hedge and the US/WTI Crude Oil pair offers the least effective hedge.

The study is useful particularly for international investors who want to avail diversification benefits. The portfolio managers can utilize this study as input for their portfolio allocation and for hedging purposes. Further, they can use the inputs from this study to maximise risk-adjusted return. It also offers insights to policy makers and regulators to implement adequate controls and regulations due to enhanced market integration.

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Factors influencing Student Mentoring: Insights from Higher Education Institutions

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Abstract

Mentoring has a close relationship to the word journey, symbolic of a goal-oriented process. Goal 4 of the Sustainable Development Goals (SDGs) stress on quality education and mentoring in educational institutions is a vehicle in this direction. Higher education is a crucial phase when students seek coaching and guidance for professional development. Higher Education Institutions (HEI) focusing on quality education assign mentors for students' academic and professional enhancement. The present study involving 92 participants describes the mentoring process followed in two social science courses of two different HEI by following a mixed-method and employing descriptive statistics and grounded theory. The emergent themes include continued communication channels between mentor and mentee, goals, duration, frequency, conflict mitigation, age and inclusion. These are structured as a model which is akin to the Rhodes Model of Youth Mentoring but more comprehensive and suited to the Indian context.

Keywords*: Mentoring, Higher Education, Youth, Grounded Theory, Academic Coping, Professional Development.*

1. Introduction

A mentor is a trusted counsellor, coach or guide as defined by Merriam Webster Dictionary and interchangeably known as a teacher or professional guidance counsellor. Mentoring as a process is a long term investment in a younger professional to ensure the development of the person through an experienced, seasoned and qualified mentor. Long term investment also indicates a qualitative engagement. Fletcher and Mullen (2012) argue that there is a strong relation to the word *journey* on tracing the word mentor. This indicates that the process of mentoring is a journey leading to a destination and follows a medium.

The mentoring process was initially practised in educational institutions, especially in higher education. It is closely related to Goal 4 of the Sustainable Development Goals (SDGs) and based on the objective of 'leave no one behind'. Section 12.3 of the National Education Policy (NEP)-2020 resonates the need for mentoring in Indian Higher Education Institution (HEI) by saying that, "Faculty will have the capacity and training to be able to approach students not just as teachers, but also as mentors and guides." Additionally 14.4.2.j directs HEIs to, "Provide socio-emotional and academic support and mentoring for all such students through suitable counselling and mentoring programmes." This suggests mentoring as an indispensable practice for imparting quality education. However, mentoring in Indian HEIs is at a nascent stage. Mentoring practice is also being adapted to workspaces, and there is also a practice of paid mentors sought by individuals who act as 'life coaches' for guidance in personal lives.

In all the scenarios, there are four common characteristics.

- This dyadic relationship is meant to enhance functionality and performance; hence the focus is on investment.
- The relationship is a space for open learning, close monitoring and regular feedback.
- There are exchange, transfer and development of skills, ideas, knowledge, and belief systems.
- The medium of the relationship is communication.

2. The Need for Mentoring in HEI in India

Education, especially higher education, is the most crucial and common phase when individuals seek or are assigned mentors as a part of academic and professional enhancement. The University Grants Commission (UGC) highlights the need for mentoring for both students and faculties, quoting the Policy Document of the NEP-2020. It asserts, *"It is evident from the Policy Document that HEIs are to be transformed into large, well resourced, vibrant multidisciplinary institutions providing high-quality teaching, research, and community engagement."* The All India Survey on Higher Education (2018-19) states that there are 37.4 million students enrolled in various HEIs across India, 46.8 per cent of which are female students, 5.56 million are Scheduled Caste and over 2 million are Scheduled Tribes, it also includes 0.86 million disabled students. This indicates a significant number of vulnerable populations who seek effective guidance through mentoring in HEIs. A global study by Nature involving 6300 participants worldwide and over 2000 scholars from Asia indicated that 21 per cent of PhD scholars experienced bullying by their guides. This throws light on the prevalence of the exclusionary practice in the HEIs.

Gonzalez (2006), Creighton (2001), Diamond (2010), Heinrich (2005) argues that despite varying and contrasting responses regarding mentoring and quality engagement, students in under-graduation, post-graduation and doctoral programs have expressed the 'need' for mentors for exchange of values, experience and exchange of thoughts and skills. This could be attributed to the following points.

- Coping with academic pressure at the level of higher education.
- Preparing for professional growth and entry into the job market.
- Social and emotional learning for Whole Person Development (WPD)

2.1 Mentoring Practice in Indian HEIs

The erstwhile Ministry of Human Resource Development released "Deeksharambh", a UGC Guide to Student Induction Programme in 2019. It aims to help new students adjust and feel at ease in the new environment, instil in them the culture of the institution, help them build alliances with fellow students and faculty members, and expose them to a sense of larger purpose and self-exploration. Medicine, Social Work and Teacher Training courses have mentoring as an essential component in fieldwork that ensures learning

and skill-building. “Paramarsh” is also a UGC Scheme for mentoring NAAC accreditation aspirant institutions by enhancing the overall quality of the mentee institutions to enable them to get accredited.

The Internal Quality Assurance Cell (IQAC) of St. Teresa's College, Ernakulam, Kerala has a 'Learner Mentoring Policy'. This policy aims to ensure that learners have the opportunity to work with a mentor who will offer support and guidance on academic issues. Thus, a personal relationship is created for a better understanding of the student's aspiration, strengths and weaknesses. The College regularly reviews the effectiveness of the policy and makes adjustments as and when necessary in response to the needs of those involved.

The data related to HEIs practising mentoring in India is not segregated and compiled currently but there is literature on specific academic disciplines and HEIs in India adopting mentoring practice. The Medical, Nursing and Social Work courses have mentoring practice. Especially Social Work courses have an essential element of fieldwork practicum which mandates students supervision. Therefore over 700 Social Work departments and institutions in the country have mentoring practice.

CHRIST (Deemed to be University), Bengaluru, Karnataka, has established over 20 special centres that ensure the mentoring experience for all students across all departments. The institution follows the practice of mentoring by ensuring all students are allocated to each faculty as a mentor. Some of them are Mentoring and Counselling Services (MACS), Centre for Social Action (CSA), Christ Incubation and Entrepreneurship Support Cell, Centre for Academic and Professional Support (CAPS), Teaching Learning Enhancement Cell, Centre for Counselling and Health Services, etc.

3. Mentoring and Theoretical Standpoints

The mentoring practice draws heavily from community psychology's core principle (DuBois, 2006), educational psychology, nursing, management, organisational behaviour (Scandura & Pellegrini, 2007) and social work. Specifically narrowing down to the context of youth mentoring, youth psychology, and developmental theories come into play (Berk, 2013). The learning and communication theories (Schunk & Mullen, 2013)primarily focus on the nature of the transaction between the mentor and mentee.

The present study focuses on the determinants of the mentoring relationship in HEIs. Drawing from the theoretical framework of learning theories and educational psychology, there is an attempt to describe the factors that lead to effective mentoring practice. The paper aims to describe the practices and issues of mentoring in higher education. The Rawlsian notion of justice on application to the context of mentoring is an important framework for educational institutions that focus on equity, fairness and justice and perceive mentoring as a means to achieve the same for students belonging to different multicultural contexts (Searby, 2020).

4. Review of Literature

There were 214 abstracts and 82 studies on themes such as 'Conceptualising Mentoring', 'Youth Mentoring', 'Mentoring and Technology', 'Mentoring in Education' and 'Agency and Mentor' that were reviewed. Boolean logic of 'AND' and 'OR' were used to search and review the literature from databases such as PubMed, Jstor, ERIC and Science Direct.

A review of the literature on youth mentoring in the past five years (2014-2020) focuses on the growing reliance on mentorship and structure, especially in developing countries. There is ample literature in the educational context. There are also researches and citations from South America, Africa, and Asia, where mentoring was studied as an effective tool for youth empowerment, including at-risk youth, social justice, etc. DuBois and Karcher (2017), Lindt and Blair (2017) and Sethi et al. (2017) are primary sources relating to themes of youth mentoring and mentoring in educational spaces.

The earliest studies on mentoring, especially in HEIs focus on a hierarchical relationship between the mentor and mentee, and the latter is referred to as *protege.* However, recent studies mention the mentoring process as a co-learning process where both entities have an egalitarian perspective. The Indian studies stress the need for mentoring in HEIs, and some studies also lend the existing models in HEIs. Whilst, the literature on the effectiveness and goal accomplishment of mentees and the negative effects of mentoring is yet to be dealt with qualitatively.

5. Method

The study aims to capture the mentoring practice followed by Indian HEIs and highlights the issues encountered in the implementation of the practice. The study employs a descriptive design using mixed-method, involving ninety-two participants enrolled in postgraduate courses in Social Sciences in 2020, receiving mentoring and their mentors from institutions in Delhi and Bengaluru, India. There were two institutions covered: a Central University and a Private University, both recognised by the UGC. The participants were selected through randomisation. The measurement tools used were a semi-structured questionnaire with 28 items and Focused Group Discussion (FGD) guides. Table 1 shows the methods and tools employed with the research participants. The transcripts obtained through in-depth interviewing and FGD were subjected to qualitative analysis (thematic analysis) using grounded theory. The study suggests a more complex framework based on contemporary practice than that of Rhode's Youth Mentoring Model (2005).

Table 1: Methods and tools employed with the participants

Participants	Methods	Tools employed
1. Students enrolled in higher education in Social Sciences	1. Semi-structured interviewing	Semi-structured questionnaire
	2. FGD	FGD guide
2. Faculty Mentors of the students	1. FGD	FGD guide

Some of the items in the semi-structured questionnaire administered to mentees are as listed.

1. Periodicity, rapport, follow-up, nature of mentoring, duration, communication medium, conflicts etc
2. Do you feel motivated to talk to your mentor?
3. Have you had a difference of opinion, conflicts with your mentee? How was it resolved?
4. What are your expectations from the mentoring relationship?
5. List some of the issues you have discussed with your mentors.
6. What are the ways in which your mentor has intervened to help you resolve these issues?

6. Results and Discussion

6.1 Demography

The age range of the participants varied from 19 to 28 years. There were 56 females and 36 males, 81 were graduate and enrolled in postgraduate courses across various social sciences, and there were 11 students who had already studied in a postgraduate course. Seven students were currently employed, and 16 have worked before joining the course. Eighty-seven students were from India, while 5 were foreign nationals from South Korea, Nepal, Sri-Lanka and China. The Indian national students belonged to Delhi-13, Uttar Pradesh-8, Bihar-6, Manipur-9, Tamil Nadu-10, Kerala-18, Karnataka-17, Maharashtra-3 and West Bengal-3. The mentors were faculties of social sciences, and their teaching experiences ranged from 3-10 years. All mentees participating in the study were undergoing group mentoring, while seventy per cent of the mentees underwent virtual mentoring.

6.2 The Agency of the Mentor and Mentee

The agency of the mentor is a key factor. The mentor's leadership skills, concern, flexibility, and empathy influence the mentee and mentoring process greatly. McCrea and Foster (2014) stated that *'mentors can be advisors, coaches, sounding boards, cheerleaders, and critics all rolled into one*' (pp: 351). Dubois and Karcher (2017) suggested that mentor-mentee profiles can be matched for easier attainment of goals. However, the participants shared that it is not a practice due to logistics and lack of awareness regarding the personality and aptitude of the newly inducted students.

Matching the agencies is stressed because many studies have indicated that the personality of mentors influences the mentee and the mentoring process.

Raposa et al. (2019) believe that it leads to a successful mentoring relationship when there are similarities between the mentor and mentee. Larose et al. (2018) stressed same-sex matching, while Lakind et al. (2015) asserted that mentees' perception of mentors is largely based on their accessibility, acceptance of the mentee's environment, mentor's leadership, flexibility, use of humour and play, etc.

6.3 Goals and Expectation of Mentoring in Higher Education

6.3.1 Academic and Scholastic Enhancement

Mentoring is seen as a very effective approach in the inclusion and empowerment of at-risk children and youth. Lindt and Blair (2017) asserted that issues related to students academic scores and truancy were resolved through a mentoring program initiated in school. In their study with middle schoolers, the group of students from economically weaker sections who had displayed declining scores, behavioural issues and high truancy; after a semester's intervention with adult mentors, improved their academic performance and worked on truancy and even behavioural issues.

McCarthy (2015) also believes that mentoring fosters positive mental health among adolescent youths with improvements in violence etc. Spencer et al. (2016) further provides similar assertions through their case studies mapping mentoring closely and have labelled mentoring as 'empowering'. Therefore in the context of marginalisation, mentoring is an effective approach for empowerment and inclusion. Further, on the mentoring goals, a student shared, *"From my experience with certain persons who claim to be mentors or experienced ones, I think my expectations are still in progress. And from my point of view, a person's expectations cannot be fulfilled till his death bed. Expectations are 'regrowing'. So my expectations, of what a mentoring process should give and how it should function, would never cease. I will still have expectations from the process till I achieve my goals."*

The assertion here is that the student is still probing the purpose of the mentoring and as shared, the mentee had a negative opinion of the mentoring process. Sethi et al. (2017) based their study in India. They stressed qualities like connection, confidentiality, concern, consistency and commitment on the mentor's side for enhanced mentor-mentee relationship and goal attainment. Another interesting aspect of the theme is that mentors from developing countries are more adaptive and empathetic than their counterparts in developed countries (Williams et al., 2018). Therefore, a mentor needs to equip themselves with these essential skills to influence the mentoring program positively.

