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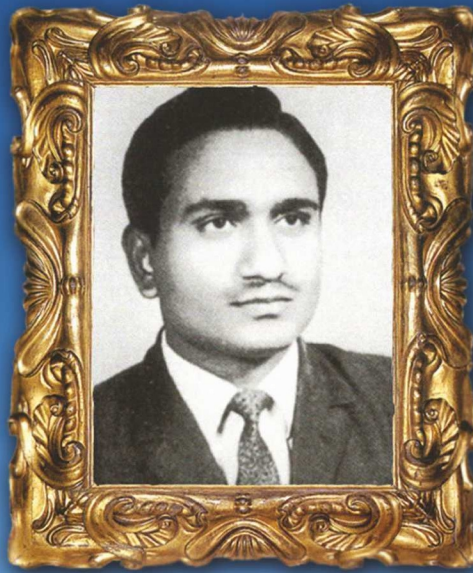
◀ Research

◀ Case Study

A TRUE VISIONARY

*“You see things and you say **Why?** But I dream of things that never were and say **Why not?**”*

- George Bernard Shaw



Shri Jagannath Gupta
(1950 - 1980)

*Also a true visionary...who dared to dream!
He lives no more but his dreams live on....and on!*

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And more dreams to come!



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Editor's Desk

Transitions to leadership: Essentials of networking

Transitioning to leadership has been a very tricky proposition for a lot of managers, who in the lack of mentoring and guidance get trapped into a vicious circle and get disheartened. This editorial will focus on a critical aspect of leadership which is networking, which always gets ignored in the focused approach followed by the managers.

Normally it has been seen managers rise in their careers and always focus on the technical aspect and soft skills to the extent of developing communication and team-building skills. The dimensions of these skills are defined by the role and the organization they are working in. A lot of managers fail to recognize that when they grow in rank and acquire strategic positions the work profile is focused on more relational than analytical tasks. These relational roles have multiple dimensions but they have to be seen as real work in leadership and have an important dimension of networking in it. This dimension is the most ignored because as a leader some become assertive leaders and would like to follow a top-down approach to managing. Some managers feel networking is manipulative and a wastage of time so they do not put an effort into it. However, if managers don't network, then either they miss out on the opportunity to rise to the top or fail to do so at all.

This has been excellently dealt by Herminia Ibarra and Mark Lee Hunter in the Jan 2007 HBR article "how leaders create and use networks". The Authors have put across an excellent framework of the networking done by the various leaders and they have put it as *operational*, *personal*, and *strategic* which according to them are interdependent and ensure transitions to a leadership role.

Operational networking focuses on the relations within the organization concerning tasks assigned. The managers need to prioritize and focus on the quality of relations that enhances mutual trust and gives power to the operational network. For a manager to transit to a leadership role, this network has to reorient externally.

Personal networking is essential for aspiring leaders, most of them in their careers have focused on the operational part, so they get socially disconnected, a cautious effort is required to develop a circle maybe through professional associations or any other common interest group. The personal network helps in developing referrals, upgrading the skills, and keeping track of things happening around it also lays the foundation for Strategic Networking.

Strategic networking focuses on lateral and vertical relationships within the organization, and also with the stakeholders to visualize and embody the bigger picture. The strategic network could help in gathering useful information, support, and shaping the strategies for achieving organizational goals. If employed this can develop synergies between the managers and their working styles.

As managers elevate to leadership roles this reorientation needs to be done to develop the future. The Unsaid job profile for a leader in networking takes time and a mindset to develop. Every little opportunity that a manager gets has to be devoted to developing this network and personal rapport leaders use every touchpoint to their advantage. Networking is a tacit skill that is a matter of judgment and finding a common ground for communication.

As a leader time need to be spent in knowing people around you developing a connection informally even with the peer or superior group. As your network thrives so is your net worth so stick to it with patience and enjoy the transition.