6.3.2 Professional Enhancement

Mentoring helps in professional empowerment and facilitates career building for youths. An effective mentoring program aimed at career development aims to give youths clarity regarding their future career roles and professional development. Lindt and Claire (2017) also mention the long term positive effects of mentoring middle school youths on self-awareness and career choices. Gupta and Gowda (2012) conducted a qualitative longitudinal study of 20 destitute girls who were mentored to improvise on English language and life-skills, the results yield the effectiveness of the mentoring process for youths. Pandey and Chhaila (2014) highlighted the need for mentoring for new joiners for knowledge sharing and social adjustment. Their study with 100 mentees indicate that 44 per cent of the mentees regarded their mentors as *'Coach'*, 30 per cent probed for a 'connect' with their mentors and 44 per cent aimed at professional and social adjustment. This indicates the effectiveness and need for mentoring for recently inducted students into HEI with ample focus on professional development.

McCrea and Foster (2014) asserted that mentoring relationships focused on academics or sports also helped youths grow towards their professional choice. It could also be attributed to mentorship attempting to equip youths with essential skills that later prove beneficial in their professional development. A synthesis of these narratives indicates:

- The goals are sometimes not very clearly defined in recently enrolled students of post-graduation. However, academic enhancement and stability are short-term goals set by the mentors and mentees, and the mentees look forward to the mentoring process to enhance academic consistency.

- Career and professional goals, precisely professional skills, is another major goal that mentees in postgraduate courses look forward to in the mentoring process. Seventy-six per cent of the mentee reported that their mentoring process addresses professional development. While 35 per cent of mentees shared that the mentoring conversation is only to address any emergent issue and have no reference to long term professional development.

6.4 Communication in Mentoring

A study by Pandey and Chhaila (2014) with 100 new joiners stated that 30 per cent probed for connection with their mentors and shared that regular open channel of communication in mentoring was their primary strength.

In the present study 90 per cent of the students shared that communication is the key to effective mentoring. A student shared, "*The mentors should know the best way to create positive morale in the mentees. They should also acknowledge the likes and dislikes through proper communication.*" Another student echoed similar sentiments, "*mentoring is essential as it helps us, as students to connect more with the teachers and allow us to reach out to teachers without a sense of hesitation.''' 'Regular feedback'*, '*connect*', '*reach-out',* etc. are the common recurrent phrases that students shared about mentoring communication.

Around 60 per cent of students reported short communication between mentee and mentor daily or alternative days. Fifteen per cent shared that there are exchanges, dialogues and sharings weekly or fortnightly. Twenty per cent reported that there were monthly dialogues and interactions. Five per cent of mentors shared that their mentees do not have any connection with them. There is a gender-based influence also in this regard.

The same-sex mentees and mentors maintained closer and regular communication links than mentor-mentees of different genders. Another determinant here is the age group. The mentors with the age group of 50-60 interacted at a lower frequency with mentees than mentors of 30-40 and 40-50 years who maintained at least weekly short spanned communications.

Studies indicate open communication is an important theme and determinant in ensuring the accomplishment of the group goals. Eller et al. (2014) focus on eight themes out of which communication is the key theme that ensures other mentoring aspects such as caring, trust, goal achievement and personal development.

6.5 Group Mentoring Practice

All the mentees interviewed reported that they experience group mentoring and individual mentoring, facilitated by the mentors. In addition to these two types, they also shared a strong peer meeting which is the preferred medium to address emergent issues. In the case of both educational institutions, it was found that the students included their senior batch mates. The latter are being mentored under the same mentor in their peer mentoring circle. Hale (2020) regards group mentoring as a resourceful process.

Honkimaki and Tynjala (2018) believe that group mentoring acts as a reference group for higher education students and help them with social relationships and life-skills development. Williams et al. (2019) believed that group mentoring as a process is more result-oriented than individual mentoring as the former enables stronger social networks, especially through dyadic relationships.

The strong sub-group connection enables peer mentoring along with individual and group mentoring. This leads to a strong support network surrounding the students.

A 28-year-old male student who enrolled in a post-graduation program after a gap of 8 years shared that his co-mentees were highly supportive. Before any issues were taken to the mentor, it was discussed with his peers whose intervention was highly helpful. "*I would discuss any emergent issue with my co-mentees and discuss the same with my faculty mentor only if my peer mentees do not have a solution for the same.*"

In this case, several other interplays of factors are found to be determining the effectiveness of the mentoring group goals. They are as listed.

- Mentor-mentee ratio
- Peer group climate
- Interaction focus

The peer and group mentoring were not completely realised to its potential in the COVID-19 situation. The virtual sphere allowed only one-to-one interaction; however, peer mentoring was facilitated through social media platforms and other domains.

6.6 Cultivation of the Growth Mindset

Eighty-seven per cent of the mentors interviewed shared that efficient and proactive learners make the first initiative of establishing contact with their mentors. The faculty mentors shared that they need not be academically high performing students, but growth is visible in such students as they move to higher semesters. Searby (2020) also lists the learners' initiative as one of the key indicators in '*mentoring mindsets*'.

A theme emergent in the discussion held with the faculty mentors was cultivation. As the meaning suggests, cultivation was to nurture the institution's learner through scaffolding and support provided through mentoring. Cultivation was mentioned in the following contexts.

- Relationships for emotional, social and identity development
- Acquisition and development of skills
- Surging ahead with application of skills
- Learning and unlearning

Sugimoto (2012) after a survey of over 200 faculties and in-depth interviews arrive at the aspect that mentors view the process of mentoring in phases of initiation, cultivation, separation and redefinition.

6.7 The Conflict between Mentor-Mentee and Mitigation of the Conflicts

Conflicts are an inevitable part of any close relationship (Braiker & Kelly, 1976). Mentoring such a relationship is a ground for conflict to emerge, whilst successful mentoring indicates conflicts. Sixty-six per cent of the mentees shared that there were *mild* to *moderate* conflicts, mild being an ephemeral difference of opinion or asking confronting questions. Moderate conflicts were listed as longer arguments, severing the channels of communication by the mentor or mentee.

The mentees believed that conflicts often arise from the mentor's side due to coerced tasks, lack of understanding and empathy and lack of patience on the mentor's side. Cultural heterogeneity could also be contributing factors to miscommunication and lack of empathy. On close examination of the Rhodes model of mentoring, it can be found that any fracture in the harmony of the mentor-mentee relationship can lead to conflicts. For instance, a male student who recently encountered a conflict with his mentor shared,

"The student-teacher community has chances of having conflicts due to various factors like difference in opinion, lack of understanding, ego- clash, dominant behaviour, judgmental attitude, biased treatment, etc. In my case, I could see that she is unable to understand that I have many issues due to which I could not complete an assigned task, but she also gave me several chances out of which two chances I wasted. It was justified on her part to raise a voice, but there could be other ways of dealing with the situation."

A synthesis of this indicates that conflicts must be resolved for the successful process of mentoring. Resolution of conflicts, as suggested by the mentees, are categorised as given below.

- Analysing and understanding the root cause and other determinants of the conflict and having a dialogue.
- Addressing the conflict with a context-centred rather than context-neutral mindset and objective perspective.
- Understanding the group dynamics in group mentoring settling and identifying at-risk youth mentees.
- Innovative coping mechanisms like debate or ice-breaking sessions such as facilitating catharsis (venting).
- Training of mentors.

6.8 Training of the Stakeholders in Mentoring

The NEP-2020 clearly states the need for mentoring not only faculties but also institutions or colleges. Training in mentoring could be attributed to two aspects here. Firstly, Shapira says that the Chartered Institute of Professional Development (2009) defines mentoring as *'a long-term form of training, learning and development..'*

This indicates the process of mentoring being viewed as an ongoing or long term training process. The training here is aimed at the holistic development of the mentee by an experienced mentor. Out of the ninety-two participants, forty-two are enrolled in a postgraduate course in social work. Here the students often refer to themselves as 'social work trainees', and the mentoring process is referred to as training.

In this situation, the students are trained to apply social work methods and skills for over two years. A mentor interviewed shared, *"We train students in this mentoring platform where students are given real-life labs for application of skills, constant feedback is provided, and learning is assessed over some time."*

Another dimension of viewing mentoring is the training of mentors and mentees. None of the mentors or mentees interviewed shared that they have undergone any training in mentoring. The programme in the west focuses on ample training at the commencement of the mentoring. Karcher (2005) and Durbin and Tomlinson (2014) believed that mentors must be equipped with skills about emotional intelligence and specific subjects before starting the mentoring process.

Some of the implications for training for mentors, as suggested by mentors are as listed.

- Institutional support through training for teaching and learning enhancement in mentoring.
- Training to focus on being equitable, inclusive, and context-aware rather than being context-neutral.
- State support and funding and ample stipend for mentoring.
- The training process to be at regular intervals and evaluation and feedback to be a regular process.

6.9 Mentoring At-Risk Youths

In the study, 4 per cent of participants have reported having faced major life stresses, such as losing one or both parents, losses in a disaster or lived in institutional care. Ten per cent shared to have suffered from mild mental disorders, and 17 per cent shared participants to have faced harassment or abuse. This indicates a marginal incidence of risk factors that can disrupt the student mentees' academic and socio-emotional functioning. This calls for the need for interventions in the mentoring process to address these emergent risk factors among the mentees, mitigate long term effects and enhance their resilience mechanism.

Flavian and Kass (2020) believe that this calls for two sets of mentoring intervention efforts. One is the qualitative training of mentors to collect ample knowledge about the mentees' psycho-social and emotional background, risk factors, stress, coping, resilience and support systems. The second is the multiple roles to be played by the mentors in the mentoring process. A mentor shared,

"I have two students who need special care; one is from an SOS shelter home. He does not have any familial support and to ensure that he gets a decent job and sustains himself, I need to work a lot, especially invest time. My other student suffers from the grief of losing a parent during the COVID-19. I had to try a lot initially to establish a rapport so that she opens up. She would not attend my calls but would respond to her peers, and I, therefore, had to utilise the peer network here."

The verbatim highlights the readiness to effectively use resources and support systems, which emerges from the mentor's experience and expertise. This calls for innovative actions to support the mentees in strengthening the coping mechanism. Much literature is available on at-risk youth mentoring, essentially the synthesis of the literature points towards the need for training of the mentors and practising equitable teaching and mentoring.

6.10 Gender as a Factor in Mentoring

Much discussed and researched construct in planning and matching mentors-mentee is of the gender. In the discussion related to the agency of the mentor and mentee, gender plays a key role. Bernstein (2005, 2009) throws light on the discursive practice of hegemony in pedagogy and points out how the classroom's curriculum and culture are white and male-dominated. Drawing the assertions to the context of India and higher education, the assertion remains unchanged concerning gender and caste. In the present study, 30 per cent of participants reported that it is preferred to have same-sex mentors. Sixty-eight per cent of female mentors shared to have experienced gender bias in their mentoring process regardless of the gender of the mentors.

Kochan and Freeman (2020) believe that cross-gender mentoring is a practice in higher education, but there are more male same-sex mentor-mentee dyads as more men are in higher education. However, this is not true to the social science students in India who have more female students. Therefore gender and mentoring must be connected with the cultural context to ensure a barrier-free and facilitative mentoring process.

Wales (2003) asserted that there is no difference in the mentoring practice among men and women; however, among the participants interviewed, all-female mentees and 50 per cent male mentees preferred female mentors due to diverse reasons. It is interesting to note that both mentees (male and female) have varied reasons to prefer female mentors. Female mentees attributed safety, security, role-modelling and empathy while male students preferred female mentors due to being responsive, accessible, non-authoritative, non-judgmental and empowering. A male mentee shared,

"In my previous college I had a male mentor, he would make me run errands for him and would often say-you are a man so you can do these jobs like going somewhere and fetching things, etc. He had no idea how such comments would affect mentees and other mentees."

There are two important derivatives here: creating a gender-friendly, especially women-friendly space through the mentoring process. The second is to train mentors in the preferred attributes, especially non-judgmental attitude and responsiveness.

6.11 Intergenerational Dynamics in Mentoring Process

All the participants, especially mentees, interviewed for the study, preferred senior and experienced mentors. Although age was not specified, they emphasised the mentors' quality, expertise, and qualifications rather than age. This asserts the practice of intergenerational or cross-age mentoring. Karcher (2005) pointed out that cross-age mentoring should be '*relational*', focused, and goals should be stated very clearly.

The *'transfer of knowledge and skillsets'* is the expected objective. Mentoring can model a traditional framework, whilst the process is more dynamic where both mentor and mentee develop over a while. Hence, age cannot be defined as a criterion or determinant, but elderly mentors were *'less open to newer ideas'* as shared by the student participants. However, a significant age gap is reported by student mentees as a barrier in communication or exchange of ideas. A student shared,

"I am unable to put across the projects I want to take up in the field because he thinks it is redundant. I wanted to have a football match to form a rapport with my clients, but he kept on saying it is not practical."

This indicates training the mentors in cross-age youth mentoring and technology, and them being adaptable to change.

6.12 Mentoring through Virtual Media

The NEP-2020 necessitates the use of technology, Massive Online Open Courses (MOOC) for mentoring, training and E-learning. During the COVID-19 pandemic, the recently enrolled students were unable to access face-to-face classes. Therefore, the classes were facilitated through the virtual platform and mentoring was also facilitated through the same medium. All the students shared that mentoring was in the virtual medium, nearly 90 per cent of students and all mentors shared that this altered the goal of mentoring and that the social and affective component of mentoring was completely missing.

"I do like the personal attention I get from my mentor through video conferencing, I can approach her anytime and able to have a detailed conversation, but I am struggling with issues of confidence, and while my mentor asks me to interact with my co-mentees, I do not have access to them, it is difficult to get them on board."

The verbatim describes how virtual mentoring medium is more personalised and how it obstructs the process and objective of group mentoring. Ohlson (2019) recommends the E-mentoring process as an effective medium for individual growth. However, E-mentoring was a practice in Western and eastern educational institutions since the late 1990s with the widespread usage of electronic media, especially E-mail. Initial definitions involved the use of E-mail and other electronic communications to support face-to-face mentoring. Later this evolved to mentoring purely through a virtual medium where mentor and mentee have not necessarily met.

Bierema and Merriam (2002) believe that E-mentoring is *'egalitarian'* and *'boundless in the configuration'*. However, Dubois (2005) asserts that there are few empirical suggestions to support that assertion. In India, besides the emergent virtual mentoring practice, there are organisations, especially not-for-profit efforts to provide remote or virtual mentoring. Miller and Griffiths (2018) argue that E-mentoring is effective primarily due to the internet allowing anonymity. It enables deindividuation and disinhibition (Joinson, 1998), which leads to an honest sharing of issues in the physical mode.

6.13 Mentoring Practice during COVID-19

The COVID-19 pandemic has created a vacuum for mental health interventions along with medical and disaster preparedness. The mentoring programme is viewed as one of the interventions to support the youths during the pandemic. Agyemang and Haggerty (2020) suggest the use of E-mentoring and virtual platforms for the same. In the above section, E-mentoring is suggested to be an effective measure. This is possible if the platform is inclusive, and mentors are provided ample training.

Agyemang and Haggerty (2020) believed that several virtual mentoring programmes continued with the disruption of face-to-face mentoring programmes during the pandemic. They suggested five factors effective for E-mentoring: planning outcome-based mentoring programme, duration, platform, two-way interaction and participant training.

Fish et al. (2020) said that in the context of LGBTQI youths, staying at home and lockdown during the pandemic was

found to be highly stressful due to unsupportive parents, lack of social support groups or peer support etc. In this case, virtual support is found to be more effective. Seventy-one per cent of mentees interviewed for the study reported that their mentors were *'highly supportive'* during the pandemic through the virtual modality. Another 15 per cent shared that they were *'supportive'* whenever mentees sought access. The remaining 14 per cent shared that their mentees were *'not at all supportive*' or responsive and ignored several messages.

The mentees garnered support from their mentors during the virtual medium. The students shared that WhatsApp, Google Classroom, Messages, etc., were utilised.

The mentoring during the pandemic was highly useful for students who have never been to campus physically. A student reported, *"I have never been to campus, we have learnt on the online platform ever since the semester started, and the mentor was the only support, she would be accessible not only for academic support but also for my personal issues."* Another student reported a lack of any verbal communication and shared that the mentor replies only to mails.

There are two aspects to be noted here.

- Mentees also seek and expect personal support during crises like the pandemic.
- E-mentoring is inclusive and supportive with proper training of participants.

6.14 Inclusive Mentoring Practice

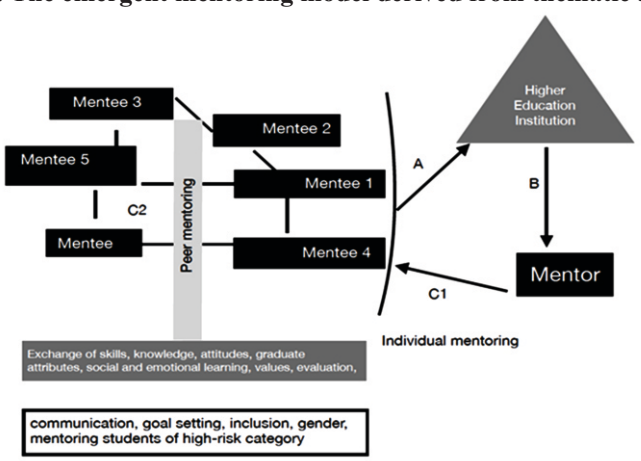
Inclusive or inclusion is a recurrent theme in the verbatim of the mentees during interviewing and FGD. Inclusion is a key aspect in the education space and policy. Educators must develop inclusive pedagogy and curriculum for marginalised mentees, including women, persons with a disability, individuals from diverse caste, class and other minority groups. Kochan and Freeman (2020) draw from the cultural aspect of mentoring. In this context, inclusion in mentoring elaborates the need for understanding the cultural context through a cultural analysis of the mentee by the mentor. In line with this, a mentee shared, *"my mentor often makes casteist remarks without realising that I belong to that caste, and it hurts my sentiments."*

Lloyd-Joan and Jane-Millers (2015) highlight the need to refer to social justice and cross-cultural while calling for an inclusive mentoring process. The inclusion here could refer to what Predoi-Cross (2020) refers to as primarily bridging the gender gap. The authors in this context stress mentors using their agency to ensure the pedagogy is barrier-free. This also calls for the inclusion of mentees with a disability who may encounter several institutional barriers. Institutions attempt to remove the barriers at the macro-level; however, the micro-space of mentoring is an ideal one to remove barriers.

7. Model of Mentoring in HEIs in India

Kumar (2017) and Gawande (2017) propose the existence of the *Guru-Shishya* model of mentoring and education in the Indian education system. While it exists in elementary education, there is a need to provide a holistic model for HEIs. The widely followed model of mentoring by Rhodes (2005) is fundamental, but there are more complexities and dynamics. Figure 1 shows the emergent mentoring model derived from the thematic analysis of transcripts from in depth-interviews using grounded theory (Straus & Glasser, 1981). The model is specific to the context of educational institutions. The key components or actors are mentors, mentees and the HEI.

Figure 1: The emergent mentoring model derived from thematic analysis



The key components are in a bi-directional relationship with each other; the mentors and mentees are mutually dependant and indicate not a hierarchical model but a participatory model. The mentors and the HEI are also with each other as the graduate attributes, mission and vision and values of the HEI are translated to the students through the mentoring process. Also, mentors look forward to capacity building, training, inclusive structures and pedagogical support for mentoring processes from the institution. Here notation 'A' defines the relationship between the students (mentees) and HEI through graduate attributes and learning outcomes. 'B' refers to the institutional mentoring process, and 'C1' indicates the mentoring process initiated by the mentor. 'C2' is the interrelationship among mentees in the group and peer mentoring process.

The duration of mentoring is also a determinant here, Rhodes (2006) believes that mentoring programs aiming at less than a year are less effective than those sustaining for more than 12 months. This is to foster better academic performance and Whole Person Development of the student mentees. The mentees are also with each other as in the format of peer mentoring, group mentoring, and with a mentor through individual mentoring.

7.1 Stages of Mentoring in HEI, India

Gupta (2015) provides steps of the mentoring process followed in the HEI in India. In the institutions facilitating the mentoring process, mentees are matched with mentors, after selection, followed by SWOT analysis to evaluate the mentoring process and termination. However, in the study, only one institution followed the process of matching mentors and mentees. Similar stages have been listed by the UGC while discussing the guidelines for faculty and institutional mentoring.

The other institution follows a randomisation method where no criteria are selected for a mentor and mentee to be paired or mentees paired in a group mentoring framework. However, Gupta (2013) believes that mentoring is a mandatory activity and must entail planning and training. The context of mentoring determines the content. Therefore, pairing is essentially the primary stage of mentoring. This can be followed by continued training for mentors through Faculty Development Programmes and mentees through capacity building programmes and periodic evaluations.

7.2 Appraisals, Mid-term Presentations and Evaluations

Gupta (2015), DuBois (2013) and Karcher (2009) believed that evaluations of the process and attainment of the goals of the mentoring are critical. The evaluations can be individually decided between mentor and mentee, and the mid-term presentations can be in an individual and group format. A mentor shared that the mentoring evaluations are often a test of students achieving mentoring and other academic goals, while the mentoring process remains unevaluated. The process of mentoring ought to be evaluated for an efficient transaction and mentoring relationship. As NEP-2020 ordinates mentoring practice, an institutional mechanism for monitoring and evaluating the practice can be developed.

8. Implications for Key Stakeholders

The key stakeholders here are HEI, mentors and mentees. Besides this, there are several other entities such as State, funding bodies, education policy, and mentees' parents and guardians. However, the implication and plan of action centres around the above mentioned three entities. The NEP-2020 asserts the use of technology for mentoring and training HEI and faculty to use platforms that facilitate training and mentoring.

Section 15.10 resonates this implication by stating, “The use of technology platforms such as SWAYAM/DIKSHA for online training of teachers will be encouraged so that standardized training programmes can be administered to large numbers of teachers within a short span of time. A National Mission for Mentoring shall be established, with a large pool of outstanding senior/retired faculty – including those with the ability to teach in Indian languages – who would be willing to provide short and long-term mentoring/professional support to university/college teachers.”

8.1 Implication for HEI

Firstly, HEI strengthens the mentors and mentees and has separate goals for both cohorts. For the realisation of graduate attributes and mission and vision of the institution, institutions must facilitate institutional mentoring for faculty mentors. Besides this, training, evaluation of mentoring is also a key aspect here. There could be semester wise evaluation along with end term evaluation to measure the attainment of academic and socio-emotional goals.

The HEIs may plan mentoring strategies in the pre-mentoring stage, develop and implement policies for sustaining mentoring practice.

8.2 Implication for Mentors

Mentors are the link between the HEI and the mentee and are crucial agents for change in the mentee's microcosm. Larose and Duchesne (2013), Gupta (2015), DuBois, Neville, Parra, and Push-Lilly (2002), assert stress on ample amounts of pre-mentoring training, to not only build capacity but also enhance the self-efficacy of the mentors.

The study's findings also indicate the importance of timely resolution of conflicts between mentor-mentee, subscribing to social justice, continuity of inclusive mentoring pedagogy, strengthened communication channels, a constructive extension of self and co-learning from the process to betterment the mentoring relationship.

The earliest studies on mentoring relationships (Duck, 1994), focused on transforming the negative mentoring relationships into positive ones. He suggested preventing dysfunction or disruption in this dyadic relationship as it can have a lasting impact on the mentee's agency. Hence, the mentoring process is viewed as a collaborative and egalitarian process, and the onus rests largely with the more experienced mentor.

8.3 Implication for Mentees

Mentees in the existing literature are passive recipients of skills and knowledge through the mentoring process. However, the study's findings indicate that the mentees steer the mentoring process with the same ampere mentors. The goals, medium, periodicity and frequency of meeting are to be set collaboratively. This calls for increased participation of the students in decision making related to these aspects and developing a plan for achievement of specific competencies.

Another aspect is the motivation and proactiveness of mentees to seek and create learning opportunities. Lastly, positively exercising autonomy is essential for a successful mentoring process.

9. Conclusion

Mentoring is an important pillar of quality education asserted by Goal 4 of SDGs. The study describes the youth mentoring practice in the specific context of Indian HEIs. The semi-structured interviewing findings reveal the key determinants of the mentoring process: goals, academic performance, inclusion, communication, gender, age, resilience, group mentoring, dyadic relationship, conflict mitigation, and the importance of cultivation. The emergent narratives have implications for all stakeholders such as using the platforms such as DIKSHA, SWAYAM, training of faculties, mentoring of HEIs by other institutions, monitoring and evaluation of mentoring by faculties, auditing and institutional mentoring. The HEI, mentors and mentee and the interplay of the themes mentioned above could be delineated as a working model of youth mentoring which involves the types of mentoring evaluation, audits and feedback system.

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Impact of Culture on Humanitarian Operations: Review and Insights

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Abstract

Various studies have indicated that integration of 'culture' in Disaster Management (DM) can improve the effectiveness of humanitarian operations and reduce disaster related risks. Recent reviews of humanitarian literature advocated that future research should also focus on the cultural background and ethnicity of the affected, while contemplating the moderating role of cross-cultural differences on humanitarian operations. This research, therefore, attempted to examine and understand how the culture and cross-cultural differences of key actors influence humanitarian operations. The study also intended to provide an overview of research insights related to the cultural aspects of victims, humanitarian organisations (HOs), relief executives and local associates impacting humanitarian operations. As the cultural aspect in humanitarian operations was not comprehensively reviewed and includes diverse actors and perspectives, the relevant research evidence method, *scoping review* was employed as the research method. The study found that religion, values, and local culture of victims/community; fatalistic attitudes, and heterogeneity of the actors; cultures and sub-cultures of the HOs; and emotional intelligence(EI), and ethnic differences among relief workers can influence the humanitarian operations. The cross-cultural differences can complicate coordination and influence collaborative relationships among humanitarian supply chain (HSC) actors and affect the HSC agility or resilience during relief operations.

Key Words: *Disaster Management (DM), Humanitarian Operations, Humanitarian Logistics (HL), Humanitarian Supply Chain (HSC), Humanitarian Organisation (HO), Cultures*

1. Introduction and Background

The field of humanitarian operations and crisis/disaster management (HOCM) has been receiving increased attention from researchers and practitioners, given the catastrophic loss of lives and destruction associated with large-size disasters in the last few decades. Globally, the macro aspects in disaster management (DM) are geography, political/legal, socio-cultural, and the extent of development (Prater et al., 2001). After technical factors, the social and cultural factors were given some importance in the DM literature. Various models for incorporating social competence in relief measures were given by Lum (1996), the "ethclass" by Schlesinger and Devore (1995), and then by Green (1995) on ethnic competence. But the governments and aid organisations have been overlooking the role of cultural beliefs and attitudes as impediments to or enablers of disaster risk reduction (DRR) efforts (Huntington, 2000). Various studies (Hoffman 1999; Wisner et al., 2004; Palliyaguru et al., 2010) have observed that quite often cultural aspects are ignored while planning and executing DRR strategies. There were several instances of neglected cultural elements, values, and attitudes during HOCM in recent decades. Some of them are discussed below.