(Ashok Sharma)

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A MEASURE OF EMOTIONAL INTELLIGENCE FOR EMPLOYEES IN MICROFINANCE INSTITUTIONS: SCALE DEVELOPMENT AND VALIDATION

Sunitha. T* Kotha Saritha**

Purpose: *The rise of emotional intelligence (EI) as a crucial psychological resource of employees predicting their performance and well-being has stimulated the use of EI measures in organizational settings. This study aimed to develop a self-report instrument to measure EI of employees working in Microfinance Institutions (MFIs), an emotionally labour-intensive business offering financial services to the poor.*

Design/methodology/approach: *The conventional scale development paradigm involving qualitative (n=8) and quantitative (n=232) studies were conducted in five MFIs across nine districts in Telangana, India.*

Findings: *The results yielded a 24-item Emotional Intelligence for Microfinance (EI-MF) measure consisting of six dimensions: self-emotional appraisal (SEA), others' emotion appraisal (OEA), emotional self-management (ESM), emotional management of co-workers (EMW), emotional management of clients (EMC) and moral emotions management (MEM).*

Originality/value: *This study is a first-of-its-kind to propose an EI measure for employees in microfinance jobs. The EI-MF measure is an extension of the existing EI measures with novel dimensions such as EMC and MEM as well as a value addition to EI research in organizational settings.*

Keywords: Emotions, Emotional intelligence, Microfinance Institutions, Scale development

JEL Classification Code: M50, C38

Emotional intelligence (EI) has emerged as an important psychological resource of employees indicating their competence to cope with stressors and perform effectively in workplace. With the evolving workforce, job pressure and client expectations, it is evident that besides intellect, diverse emotional and social skill sets are imperative for employees and leaders to achieve organizational goals (Clark & Polestello, 2017). Hence, EI has been embraced as an effective tool and solution for workplace problems (Ackley, 2016). Empirical research has established the impact of employees' EI on their well-being, job performance and workplace behaviours (O'Boyle et al., 2011) which is persuading organizations to adopt EI testing of their employees for optimal training and job assignment based on their job fit/compatibility.

EI measures are increasingly employed by organizations to evaluate and raise the EI level of their staff to manage job stress, improve interpersonal skills, customer service, sales, etc. (Cartwright & Pappas, 2008). The Job Demand-Resources (JDR) and emotional labour theories propose that employees with high EI possess superior emotion appraisal, regulation and coping skills which enable them to tackle job pressure effectively, perform better and stay longer in the organization (Bakker & de Vries, 2021). Emotionally intellectual employees are a valuable asset for any organization specifically for labour-intensive service business like microfinance.

Microfinance is the provision of financial services to the poor/economically weaker individuals and groups who lack access to conventional banking services (Jayadev & Rao, 2012). Microfinance emerged as a sustainable tool for financial inclusion serving as an effective strategy for poverty alleviation and women empowerment in many developing countries. Microfinance services include savings account, loans, insurance and deposits, but collateral-free short-term loans or microcredit remain the most popular. While microfinance services are offered by both commercial banks and MFIs, MFI operations are extremely challenging since it only deals with clients belonging to marginalized section of the society and incurs high operational risks and transactional costs stemming from lack of economies of scale (Visconti, 2016). MFIs normally need to serve a large client base availing short-term micro-loans which results in overburdening of employees affecting their performance and

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productivity (Jha & Singh, 2015). Hence, the sustainability of MFIs depends on the knowledge, emotional competency, interpersonal skills and social networking ability of the employees. To achieve profitability, MFIs need to recruit suitable and optimal number of employees who can accomplish tasks such as identifying potential clients/borrowers, determining creditworthiness, developing and maintaining client relationships, providing loans, monitoring and collecting payments ensuring the economic development of clients and organization. To sustain this highly demanding and emotionally laborious job, employees need to possess high EI which can serve as a key psychological resource. MFIs ought to regularly evaluate and improve EI of their employees to enhance their productivity and well-being besides sustainability of the organization. This study focuses on exploring the EI of employees working in MFIs. Specifically, the objectives are:

- To identify the various facets of EI essential for employees working in MFIs;
- To develop and validate a self-report multi-dimensional Emotional Intelligence for Microfinance (EI-MF) scale to measure EI of employees working in MFIs;
- To estimate the EI score of the employees considered in this study.

I. Review of Literature

Over the past three decades, EI has evolved from being a novel and trendy concept to a mainstream, scientific, multi-dimensional construct with several established measures (Ackley, 2016). Being a highly subjective concept unlike Intellectual Quotient (IQ), EI is a comparatively unstructured notion with varying interpretations, conceptual definitions and measures. This study reviews three popular measurement approaches widely used in organizational settings i.e. ability/performance-based, trait/self-report and mixed measures.