Many humanitarian cargos from companies across the world shipped unwanted and inappropriate aid material like used Western garments, baked beans, and carbonated beverages that have clogged for months in the airport when the tsunami hit Sri Lanka (Thomas & Fritz, 2006). When Nepal was devastated by an earthquake in 2015, it received aid from different nations including Pakistan. However, the media reports that Meals Ready to Eat (MRE) supplied by Pakistan were accused of containing "Beef Masala" which caused an emotional stir and political outrage in Nepal (Saxena, 2015) and the aid did not reach victims. Many Hindus in Nepal and India do not consume beef and therefore, relief supply and services should be planned in detail considering the customs, culture, and tradition (Singh et al., 2016). In 2005, when hurricane 'Katrina', occurred in New Orleans, Afro–Americans did not escape ahead of the storm mainly due to language/communication barriers (Elder et al., 2007). During the 2018 floods in the South Indian state Kerala, few upper caste people refused to board the lower caste fishermen boats (Bajwa, 2018). The relocation process for fish-folks living in Chennai after the tsunami in 2004, was delayed due to a lack of understanding of the differences in cultural values among stakeholders and context to achieve a holistic recovery plan (Raju, 2013).

1.1. Why 'Culture' Should be Integrated?

As emphasized by Nunn et al. (2007) in their research and Oliver-Smith and Hoffman (1999) in their book "*The Angry Earth: Disasters in Anthropological Perspective*," ignoring cultural aspects may escalate disaster vulnerabilities and result in futile DRR efforts. If 'culture' is not considered, the associated problems of adaptation, coping, intervention, knowledge, power-relations, etc., could not be totally comprehended (Krüger et al., 2015). As disasters are often geographic-specific, factoring ethnicity and local culture will bring out new and considerable dimensions to humanitarian supply chain management (HSCM) (Behl & Dutta, 2018). A study by (Kulatunga, 2010) advocates community-based DRR activities to incorporate culture for successfully handling disaster effects. Findings from the latest research (Haraty & Utaberta, 2019) also reveals that the integration of culture in DM has proven to be significant in reducing the number of disaster-related deaths. Extended research studies (Scott, 2007; SRA International Inc., 2008; Carpenter, 2016; Yeo et al., 2017) in humanitarian relief also recommended that social workers should incorporate cultural competence and provide relief that is consistent with the victims' cultural beliefs.

1.2 HOCM Research: Emphasis on 'Culture'

Kunz and Gold (2015) observed in their study that the future research should progress beyond the confined notions of operational and economic objectives and contemplate external contingency factors which can impact humanitarian operations. Culture, religion, and traditions are some of the key socio-economic contingency factors (Gaillard, 2007; Rodon et al., 2012). Though three major dimensions of society are culture, economy, and politics (Mukherjee, 1998), economic explanations dominated most of the sociological research in humanitarian operations. A recent study (Salem et al., 2019) emphasized that future research can contemplate the moderating role of cross-cultural differences. In some literature available, it is believed that cultural orientation helps in determining the depth of the knowledge of victims about the disaster and its consequences. A thematic literature review paper by Behl and Dutta (2018) observed that the future of research into

HSCM should focus on the differences in dealing with the problem based on the cultural background and ethnicity of the affected. Prasanna and Haavisto (2018) also noted that studies are needed to understand if country culture influences collaborative behaviour in humanitarian supply chains (HSCs). It is also essential to understand the impact of cultural differences between victims and those delivering humanitarian relief (Azmat et al., 2019).

2. Research Question and Objectives

Earlier studies (Hoffman 1999; Wisner et al., 2004; Palliyaguru et al., 2010) observed that culture was quite often ignored during disasters. But the extended research works (Scott, 2007; SRA International, Inc. 2008; Carpenter, 2016; Yeo et al., 2017) recommended incorporating cultural competency among relief works, while the study by Haraty and Utaberta (2019) observed that integrating culture in DM can reduce the disaster-related risks. Further, recent studies (Behl & Dutta, 2018; Prasanna & Havisto, 2018; Salem et al., 2019; Azmat et al., 2019) have felt the need to study and understand the role of culture and cross-cultural differences of victims and those delivering aid, in humanitarian operations. In view of this need, this research aims to understand and provide an overview of the impact of culture and cross-cultural differences of victims, HOs, relief executives and local associates on the humanitarian operations by interpreting the body of literature. This paper also offers inputs based on research insights that can help HOs to effectively integrate culture in their humanitarian operations.

3. Materials and Methodology

Various cultural aspects having an impact on the humanitarian operations from different stakeholders' and DM activities' perspectives, can be better covered through a review of wide and relevant literature than a set of primary studies. Moreover, synthesizing existing studies are fundamental to attaining higher analytic goals and enhancing the generalizability (Sandelowski et al., 1997). Methods of research evidence synthesis can facilitate in interpreting the body of literature and providing an overview of the cultural impact in humanitarian operations. The scoping review is a relatively new approach to research evidence synthesis to provide an overview of extant research evidence (Sucharew & Macaluso, 2019). This review method can be used when the information on the topic was not reviewed comprehensively or when it is complex or diverse (Peters et al., 2015). As the cultural dimension in humanitarian operations was not comprehensively reviewed and includes diverse actors and perspectives, the *scoping review* of relevant literature was chosen as the research method.

Systematic searches were carried out beyond published journals indexed in bibliographic databases and extended to books, unpublished research works, conference proceedings, and the Internet (Tranfield et al., 2003). The initial step involved sourcing all relevant research papers, books, reports, news, etc., related to the specific cultural issue(s) faced in HOCM published in refereed journals, practitioner journals, or unpublished sources through a systematic search process. The systematic search began with finding *keywords* and *focused search terms* (across relevant disciplines such as management, cultural studies, etc.), developed from scoping study, the literature, and conversations within the research group. Relevant research studies were identified applying keywords in various bibliographic databases like EBSCO, Emerald, Science Direct, Springer Link, Taylor & Francis, and Wiley. Boolean search method using focused search terms also helped in identifying related papers, reports, books, etc. Adequate care was taken as to how the information was obtained by the relevant author, confidentiality, and accurate reporting of information.

The next step was to select studies/papers/articles/reports based on the implicit quality of the sources and predetermined eligibility criteria. All potentially relevant citations found in the search were reviewed for the selection of relevant quality sources. Individual studies were shortlisted against preset criteria and specifications to aid the process (Oxman, 1994). However, determining criteria for identifying the suitable or good quality in qualitative research is a challenging task (Engel & Kuzel, 1992). Management researchers generally depend on the implicit quality ranking of a journal, instead of employing quality assessment criteria for papers they consider in their reviews (Tranfield et al., 2003). Further, the selection of papers in management research is based on specific findings and inferences of the author(s). While the selection of articles was based on the implicit quality of the sources, broadly articles that are directly or indirectly linked to the formulated research objective were selected for review. In a nutshell, the predefined selection criteria include source

quality, relevance to formulated objective(s), subjective findings of the study, and conclusion of author(s).

Finally, literature was reviewed for the selected studies to identify research insights aligned with research objectives. An interpretative approach which includes scoping review was employed to provide a means of summary of the insights on the topic from relevant studies and other sources of evidence. The review and syntheses process explored various insights through systematically mapping and interpreting the available literature on the topic. Initially, the review explored the research insights and related cases identifying various sources of evidence. This evidence-based review focused on understanding how the culture of victims and of those who plan/deliver aid influences Humanitarian Logistics (HL) and HSCM. Finally, the review focused on understanding how the culture of HOs, relief providers and local associates impact humanitarian operations.

4. Research Review and Insights

4.1. Impact of Victims 'Culture' on HOCM

Humanitarian studies in (Table 1) suggests that the culture of victims can influence disaster preparedness, response, and recovery.

Table 1: Impact of 'Culture' on HOCM

Authors	Findings	Insight
Oliver-Smith (1996)	Behaviour of the affected is largely influenced by the culture of their community	*The behaviour of the affected during disaster preparedness, response, and recovery, is largely influenced by the culture of victims or their community*
Arunotai (2008), Kulatunga (2011)	Disaster preparedness, response and recovery of the victims are highly influenced by their culture	
Raju (2013)	Differences in cultural values between stakeholders delayed the relocation of the fishing community	
Arunotai (2008)	Culture can help communities to prepare for disaster. The indigenous Moken community in Thailand believe that abnormal behaviour of animals and birds and the occurrence of low tide signifies attack of Tsunami. This made them evacuate to safer places during the 2004 Tsunami.	*Culture can be a facilitator for disaster preparedness and a barrier for effective DRR activities.*
Kulatunga, (2010)	Culture has acted as an impediment for successful DRR	
Green (1996), Perilla et al.(2002)	Ethnic differences influence the psychological response to a disaster	*The culture and ethnicity of victims determine the vulnerability of psychological impacts and response to disasters*
Goenjian et al. (1995)	Disparities found in psychiatric illness among communities affected by natural calamities between the developing nations and America	
Kar et al. (2007)	Post-Traumatic Stress Disorder symptoms are varied with cultural differences by the response, recovery, and social harmony	
Ekanayake et al. (2013)	Religious beliefs among Tsunami victims in the Matara district of Sri Lanka helped in sustaining emotional balance and psychological resilience post-disaster.	

Lehman and Taylor (1987)	When fatalism is coupled with optimistic bias, chances that communities get ready for disasters are low.	*Fatalism, trust/distrust in authorities, and even belief in God, influences disaster preparedness.*
Solberg et al. (2010)	People's attitudes related to protection efficiency are at times extremely fatalistic in a way people may think that any effort to safeguard themselves will fail.	
Joffe (2012)	Fatalism, emotional-orientation, and distrust are barriers to disaster preparation. Americans are more prepared for disasters than the Japanese due to their individualist versus collectivist cultural orientations. Cultures of Japanese and Turkish, keep them away for preparedness against seismic risks and rely on authorities.	
Thomson (2011)	Fatalism, trust in government, and faith in God, impact humans in preparing for catastrophes.	
Baytiyeh and Naja (2016)	Fatalism is embedded in Middle Eastern societies. So, their disaster preparedness is lo$_{w.}$	
McClure (2017)	People with fatalistic attitudes attribute loss to uncontrollable natural disasters instead of preparedness.	
Clarke and Parris (2019)	Beliefs across most worldviews like 'Acts of God' drive behaviours during disasters.	
Fothergill et al. (1999)	Racial and ethnic communities in the USA are susceptible to natural calamities, because of linguistic issues besides segregation and ethnic insensitivities.	*Some social and ethnic communities are susceptible to problems during disaster recovery due to language barriers, community insensitivities, etc.*
O'Hare (2001)	Few social and demographic communities are highly susceptible to bigger problems while recovering from disasters.	
Andrulis et al. (2007)	Minorities recoup slowly during disasters as they confront cultural hurdles and receive incorrect or inadequate information due to language barriers.	
Elder et al. (2007)	Several Afro-Americans did not escape ahead of the storm during Hurricane Katrina in 2006, due to communication barriers.	
Paul (2011)	During relief operations in Rajasthan (2006) and Bihar (2008), the upper castes declined to eat food as Dalits were served before and denied access to drinking water in their localities forcing Dalits to drink flood water and face health risks.	
Bajwa (2018)	During Kerala floods (2018), few upper caste people refused to board boats of lower caste fishermen.	

Constable (2008)	Lootings after Hurricane Katrina which were based on second-hand accounts highlights how media mindsets influence disaster planning and response.	*Losing morals, paternalistic and defensive attitudes of public authorities, media mindsets, inappropriate aid, misuse of political power affect humanitarian operations*.
Rettner (2010)	People may become selfish during natural disasters, losing their morals.	
Civaner et al. (2017)	Public authorities' paternalistic and defensive attitudes, media exaggeration to increase relief, donors offering half-used drugs or relief other than what victims need, and political misuse to distribute relief based on religion and ethnicity affect humanitarian operations.	
Lavigne et. al. (2008)	During the eruption of the Merapi volcano (2006), many people didn't evacuate following government orders as they don't go against the words of their community leader.	
Bukvic et al. (2018)	After Hurricane Sandy, it was found that the relocation decision is often linked with what the community decides.	C*ommunity values of victims influence their evacuation and relocation behaviours***.**
Boen and Jigyasu (2005), Chen et al. (2007)	Relocation plans of authorities did not consider the cultural aspects of communities leading to victims returning to their original living places.	
Raju (2013)	While the government wanted to protect human life and physical infrastructure by providing housing at safer locations, the fishing community wanted their houses reconstructed in the same location as they feel they belonged to the sea and have customary rights.	
Arlikatti et al. (2018)	Due to age -old links with place, persons, pets, cattle, and livelihood, people in vulnerable areas such as Uttarakhand, India (affected by floods and landslides in 2013) were resistant to relocate.	

Smyth (2005)	The death toll of women was 2 – 3 times higher than men in India and 4 times in Indonesia. Where women knew swimming, fatality rates go down to 60%.	*Socio-cultural norms limit female to learn swimming and climbing trees and depend on male for reaching evacuation centre, while culture-imposed dress codes and gender-specific norms or customs affect mobility during disaster response.*
Ferris (2010)	Females are prone to die or suffer ill-health issues in most disasters.	
Thebe (2016)	Traditional clothing like sarees imposed on women due to social norms and the need to take care of children who cannot run/swim, can limit their swift movement in times of disaster.	
Hunter et al. (2016)	Socio-cultural norms have limited womenfolk to: reach evacuation places without male support, acquire skills like swimming and climbing trees to escape hazards.	

4.2. Impact of Culture on HL/HSCM

Although socio-economic situations influence in nearly all disasters, they were not seen as the extremely critical factors affecting HL (Kunz & Reiner, 2012). But the humanitarian literature (Table 2) advocates that culture can influence the efficacy of HL/HSC.

Table 2: Impact of Culture on HL/HSCM

Authors	Findings	Insight
Rodon et al. (2012)	Cultural disparities can interrupt the coordination of operations.	*The culture of victims and HOs can potentially disrupt the HSC.*
Dowty and Wallace (2010)	Inability to understand cultural biases is among many reasons for the mismanagement of HSC.	
Azmat et al. (2019)	The culture of HOs and beneficiaries is a critical success factor that can significantly disrupt the HSC during a relief process.	
Altay et al. (2009), Dowty and Wallace (2010), Perry (2007), Sandwell (2011), Tatham and Houghton (2011), Tatham and Kovacs (2010)	Collaboration culture within and between organizations is significant for humanitarian operations.	

Authors	Findings	Insight
Prasanna and Haavisto (2018)	Similarities and complementarities of organisational culture between the buying and supplying organisations enable collaborative relationship. Collaborative outcomes such as product/service delivery customisation, inventory management, cost reduction, etc., for HSCs depend on the cultures of information sharing, trust, and commitment of both supplying and buying organisations.	*The culture within and between organizations can influence the collaborative relationship and outcomes between supplying and buying organisations in an HSC*.
Kabra et al. (2015)	Culture is one of the barriers for coordination in HSCM	*Differences in working rhythms and cultures among humanitarian agencies can affect the coordination in HSCM.*
Kovács and Spens (2007), Haigh and Sutton, (2012), Schulz and Blecken (2010), Bealt et al., (2016) Nurmala, et al., (2017)	Culture shock and differences in working rhythms affect coordination and collaboration among agencies involved in HL.	
Yu et al. (2015)	Heterogeneity of different actors further complicates coordination in HSCM.	
Haigh and Sutton (2012) Nurmala et al. (2017)	For HOs, relationships with corporate houses could bring cultural and technical problems.	*Private-public relief partnerships and partnerships with businesses could bring cultural and technical problems.*
Thomas and Fritz (2006)	While NGOs/relief organizations look for financial aid, several corporate firms would like to donate in-kind relief material, offer communication/technology support, arrange for logistics resources, etc. Humanitarian cargos from companies across the world brought unwanted and inappropriate materials such as used western clothes, baked beans, and carbonated beverages which clogged for months in the airport when tsunami hit Sri Lanka.	
Sen (2018)	iFly—IndiGo's corporate learning academy sent salwar-kurtas and thought it would have been fine to send it to Chennai also.	

Authors	Findings	Insight
Altay et al. (2009) Dowty and Wallace (2010)	Availability of local vendors, education level of victims and their ethos/religion can enable humanitarian firms to adapt their operations to the situation and may influence HL performance.	*Availability of local vendors, education level of victims and their ethos/religion can affect HL performance.*
Altay et al. (2018)	Control orientation (CO) in HOs has a significant interaction effect between supply chain resilience (SCRES) and pre-disaster performance (PRE-DP). Flexible orientation (FO) can significantly moderate between supply chain agility SCAG/SCRES and post-disaster performance (POST-DP).	*While control orientation can moderate between SCRES and PRE -DP, flexible orientation can moderate between SCRES/SCAG and POST-DP.*

4.3. Impact of HO Culture on Performance

Studies in Table 3 posit that the culture of HOs and cross-cultural differences between expats and local associates/HCNs can affect the performance.

Table 3: Culture of HOs/Personnel – Impact on HOCM

Authors/Source	Findings	Insight for HOs
Pulakos et al. (2000)	The adaptive performance involves handling emergencies or crises, demonstrating cultural adaptability, etc.	*The culture of organisation learning in HOs is mediated by the appreciation of other's emotions and beliefs for adaptive performance which is vital for disaster preparedness.*
Simon et al. (2013)	Organisational learning culture promotes the learning atmosphere required to improve adaptability in dynamic contexts.	
Pradhan et al. (2017)	Appreciating others' emotions and beliefs significantly mediates the relation between organisational learning and adaptive performance facilitating adaptability in changing circumstances.	
Nilsson et al. (2011)	Sub-cultures i.e., "subjective/soft" reality like norms, routines, interests, passable attitudes, advice, and viewpoints, exhibited by few HOs limit the humanitarian operations. Relief employees should behave according to the norms and interests of their organisation while relating to (sub-) cultures, besides following formalities during operations abroad.	*Sub-cultures and formalities of HOs may affect humanitarian operations.*

Holguın-Veras et al. (2012)	Local organization's distinctive knowledge about victims and route conditions was required during the Haiti earthquake to deliver aid on time.	*Expatriates' collaboration with local associates is key to perform humanitarian operations. But the divide between them due to differences in ethnicity, culture, language, etc., can become an impediment for collaborative performance.*
CHS Alliance (2015)	Expatriates' collaboration with local associates is vital for successfully performing humanitarian operations.	
UN-OCHA (2017) Kovacs and Spens (2009) Pedraza-Martinez et al. (2011)	*Local-expats collaboration* in operational functions viz., requirements identification local procurement, and last-mile transport.	
Carr and McWha-Hermann (2016) Abrams and Hogg (2010)	Local associates and expatriates often divide into subgroups at work, which can become an impediment during humanitarian operations. Visible disparities seen in ethos, culture, language, etc., between locals and expats.	
Altay et al. (2009)	When disaster operations are beyond the national borders, boundary controls and cross-cultural differences make it even more complex.	*Cross-cultural differences between international aid organisations/expatriates and locals pose serious challenges like adjustment of expats which affect their performance.*
Saleh and Kleiner (2005)	American humanitarian firms can be effective in the Middle East when they can better comprehend the culture, politics, and people of that province.	
Silbiger et al. (2017)	With substantial cross-cultural disparities between expats and local community, challenges like adjustment of expats affect their performance.	
Afiouni et al. (2013)	Cultural disparities make it even more challenging if the expats unfollow local religion and principles.	
Varma et al. (2016)	HCNs tend to place expats into 'in-groups' and/or 'out-groups' based on various demographic factors such as race, ethnicity, religion, and gender, which has implications on expats' adjustment and performance.	*In the name of ethnocentrism or collectivism, race, ethnicity, religion, gender, etc., HCNs tend to place expats into 'in-groups' and/or 'out-groups' which affect their adjustment and performance.*
Singh et al., (2019)	HCNs also tend to categorize Self-initiated Expatriates based on specific characteristics viz., ethnocentrism and collectivism.	

5. Discussion

Researchers have observed that *ethnicity* (Fothergill et al., 1999 and Perilla et al., 2002), *community* (Bukvic et al., 2018), *cultural differences* (Varma et al., 2016), *language barriers* (Elder et al., 2007), *ethical values* (Civaner et al., 2017), *fatalistic attitudes* and *distrust* (Joffe, 2012), and *gender sensitivity* (Ashraf & Azad, 2015) can impact humanitarian operations.

Several problems arise during disaster response due to religious beliefs (Azmat et al., 2019; Afiouni, Karam, & El-Hajj, 2013), cultural insensitivities (Paul, 2011), language barriers (Andrulis et al., 2007), and gender-specific norms/customs (UNDP, 2011; Smyth, 2005) of the affected. Some Hindus and Buddhists are often strictly vegetarian and do not consume any meat or animal by-products. For such victims during disasters, medications produced using biomaterials are likely to be problematic (Singh et al., 2016). Believers of Islamic faith may specifically request a diet in accordance with religious laws for "Halal" food. Distributing rations laced with pork extract would be counterproductive in Muslim regions (Altay et al., 2009). Such religious sensitivities must be taken into consideration while planning humanitarian operations.

Another aspect to be noticed is that *fatalism* is highly seen in typical traditional, and faith based cultural systems (Joffe, 2012; Baytiyeh & Naja, 2016). Studies (McClure, 2017; and Solberg et al., 2010) have observed that people with fatalistic beliefs perceive that a disaster is a natural intervention and cannot be controlled. The major concern is when people even give up on the preventable risks or damage and accept it as inevitable. While DRR is important, in vulnerable regions where people believe that disasters are acts of God, the focus of HOCM should be on preparing and preventing loss of lives and assets.

On the medical front, there are also challenges in treating victims due to religious beliefs. For example, in India, psychosocial and psychiatric problems are often treated in the religious premises at regionally prominent shrines and temples (Sujatha, 2012). Many cultures have strong religious beliefs about the provision of healthcare and disposal of remains. When Muslim patients are treated, it is important to know the impact that Islamic beliefs have on healthcare processes such as privacy and touch issues, dietary practices, and unacceptable medications (Attum et al., 2019). Cremations are forbidden in Jewish burial customs and require that the departed be buried as early as possible, while the Indian customs require cremation.

For better humanitarian response, above discussed cultural aspects should be considered during the distribution of relief material/medical supplies, offering healthcare services, etc. Understanding the ethnicity of the victims can also help assess the vulnerability to the psychological impacts (Perilla et al., 2002). In a diverse, multi-cultural and cross-border setting, the response and material needed differs from region to region (Altay et. al., 2009) and therefore, awareness of cultural differences is important (Jacobs et al., 2012). For example, long grain rice and fruit cocktail were unaccepted, but spam was highly valued in the Pacific Islands. While some regions wanted monetary aid, others preferred in-kind assistance (Thomas & Fritz, 2006). Immigrants and refugees may converse in foreign languages, have different cultural backgrounds, and may follow different norms. Muslim women are expected to wear clothes that are neither transparent nor shape-revealing and arms, legs, and hair should be covered (Attum et al., 2019). The disaster relief teams should plan relief logistics so that access to basic amenities and relief material can be provided in a free and fair manner to the minorities and vulnerable groups. In minority communities where the culture of asking for and receiving care are frequently different from those in majority communities (Scott, 2007) and therefore, require special attention, adaptation of informational/warning messages, use of assistive technologies, etc. So, recognizing cultural differences and understanding our own biases is essential to effectively plan and execute the relief supply and logistics for assisting culturally diverse communities during disasters.

Knowledge about the socio-cultural values of the affected society should be considered when designing programs geared toward raising disaster preparedness (Kasapoglu & Ecevit, 2004). Relief operations should also be designed for containing ethical issues that arise due to paternalistic/ defensive attitudes of public authorities, media mindsets, donors' attitudes, misuse of political power (Civaner et al., 2017), losing morals (Rettner, 2010), etc. While some cultures adopt good social morals that help in smooth relief operations (BBC, 2011), in certain societies public outbursts, looting, and riots are common during disasters (Rettner, 2010; Constable, 2008). Based on social values

held by the locals and relief partners, HSCs should assess the actual relief required, adequately plan material security, distribution, and manpower resources.

According to Pradhan, Jena, and Singh (2017), EI among relief executives plays a major role in promoting organisational learning for adaptive performance. So, HOs should impart various EI dimensions that can boast organisation learning and adaptive culture among relief executives. Nevertheless, HOs' ability to capture local cultural knowledge gained in the field and build their capacity for specific needs (Goncalves, 2011), is crucial to respond effectively whenever an emergency hits in the same country or region. Adopting an intergroup leadership style can considerably enhance operational performance by developing co-operation between local and expatriate subgroups in the field office (Salem et al., 2019), and therefore, HOs should train their field officers who can exhibit intergroup leadership style.

Understanding differences in values among stakeholders and relief partners (Raju, 2013) is needed to ensure smooth and hassle-free humanitarian operations. Cultures of victims/community (Rodon et al., 2012,), heterogeneity of actors (Yu et al., 2015), mindset and orientation of HOs/practitioners (Altay et al., 2018) may disrupt the HSC (Azmat et al., 2019), complicate coordination (Yu et. al., 2015), and affect HL/HSC agility or resilience (Altay et al., 2018), during relief operations. Therefore, managing cross-cultural differences and promoting the right attitudes, developing compatibility and trust among relief partners besides factoring local culture and religion of victims, can help HOs adapt their operations to context.

Gender discriminations prevailing in certain social norms add to the already existing vulnerabilities, risks, hazards, and disaster impacts (Ashraf & Azad, 2015; Buvinic, 1999). Socio-cultural norms have limited women from learning skills such as swimming and climbing trees to escape or avoid hazards (Hunter et al, 2016; UNDP, 2011). Traditional clothing like sarees imposed on women due to social norms and the need to take care of their children who cannot run/swim can limit their swift movement in times of disaster (Thebe, 2016). Gender-informed disaster recovery plans should be designed for short- and long-term responses to disasters (Buvinic, 1999).

HOs must impart cultural competency among relief employees so that they can appreciate the emotions and beliefs of people requiring aid and the culture/values of those delivering aid. United States Department of Health and Human Services defined 'Cultural Competency' as "*the ability of individuals and systems to respond respectfully and effectively to people of all cultures, classes, races, ethnic backgrounds, sexual orientations, and faiths or religions in a manner that recognizes, affirms, and values the worth of individuals, families, tribes, and communities, and protects and preserves the dignity of each*" (National Technical Assistance and Evaluation Center, 2009). The provision of culturally and linguistically appropriate services (CLAS), will help for promoting cultural competence among members so that relief operations are reactive to specific health beliefs/ practices of victims' culture, local languages, level of health knowledge, and communication requirements (Jacobs et al., 2012). Just like cultural competence, *cultural sensitivity* is also a set of skills that can make relief personnel learn about the affected who are different in their thought processes, culture, ethnicity, tradition etc., and react appropriately (Brooks et al., 2019). 'Environmental Scan' is the resource guide that plays a crucial role in developing a curriculum for cultural competence for disaster responders (SRA International, Inc., 2008). It includes resources for the concepts, practices, best methods, case studies and pedagogy for cultural competence learning/ teaching.

6. Conclusion, Implications and Limitations

Humanitarian relief is all one hopes and needs for in the most distressing situations. During the major disasters that have happened in the last decade (viz., Nepal earthquake tragedy, Indian Ocean Tsunami in Sri Lanka, Kerala floods in India, New Orleans Hurricane Katrina, etc.,), the cultural values, beliefs, and diversity were overlooked affecting preparedness, relief, and recovery. This led to either wastage of relief or inaccessible/ ineffective aid or non-cooperation among partners or delayed rehabilitation. As these are emergency situations, preparedness, and readiness for any kind of disaster is crucial and should be made mandatory to prepare ahead not only in technical competencies but also in cultural competencies. Culture should be considered as one of the key dimensions of humanitarian operations. Understanding the issue and responding with the right

solution could be a better approach in solving sensitive issues.

This paper provides several research insights emphasizing the importance, impact, and influence of the culture of victims and other key actors for effective humanitarian operations. By leveraging these research insights, HOs can factor culture and ethnicity to augment their organisational capacity and performance in DM. Further, culturally competent HOs will contribute to DRR while ensuring relevant, smooth, and seamless relief to victims in the event of disasters. This research identified several specific cultural aspects such as ethical/ social values, fatalism, religious beliefs, gender sensitivity, local-expatriate cooperation, etc., which can impact HOCM. Since the outcome of this research is predominantly derived from specific regional or national contexts, findings cannot be generalized or applied universally. If field studies are carried out, insights from practitioners and victims can bridge qualitative/information gaps in this research. Researchers can further study each cultural aspect in-depth through empirical field studies to validate the relationship between culture and humanitarian effectiveness. Specific studies on how all these cultural aspects can impact HOCM in different disaster-types, selected cultures and high-risk/culturally sensitive countries can be envisaged.

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Determinants of Indian Stock Market Movements: An Empirical Study

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Abstract

This study is an attempt to model the movements of the Indian stock market by examining the impact of seven macroeconomic variables on the Indian stock market. The study also analyses the cause and effect relationship between these variables. The empirical study is based on a multiple regression model computed on Standard Ordinary Least Square (OLS) Method and Granger Causality test for a period of 12 years from January 2006 to December 2017. The results show that Foreign Portfolio Investments (FPIN), lagged index values ($NIFTY_{t-1}$) and Oil Price (OIL) have significant positive and domestic interest rate (CMR) and Exchange Rate (ER) has a significant negative impact on market movements. The Industrial Production (IIP) and Inflation (CPI) have no significant impact on stock market movement. It means that the market has already adjusted with the past information related to these variables. It also shows the efficiency of the Indian market in relation to these variables. The significant positive coefficient of the past Nifty values ($NIFTY_{t-1}$) shows that past market return significantly affects the present return or investors purchase or sell the securities based on the past market movements. The positive relationship between the market return and oil price is inconsistent with the common literature. It is mainly because during the study period the Indian economy showed an upward trend and the demand for goods and services increased, hence though the prices including Oil Price increased market return also increased. Since the Indian market is integrated to the US and other developed markets the return spillover further added to the intensity. The results of the causality study to identify the direction of causality reveal that the Exchange Rate, Foreign Portfolio Investments, Oil Price and Inflation cause Nifty movements. There is bidirectional causality between market return and Exchange Rate.

Keywords: *NSE Nifty, Macroeconomic variables, Unit root tests, Regression Model, Granger Causality Test*

1. Introduction

The financial market plays an important role in the economic development of the nation and stock markets of emerging economies are likely to be very sensitive to fundamental changes in economic structure. Identifying the link between macroeconomic variables and the stock market is highly helpful for investors in their investment decision. It is also very important for the policymakers in developing macroeconomic policies. The earlier studies like Atje and Jovanovich (1993), Levine and Zervos (1996) show that there exists a good positive relationship between stock market development and economic growth. The review of existing literature reveals that there are a number of studies on the effect of macroeconomic variables on stock market movements and return of the market but these studies are contradictory in nature. It may be because of the dynamic nature of the economy, period of study, statistical tools for analysis, selection of macroeconomic variables and proxy variables used. Hence a study on the relationship between stock market movements and macroeconomic variables are always a matter of academic interest. This paper analyses the impact of seven explanatory macroeconomic variables on the movements of the Indian stock market.

2. Review of Literature

Issahaku et.al (2013) examined the existence of causality between macroeconomic variables and stock returns in Ghana with help of VECM and granger causality test for the period of monthly data from January 1995 to December 2010. They found a significant long-run relationship between stock returns and inflation, money supply and Foreign Direct Investment. They also found that there exists a relationship between stock returns and money supply, interest rate and FDI.

Aurangzeb (2012) investigated the factors affecting stock market return in South Asian countries by selecting Pakistan, India and Sri Lanka based on the period from 1997 to 2010. The results of the study with the help of regression analysis reveal that Foreign Direct Investment and Exchange Rate have a significant positive impact but the interest rate and inflation have a negative impact. The authors highlight the importance of reducing the values of Interest and Exchange Rates to recover the confidence of investors.

Ray (2012) developed a multiple regression model to test the effects of macroeconomic variables on the Indian stock prices and found that Oil price and Gold price have a significant negative effect on the stock price, while balance of trade, interest rate, foreign exchange reserve, gross domestic product, industrial production index and money supply have a positive influence on Indian stock price. Inflation rate, Foreign Direct Investment, Exchange Rate and Consumer Price Index don't have any significant effect on the stock price.

Hosseini et.al (2011) investigated the relationships between stock market indices and four macroeconomics variables, namely Crude Oil Price (COP), Money Supply (M2), Industrial Production (IP) and Inflation Rate (IR) in China and India for the period of 10 years from January 1999 to January 2009. The study was based on Johansen-Juselius (1990) Multivariate Cointegration and Vector Error Correction Model technique. The findings of the study indicated that in the long run, the impact of increases in crude oil price in China is positive but in India the effect is negative. In terms of money supply, the impact on the Indian stock market was negative, but in the case of China, it was a positive impact. The effect of inflation was positive in both countries. The short-run effect of crude oil price was positive in India. The authors didn't find any statistically significant short term relationship.

Mayasami et al (2004) applied Johansen's (1990) VECM maximum likelihood estimation model and identified that Singapore stock market has significant positive relationships with real economic activity, Exchange Rate, Money supply, short-term and long-term interest rates. The cointegrating relationship between macroeconomic variables shows inefficiency in the capital market.

Nath and Samantha (2002) examined the linkage between the Foreign Exchange and Stock Market in India for the period from March 1993 to December 2002 based on daily data. The study based on S&P CNX NIFTY reveals that in India stock market investment has a significant impact on exchange rate movement. They argue that it is because of the dominant role of FII in the Indian stock market. They also found that there is no significant causal relationship between Exchange Rate and stock price movements except for the years 1993, 2001 and 2002

Bilson et al (2000) found that compared to the global risk factors local macroeconomic factors are the primary source for equity return variation in the emerging stock markets. The authors found that local risk factors such as money supply, inflation, industrial production and exchange rates have a significant association with the equity return of the emerging market.

Cohn and Lessard (1980) reveal that in a majority of the countries stock prices are negatively related to nominal interest rates and inflation. Rising inflation leads to a fall in stock prices and a decline in after-tax profits and systematic errors in valuation are made when there is significant inflation.

Fama and Schwert (1977) analysed the expected and unexpected component of inflation and stock return from 1953 to 1971. They found a negative linkage between stock returns and both expected and unexpected inflation.

3. Statement of the Problem

The stock market plays a crucial role in the growth of commerce and industry by providing the means of finance. Stock prices of an efficient market will adjust rapidly to all the available information and macroeconomic changes in the economy. Hence it can be used as a major indicator of the economic conditions of a country.

The fluctuations in the stock prices will also lead to changes in the macroeconomic structure. Therefore bidirectional causality can be hypothesised between macroeconomic variables and stock index movements. These dynamic relationships between stock indices and macroeconomic variables are useful for a nation's macroeconomic policy formulation.

The movement of the stock index is not only watched by the domestic investors and companies but also the foreign portfolio investors, foreign direct investors, rating agencies and all general public. The present study is an attempt to model the movements of the Indian stock market and to find the 'casual' relationship between these variables.

4. Objectives of the Study

The main objective of this study is to examine the impact of seven macroeconomic variables namely Inflation (CPI), Domestic Interest Rate (CMR), Exchange Rate (ER), Economic Growth (measured in terms of Index of Industrial Production), Oil Price (OIL), Foreign Portfolio Investments (FPIN) and Domestic Institutional Investments (DIIN) on Indian stock market.

5. Data and Methodology

The empirical investigation was based on monthly data for a period of 12 years from January 2006 to December 2017. The study has selected seven macroeconomic (independent/explanatory) variables that have a theoretical base in explaining the Indian stock market movements. The NSE (Nifty) closing price is taken as a dependent variable i.e. proxy for the Indian stock market. The study was initially conducted with nine macroeconomic variables which included Gold price and return of the US stock market. These variables are excluded from the study because these variables are statistically insignificant in explaining the index movements and also the existence of specification errors.

5.1 Independent Variables

5.1.1 Domestic Inflation measured as Consumer Price Index (CPI) -

Inflation is an increase in the general level of prices or a decrease in purchasing power of money. Inflation is explained as negative news to the stock markets because a high rate of inflation increases the cost of living and a shift of resources from investments to consumption. It leads to a fall in demand for market instruments and a reduction in the volume of stock traded. In this study, CPI is used as a proxy for Indian domestic inflation. From 2014 onwards RBI follows CPI for measuring inflation. A negative relationship is hypothesised between inflation and market return.

5.1.2 Domestic Interest Rate measured as Call Money Rate (CMR)

Domestic interest-bearing securities are a less risky investment alternative for investors. Theoretically, an increase in the domestic interest rate will increase the opportunity cost of holding money. It means an increase in the domestic interest rate may lead to substituting the stocks with interest-bearing securities. It may result in falling of stock prices due to less demand. Thus a change in interest rates should move asset prices in the opposite direction. Hence, a negative relationship is expected between interest rate and stock price. In this study Call Money Rate (CMR) is used as a proxy to measure the domestic interest rate. It is the major commercial banks call money rate.

5.1.3 Exchange Rate measured as INR vs US$ (ER)

A fall in the Indian currency is likely to affect the economy negatively. Since the Indian economy is in an adverse BOP position a depreciation of the local currency will drive prices upward which will make it difficult for people to save for investment. Hence, a negative effect is hypothesised between Exchange Rate and stock performance. In this study average monthly Exchange Rate between Rupee and US Dollar is considered because the US Dollar is the most dominant foreign currency used for trading and investment.

5.1.4 Development of Economy measured as Industrial Production Index (IIP)

The measure of real output or real economic activity is Gross Domestic Product (GDP) but GDP data is available quarterly. Index of Industrial Production is another important measure of overall economic activity in the economy. Theoretically, an increase in the industrial production index may positively influence the stock performance because an increase in IIP means an increase in the production of the industrial sector and an increase in the profit of industries. Thus Industrial Production Index is used as a proxy to measure the growth rate in the real sector. A positive relationship is hypothesised between IIP and Market return.

5.1.5 Crude Oil Price (OIL)

Crude oil is an essential input for various industrial productions. India largely depends on the import of crude oil and therefore, oil price has a crucial role to play in the Indian economy. An increase in oil prices results in higher transportation and production costs which have a negative impact on corporate earnings. Likewise increasing fuel prices also raise inflation and lead to a decline in consumers saving and investment. Therefore, for oil-importing countries like India, an increase in oil price may have a negative impact on the stock market. Therefore a negative correlation is hypothesised between Oil Price and stock index movements.

5.1.6 Foreign Portfolio Investments (FPIN)

In this age of transnational capital formation, the fund from outside the nation in the form of Portfolio Investments is the major source of capital for developing countries and India is not an exemption. In India, around 49 per cent of the Nifty Company's market capitalisation is from FPI. Thus, theoretically, the stock index may move in tandem with FPI activities. In this study, FPIs net investment (FPIN) is used as a proxy for FPI. A positive relationship is hypothesised between FPIN and Market return.

5.1.7 Domestic Institutional Investments (DIIN)

Domestic investors like mutual funds, pension funds and other institutional investors are also investing a substantial amount of funds in Indian equity markets. Market up and downs may also be influenced by their investment activities. Therefore a positive relationship is expected between DIIN and the stock index. In this study Domestic Institutional investor's net investment is considered as an independent variable that affects the stock market.

5.2 Dependent Variable NSE Nifty

NSE NIFTY is a basket of 50 shares from 21 sectors of the Indian economy. It is considered as a true representative sample of the Indian equities. The CNX Nifty index is a free-float market capitalisation of weighted index. The base period for the CNX Nifty index is November 3, 1995 with a base value of 1000.

A brief description of all the variables used in the study is presented in Table 1

Table 1: Description of Variables

Name of Variables	Symbol Used	Proxy Used	Source
Domestic Inflation	CPI	Consumer Price Index	dbie.rbi.gov.in
Domestic Interest Rate	CMR	Call Money Rate	dbie.rbi.gov.in
Exchange Rate	ER	Monthly Average Rupees per unit of US $	dbie.rbi.gov.in
Development of Economy	IIP	Index of Industrial Production	dbie.rbi.gov.in
Crude Oil Price	OIL	Crude oil price Index Value based on Us $ per Barrel	indexmundi.com
Domestic Institutional Investments	DIIN	Net Domestic Institutional Investment	sebi.gov.in
Foreign Portfolio Investment	FPIN	Net Foreign Portfolio Investment	sebi.gov.in
Stock Indices	NIFTY	Nifty Closing Price	nseindia.com

Data for all macroeconomic variables are collected from the database of the Indian economy maintained by the Reserve Bank of India and SEBI. Nifty data is obtained from the website of NSE. E-Views 7 is used for all analysis.

5.3 Tools for Analysis

5.3.1 Unit root Test

The foundation of time series analysis is stationarity. A series is said to be stationary if the mean and variance are time-invariant. Therefore, before estimating regression it is important to confirm whether the data is stationary or not. The Augmented Dickey-Fuller test (Hamilton, J., 1994) was used to check the stationarity of the data by applying the following regression.

$$\Delta Y_t = \alpha + \beta T + \rho Y_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta Y_{t-i} + e_t \quad \text{.....1}$$

Where *Yt* is the variable in period t, T denotes a time trend, *et* is pure white noise error term disturbance with mean zero and variance σ2, k represents the number of lags of the differences in the ADF equation and $\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$.

5.3.2 Descriptive Statistics

It describes the patterns and general trends of a dataset. It enables a reader to quickly understand and interpret the set of data that has been collected. This study uses measures of central tendency (mean, median, and mode), measures of variability (standard deviation, minimum and maximum), skewness, kurtosis and Jarque Bera normality test.

5.3.3 Correlation Matrix Analysis

Correlation is the most important and simple method to analyze the relationship between the variables. Correlation is a term that refers to the strength of a relationship between two variables. A strong or high correlation means that two or more variables have a strong relationship with each other while a weak or low correlation means that the variables are hardly related. Here, the study used Karl Pearson *r*, a type of correlation coefficient, which is also referred to as linear or product-moment correlation.

5.3.4 Regression Model

A multiple regression model is designed to test the effects of the macroeconomic variables on the stock prices. The stock market functions can be represented as follows.

$$NSE_t = \alpha + \beta_1 CP1_t + \beta_2 CMR_t + \beta_3 ER_t + \beta_4 IIP_t + \beta_5 OIL_t + \beta_6 FIIN_t + \beta_7 DIIN_t + \beta_8 Nifty_{t-1} + \mu_t \quad \text{.....2}$$

Where NSE_t is the stock index of NSE Nifty at time t, α is the constant $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$, and β_8 are the parameters to be estimated and μ_t is the error term and *t* represents time.

It is expected that $\beta_1, \beta_2, \beta_3$ and $\beta_5 < 0$, $\beta_4, \beta_6, \beta_7$ and $\beta_8 > 0$. Null Hypothesis.

The test is based on the null hypothesis that the independent variables have no significant impact on dependent variable or all the coefficients are equal to zero or

$\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$

5.3.5 Granger Causality Test

Ordinarily, regressions reflect "mere" correlations, but the Granger causality test (Granger 1988) is a statistical hypothesis test for determining whether a one-time series is useful in forecasting another. Here the study uses the term causality to represent the dynamic relationship that exists between these variables i.e. one variable say Xt precedes Yt or Yt precedes Xt, the lead-lag relationship. In addition, it also says that variable Y is Granger caused by variable X if variable X assists in predicting the value of variable Y. If this is the case, it means that the lagged values of variable X are statistically significant in explaining variable Y. The test is based on the following regressions

$$Y_t = \beta_0 + \sum_{k=1}^{M} \beta_k Y_{t-k} + \sum_{l=1}^{N} \alpha_l X_{t-l} + u_t$$

$$X_t = \gamma_0 + \sum_{k=1}^{M} \gamma_k X_{t-k} + \sum_{l=1}^{N} \delta_l Y_{t-l} + v_t \quad \text{.....3}$$

Where Y_t and X_t are the variables to be tested, and u_t and v_t are mutually uncorrelated errors, and t denotes the time period and 'k' and 'l' are the number of lags. To test the null hypothesis of X does not granger cause Y, F-test is used. If the computed F-value exceeds the critical F-value at the chosen level of significance, the null hypothesis is rejected. It can also be concluded on the basis of P Value at the selected level of significance. This would imply that macroeconomic variable "Granger Cause" or improve the prediction in stock prices and vice versa.

6. Data Analysis and Discussion

6.1 Descriptive Statistics

It describes the pattern and general trend of the data set for getting an overall idea about the variables. The details are presented in Table 2

Table 2: Descriptive Statistics

Variables	CPI	CMR	ER	OIL	IIP	FPIN	DIIN	NIFTY
Mean	130.729	6.35729	48.22784	71.41	141.4206	4843.361	-131.176	4229.158
Median	127.250	6.51500	46.04785	72.51	148.5100	3840.650	73.50000	4649.275
Maximum	197.100	14.0700	63.7621	132.55	194.2000	28562.90	16414.69	8588.250
Minimum	69.5612	3.073	39.37370	25.15	84.15520	-15347.3	-16207.3	934.0500
Std. Dev.	32.7190	2.00349	6.088319	30.070	30.90248	8398.235	5014.799	1828.340
Skewness	0.42823	0.21290	1.044325	-0.078	-0.34645	0.527321	-0.39761	-0.10215
Kurtosis	1.74614	3.50623	3.191234	1.769	1.799426	3.388362	4.460558	2.205678
Jarque-Bera	10.7045	2.62550	26.39418	9.932	11.52893	7.578563	16.59376	4.036150
Probability	0.00277	0.26907	0.000002	0.0096	0.003137	0.022612	0.000249	0.132911
Observations	144	144	144	144	144	144	144	144

Source: Computed Values

The high standard deviation implies the high volatility of the series. Table 2 shows that CMR, ER, IIP and CPI have low deviations from their mean, while FPIN, DIIN, and NSE have very high and significant variation from their means. The mean exchange rate between rupee and dollar for the period is 48. 22 and mean domestic interest rate measured in terms of CMR for the period is 6.34 per cent.

Most of the variables are positively skewed. The negatively skewed values for the variables IIP, DIIN and NSE imply that mean of the observation is less than the median. Thus there is a deviation from the normal distribution. The value of kurtosis for the variables DIIN (4.469558), CMR (3.50623), FPIN (3.3883) and ER (3.19123) are leptokurtic distribution (i.e., >3) meaning that high probability for extreme values in the distribution. The kurtosis value of all other variables indicates platykurtic distribution (i.e., <3) indicating that values are widespread around the mean. Jarque Bera test statistic measures the difference of the skewness and kurtosis of the data series from the normal distribution based on the null hypothesis that data follow a normal distribution. By using probability values of Jarque-Bera statistics, null hypothesis normality is rejected for all variables except for CMR and NSE at a 5 per cent level of significance.

6.2 Test of Unit root

ADF statistics is used for examining the stationarity. If the calculated absolute ADF test statistics is more than the critical values from Fuller's table the null hypothesis of unit root can be rejected. The unit root test results obtained through the ADF test are presented in Table 3.

Table 3: **ADF Unit Root Test Statistics**

Variables	At level			
	With Intercept		With Trend and Intercept	
	Test Statistic	Critical Value	Test Statistic	Critical Value
CMR	-3.637704	-2.880211*	-4.296847	-3.439*
FPIN	-8.503043	-2.880211*	-8.98862	-3.439*
DIIN	-7.295494	-2.880211*	-7.78577	-3.439*

At First Difference				
Variables	**Test Statistic**	**Critical Value**	**Test Statistic**	**Critical Value**
dCPI	-9.87083	-2.880336*	-9.92792	-3.439*
dER	-8.857793	-2.880336*	-8.98977	-3.439*
dIIP	-2.881978	-2.823853*	-3.5977	-3.442*
dOIL	-7.450798	-2.880336*	-7.484017	-3.4394*
dNIFTY	-12.45259	-2.880336*	-12.4671	-3.439*
*Significant at Five Percent Level				

Source: Computed Values

It is clear from Table 3 that all the absolute test statistics values are more than the critical value at five percent, therefore, we reject the null hypothesis of non-stationarity at level for variables CMR, FPIN and DIIN and at first difference for all other variables.

6.3 Correlation Matrix

The correlation matrix of stock exchanges indices and seven macroeconomic variables are presented in Table 4.

Table 4: Correlation Matrix

Variables	**CPI**	**CMR**	**ER**	**IIP**	**OIL**	**FPIN**	**DIIN**	**NIFTY**
CPI	1.0000	0.0417	0.1361	-0.2786	0.3152	-0.0561	0.0819	-0.0657
CMR	0.0417	1.0000	0.2381	0.0613	0.02059	-0.0863	-0.1938	-0.1976
ER	0.1361	0.2381	1.0000	0.0149	0.31215	-0.5398	0.4180	-0.4096
IIP	-0.2786	0.0613	0.0149	1.0000	-0.01337	0.1223	-0.0936	0.1643
OIL	0.3152	0.0205	0.3121	-0.0133	1.00000	-0.2361	0.3243	0.1902
FPIN	-0.0561	-0.086	-0.5398	0.1223	-0.23615	1.0000	-0.7830	0.5589
DIIN	0.0898	-0.193	0.4180	-0.0939	0.32433	-0.7830	1.0000	-0.4727
NIFTY	-0.0657	-0.1976	-0.4096	0.1643	0.1902	0.5589	-0.4727	1.0000

Source: Computed Values

The correlation matrix gives only an idea about the relationship among the variables. Table 4 shows that Nifty is positively correlated with Foreign Portfolio Investments (0.55895), and Industrial production (0.1643). Industrial production, Oil Price and Inflation have weak and FPI has a moderate positive correlation with Nifty. The stock index is negatively correlated with all other variables. Among the negatively correlated variables, DIIN and CMR have a moderate correlation with Nifty.

6.4 The Regression Model

In order to test the impact of macroeconomic variables on the Indian stock market, a multiple regression model was estimated on the Standard Ordinary Linear Square (OLS) method. The model has taken the NSE Nifty index as the dependent variable and seven macroeconomic independent variables as explained in Equation 2. The results are presented in Table 5. The multiple breakpoint test is used to ensure that there is no structural break in the series.

Table 5: Regression Model

Variables	Coefficient	Std Error		P - Value
C	1.904266	0.964110	1.975154	0.0466*
CMR	-0.592730	0.302579	-1.95893	0.0470*
dER	-1.337340	0.677425	-1.97415	0.0494*
dOIL	0.90865	0.044698	2.032865	0.0489*
DIIN	0.00130	8.71E-05	1.593940	0.0937
dIIP	0.016797	0.065136	0.257879	0.7969
dCPI	-0.304821	0.59454	-0.51270	0.6018
FPIN	0.0296	0.0117	2.531487	0.0125*
NIFTY $_{t-1}$	0.022888	0.000953	24.01752	0.0000*
R-squared	0.866128	Mean dependent var		1.716675
Adjusted R-squared	0.857126	S.D. dependent var		7.268322
S.E. of regression	2.747910	Akaike info criterion		6.575051
Sum squared resid	1011.568	Schwarz criterion		6.740804
Log likelihood	-342.8106	Hannan-Quinn criterion		6.642405
F-statistic	107.4329	Durbin-Watson statistics		2.042080
Prob (F-statistic)	0.000000	* P value significant at 5 percent level		

Source: Computed Values

Table 5 shows that the value of the adjusted R-squared is 0.857066. It means 86 percent of the variation in Nifty is explained by the explanatory variables. The study also included lagged values of the dependent variable (NIFTY$_{t-1}$) as an explanatory variable. Table 5 shows that Foreign Portfolio Investments (FPI), lagged index value (NIFTY$_{t-1}$) and Oil Price (OIL) have a significant positive impact on stock market movement. Foreign portfolio investors are the most dominant investment group in the Indian stock market. In India, 49.18 percent of the NSE Nifty company's shares are held by FPIs (Varughese, 2018). Therefore generally Indian stock market may move in tandem with the activities of Foreign Portfolio Investors. The positive relationship between FPIs and market return supports the findings of Pathan and Masih (2013). The significant positive relationship with OIL is contrary to the findings of Hosseini et al (2011) in the Indian market, but in the Chinese market, he found a positive relationship. Past Nifty values (NIFTY$_{t-1}$) have a significant positive impact on present market movements because past index values should always have an impact on investors' decision or the investors follows past market movements to make their investments in the Indian market.

As explained in the theory the sign of the coefficients of domestic interest (CMR) another locally available investment alternative, Exchange Rate (ER) measured in terms of US Dollars and Inflation (CPI) is negative. Exchange Rate (ER) and Domestic Interest (CMR) is significant, but domestic inflation (CPI) is not significant in explaining the market movements. The domestic interest rate (CMR) has a negative impact on market return because when the interest rate increases the investors may withdraw their savings from the stock market and invest in less risky interest-bearing securities. The negative relationship between the interest rate (CMR) and the market return is contrary to the findings of Ray (2012). The study reveals that a 1 percent increase in the interest rate will lead to a more than 0.592 percent decrease in Nifty. The negative relationship between market return and Exchange Rate (ER) exists because depreciation of the local currency drives the prices upward. It may make it difficult for people to save for investment. Hence, the demand for shares may decline and lead to a fall in the market prices of the securities. This result supports the findings of Doong et al., (2005). The findings of Pathan and Masih (2013) and Mukherjee and Naka (1995)

show a negative relationship between Exchange rate and Market Return. The depreciation of the Indian Rupee against the US Dollar leads to a decline in the value of the foreigner's investment in India. Hence, the depreciation of the Indian Rupee will encourage Foreign Investors to withdraw their fund from the Indian market. It also means that FIIs sell more in response to the depreciation of the Indian rupee with the dollar.

The Industrial Production (IIP), Domestic institutional investors (DIIN) and Inflation (CPI) have no significant impact on stock market movement. It means that the market has already adjusted with the past information related to these variables. It also shows the efficiency of the Indian market with relation to these variables.

In this study, all the variables except Oil show the relationship as explained in the theory. In the case of Oil Price (OIL), a negative relationship is hypothesised with the market return but the results of the study show a positive relationship between the market return and oil price. It may be because of the influence of oil companies that are included in the sample i.e. in Nifty. It also creates an opportunity cost for foreign investors in such a way that when Oil Price increases market return decreases in their home market, it encourages the foreigners to switch their investment from their home market to India where the expected return is high. According to Sahu and Bandopodhyay (2012) when an economy recovers from a recession, the global demand picks up and it leads to the rise of basic material prices like crude oil. Further, if the stock market of a developing economy is cointegrated with the stock markets of developed countries, then the joint effect might magnify the result significantly. In India, during the study period, the economy has shown a real upward trend which in turn has led to high demand for goods and services and hence though the oil showed an upward trend, market return also increased. It was the major reason for the positive relationship between Oil Price and market return. Indian market being much integrated to the US market is also another reason. Sahu et al (2012), Sadorsky (2001), Hammoudeh and Li (2005), also corroborate the view that there exists a long term positive association between oil prices and the stock markets. Robert and Gay (2008) found no significant relationship between market return and oil price in BRIC countries. The positive relationship between oil price and market return supports the findings of Narayan and Narayan (2010), Siddiqui (2014), Luo and Qin (2017), Tursoy and Faisal (2018) in Vietnam, Pakistan, Chinese and Turkish markets respectively. In the Indian market, Najaf and Najaf (2016) found a positive relationship between crude oil price and the Bombay Stock Exchange.

6.5 Residual Diagnosis

The model has a high R squared value. The majority of the independent variables are significant in explaining changes in Nifty. The f statistics (107.43) and corresponding p-value (0.0000) shows that all the independent variables are jointly significant in explaining the dependent variable. The Durban Watson statistic is 2.042080 it means there is no autocorrelation. In order to check the adequacy of the model following diagnostic tests are selected.

6.5.1 Test of Autocorrelation

The residuals should not be autocorrelated. Breusch Godfrey Serial correlation test is applied.

Table 6: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.260678	**Prob. F**	0.7819
Obs*R-squared	0.54163	**Prob. Chi-Square(2)**	0.7637

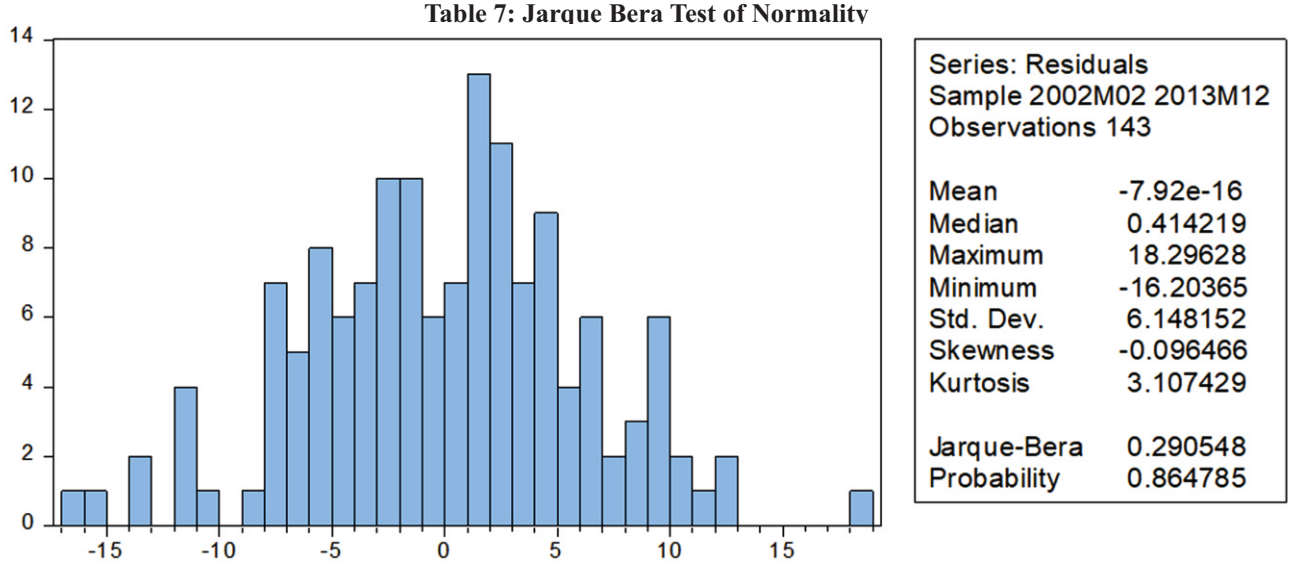
Source: Computed Values

The p-value is greater than 5 percent therefore we cannot reject the null hypothesis of no autocorrelation. This means that residuals are not autocorrelated which is desirable.

6.5.2 Normality Test for Distribution of the residuals

The regression coefficients are best linear unbiased if the residuals follow the normal distribution with zero mean and constant variance. Jarque Bere test is applied to check the normality of the residuals based on the following hypothesis

Table 7: Jarque Bera Test of Normality



Source: Computed Values

From Table 7 it is observed that the p-value of Jarque –Bera statistics (0.864785) is more than 5 percent, therefore, we can accept the null hypothesis of normality meaning that population residual is normally distributed which fulfils the assumption of a good regression line.

6.5.3 Heteroscedasticity Test

Heteroscedasticity is a term used to describe the situation when the variance of the residuals from a model is not constant. Pegan Godfrey Serial test is applied to test for the presence of heteroscedasticity based on the following hypothesis. The details are presented in Table 8.

Null Hypothesis – Variance of the residual is not heteroscedasticity (homoscedastic) Alternative Hypothesis – Variance of the residual is heteroscedastic

Table 8: Pegan Godfrey Serial test

F - statistic	1.280523	Prob. F(7,135)	0. 2717
Obs*R - squared	8.98666	Prob. Chi - Square(7)	0.2546
Scaled explained SS	8.28235	Prob. Chi - Square(7)	0.3070

Source: Computed Values

Table 8 shows a p-value more than 5 percent meaning that we cannot reject the null hypothesis of no heteroscedasticity and it is concluded that residuals have constant variance or homoscedasticity which is desirable.

6.6 Arch Effect

The arch test is applied for checking the arch effect based on the null hypothesis that there is no arch effect. The details are presented in Table 9.

Table 9: Arch Test

No of observations	F- statistic	Prob. F	Obs*R - squared	Prob. Chi - Square
142	0.24052	0.6157	0.242057	0.6172

Source: Computed Values

From Table 9, it is clear that the p-value of 0.6257 is greater than 5 percent. It means we can accept the null hypothesis of no arch effect which is desirable.

6.7 Ramsey's RESET Test

Regression Specification Error Test (RESET) was developed by B. Ramsey. This test is used to detect omitted variables and incorrect functional form of specification errors. The test has obtained a very low f-value of 0.080853 and a corresponding p-value of 0.7766. Thus the null hypothesis of no specification error has been accepted at a 5 per cent level of significance.

From the model diagnosis it is clear that the model satisfies all the conditions of model adequacy i.e., no autocorrelation, no arch effect, no heteroscedasticity, so specification error and residuals follows a normal distribution. No autocorrelation, no heteroscedasticity and normal distribution of residuals which is known as a holy trinity as it is a rare case. Therefore, the model is highly acceptable

The question 'casual' relationship between macroeconomic variables and the stock market is addressed by using Granger (1969) causality test. Granger causality test is a technique for determining whether one-time series is significant in forecasting another or not. The results are given in Table 10

Table 10: Granger Causality Test

Null Hypotheses	F Statistics	P-Value	Result
dER does not Granger Cause dNIFTY dNIFTY does not Granger Cause dER	6.23754 5.7126	0.0005 0.0077	Bidirectional Causality
dNIFTY does not Granger Cause DIIN DIIN does not Granger Cause DNIFTY	6.2653 0.46109	0.0027 0.6254	Unidirectional Causality
dNIFTY does not Granger Cause OIL dOIL does not Granger Cause dNIFTY	0.72807 5.61118	0.4904 0.0049	Unidirectional Causality
FPIN does not Granger Cause dNIFTY dNIFTY does not Granger Cause FPIN	3.14087 1.03825	0.0482 0.4075	Unidirectional Causality
dNIFTY does not Granger Cause dIIP dIIP does not Granger Cause dNIFTY	0.30991 0.38269	0.7160 0.6760	No Causality
dCPI does not Granger Cause dNIFTY dNIFTY does not Granger Cause dCPI	3.29316 0.63964	0.0491 0.7831	Unidirectional Causality
CMR does not Granger Cause dNIFTY dNIFTY does not Granger Cause CMR	0.61567 3.17356	0.7921 0.0461	Unidirectional Causality

Source: Computed Values

The test results presented in Table 10 reveals that Exchange Rate (ER), Foreign Portfolio Investments (FPIN), Oil Price (OIL) and Inflation (CPI) 'cause' Nifty. These variables have a significant impact on changes in Nifty or these variables precede Nifty. There is bidirectional causality between Exchange Rate (ER) and Nifty. It means changes in Exchange Rate will affect the Nifty and Changes in Nifty will also affect Exchange Rate. The causality test also reveals that there is unidirectional causality between Nifty and domestic interest rate (CMR) and Domestic Institutional Investments or mutual fund investment activities (DIIN), ie, Nifty 'causes' CMR and DIIN. The macroeconomic variable industrial growth (IIP) does not appear to have any statistically significant effect on stock price and vice versa. It means that the impact of Industrial production has already been incorporated in the share price movements before its announcements.

7. Findings, Suggestions and Conclusion

Stock markets are very important from the point of view of channelising resources for the growth of the economy. A stable and strong stock market always reflects the economic

stability and the confidence of investors in the strength of the economy. Therefore the causes of stock market fluctuations have been an area of important concern. This study is an attempt to examine the impact of seven important macroeconomic variables on Indian stock market movements. The explanatory variables considered for the study was Inflation, Domestic Interest Rate, Exchange Rate, Economic Growth, Oil Price, Foreign Portfolio Investments and Domestic Institutional Investments. NSE Nifty index was used as the dependent variable. Correlation analysis, Regression Model and Granger Causality Test were the statistical tools used for the analysis. Care has been taken while selecting the variables, identifying the appropriate proxies and pre-analysis checking of the data. All the model adequacy tests are conducted before accepting the model. The explanatory power of the regression model was also high.

The results show that Foreign Portfolio Investments (FPIN), lagged index values ($NIFTY_{t-1}$) and Oil Price (OIL) have a significant positive and Domestic Interest Rate (CMR) and Exchange Rate (ER) has a significant negative impact on market movements. The Industrial Production (IIP) and Inflation (CPI) have no significant impact on stock market movement. Domestic institutional investors (DIIN) another important player in the Indian stock market has no significant impact on market return. The coefficient of Call Money rates showed that a one percent increase in CMR resulted in a 0.592 percent decline in Nifty. The negative impact of domestic interest rate (CMR) on market return could be due to the high opportunity cost of substituting stocks with other less risky interest-bearing instruments. The coefficient of Exchange Rate showed that a one percent depreciation in local currency resulted in a 1.33 percent decline in the Nifty. The significant positive coefficient of the past Nifty values ($NIFTY_{t-1}$) shows that past market return significantly affects the present return or investors purchases or sell the securities based on the past market movements. This result is consistent with the findings of Doong et al. (2005). The results of the causality study to identify the direction of causality reveal that the Exchange Rate, Foreign Portfolio Investments, Oil Price and Inflation cause Nifty movements. There is bidirectional causality between market return and Exchange Rate.

Since Foreign Portfolio Investors have a significant positive impact on market return steps can be taken to attract more FPIs into India. Strengthening the Indian Rupee will attract foreign funds into the market. It is because the appreciation of Indian currency increases the value of foreigners' investments. It also means that FIIs sell more in response to the depreciation of the Indian rupee with the dollar. As the domestic interest rate has a negative impact on market return, steps should be taken to maintain a stable interest rate. There is evidence that the Indian market is influenced by macroeconomic factors, hence it is necessary that measures be taken to improve the depth of the market to increase the market efficiency.

While examining the results of the study it is observed that the Indian stock market is efficient in adjusting to the changes with related to the variables such as Industrial Production (IIP) Inflation (CPI) and Domestic Institutional Investors (DIIN). It means that the market has already adjusted with the past information related to these variables. It also shows the efficiency of the Indian market in relation to these variables. The impact of the other significant variables on market return is not as much as expected. It shows the evidence that the Indian market is in its semi-strong form of market efficiency. Though FPIs have a significant positive impact on market movements, the impact is low, hence, the study does not find evidence to prove the general perception that Foreign Portfolio Investors are the major reason for the fluctuations in the Indian market. The positive relationship between FPIs and market return supports the findings of Pathan and Masih (2013).

The positive relationship between the market return and oil price is inconsistent with the common literature. It is mainly because during the study period the Indian economy showed an upward trend and the demand for goods and services increased, hence though the prices including Oil Price increased market return also increased. Since the Indian market is integrated to the US and other developed markets, the return spillover further added to the intensity. The opportunity cost of the FPIs also led to an increase in the market return. The influence of oil companies that are included in the sample (in Nifty) is also one of the reasons for such a positive relationship.

It is observed that a fall in the Indian rupee is likely to have a short-run negative impact on Stock market returns. It encourages foreign investors to withdraw their funds from the Indian market as the value of their investment diminishes. This pushes the market downwards with the expectation that the currency will further depreciate, however in the long run there is expected to be a positive impact on the stock market returns. In the longer term, the

expectation of a local currency fall will diminish and the low foreign exchange pushes the interest rate low, reduces the cost of capital and promoting export activities. This pushes up the local market price, and finally, the share price starts to rise, therefore reversing the negative correlation into a positive correlation between the exchange rate and stock price. This theory was proved in the Chinese market by Tiang and Ma (2009). Therefore the policy of the Government of India to have a depreciated currency is not against its proclaimed objective of export promotion, export-led economic growth and market return. In the short run, there will be a strengthening of the Indian Rupee which will have a positive impact on stock market returns. Strengthening of the Indian currency is helpful for the economy because an appreciating currency attracts foreign investors to the domestic market. The inflow of foreign funds is helpful to ease its tight Balance of Payment situation and also has a positive impact on Stock Market Returns. The reversal from a positive correlation to a negative correlation in the longer term was found by Wu (2000) when he examined the impact of currency depreciation on stock prices in Asia.

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