The early pioneering research on EI in 1990s by Salovey and Mayer (1990) conceptualized it as a form of inborn ability or intelligence, a set of innate skills to comprehend and regulate emotions. They defined EI as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions”. Ability-based EI measures comprise questions analogous to IQ tests which provide an assessment of an individual’s ability to understand emotions and how they work (Connor et al., 2019). The most popular ability-based measure is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer et al., 2003) which evaluates EI using a hierarchical four-branch model. This model serves as the foundation for most EI research and measurement which incorporates a range of emotional abilities and knowledge synopsized by Côté (2014) as follows:

- Perceiving and expressing emotions – ability to identify emotions in self and others, appraise one’s emotions, express emotions clearly.
- Using Emotions – ability to harness emotions to facilitate cognitive processes to solve problems and achieve intended goals
- Understanding emotions – ability to comprehend emotions, analyse cause and effect relations between events and emotions, understand how emotions work
- Regulating emotions – ability to set emotion regulation goals, select and implement emotion regulation strategies

Other popular ability EI measures that emerged over the years include the Situational Test of Emotion Management (STEM) and the Situational Test of Emotional Understanding (STEU) (MacCann & Roberts, 2008) and Geneva Emotional Competence Test (GECe) (Schlegel & Mortillaro, 2019). Although ability EI measures uses performance-based tests which gives an optimal indication of an individual’s maximal ability, past research has critiqued their poor psychometric properties, need for expert scrutiny of responses and failure to capture the typical behaviour. Hence, researchers often prefer/are coerced to adopt trait EI measures which comprise self-report questions/items evaluating an individual’s behavioural tendencies and abilities rather than objectively assessing their knowledge (Connor et al., 2019). The commonly-used and widely-cited trait EI measures are Self-report Emotional Intelligence Test (SREIT) (Schutte et al., 1998), Trait Emotional Intelligence Questionnaire (TEIQue) (Petrides & Furnham, 2001) and Wong and Law Emotional Intelligence scale (Wong & Law, 2002). Trait EI measures have often demonstrated good psychometric properties and significant relationship with workplace attitudes and behaviours such as organizational commitment, job satisfaction and performance (O’Boyle et al., 2011; Miao et al., 2017). However, the major disadvantages of self-report measures are errors caused by respondents’ chances of faking and incorrect judgement of their own emotional tendencies (Boyatzis, 2018; Connor et al., 2019). Besides the ability and trait EI measures, mixed EI measures have been developed which test a combination of emotional competencies and social skills. These measures are self-report which include 360-degree assessment with feedback from supervisors, peers and subordinates thereby reducing the self-report bias. The popular mixed EI measures include Bar-On Emotional Quotient Inventory (EQ-i) (Bar-On, 1996), Emotional and Social Competence Inventory (ESCI) (Boyatzis et al., 2000) and Genos Emotional Intelligence Inventory (Palmer et al., 2009). On par with trait EI, the mixed EI measures are also found to be significant predictors of workplace outcomes such as organizational commitment, job satisfaction and performance (O’Boyle et al., 2011; Miao et al., 2017).

The majority of the EI measures are inspired by the pioneer four-branch EI model of Mayer and Salovey and hence their facets/sub-scales have numerous conceptual overlaps (Connor et al., 2019). The summary of the popular EI measures and their facets/dimensions is presented in Table 1.

Table 1: Summary of Popular Emotional Intelligence Measures

Name of the EI Measure	Type	Facets/Dimensions
Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) Mayer et al. (2003)	Ability	Perceiving emotions Facilitating thought Understanding emotions Managing emotions
Situational Test of Emotional Management (STEM), Situational Test of Emotional Understanding (STEU) MacCann and Roberts (2008)	Ability	STEM - measure of emotional regulation in oneself STEU - measure of emotional understanding
Geneva Emotional Competence Test (GECe) Schlegel and Mortillaro (2019)	Ability	Emotion recognition Emotion understanding Emotion regulation in oneself Emotion management in others
Self-Report Emotional Intelligence Test (SREIT) Schutte et al. (1998)	Trait	Optimism/mood regulation Appraisal of emotions Social skills Utilization of emotions
Trait EI questionnaire (TEIQue) Petrides and Furnham (2001)	Trait	Self-control Well-being Sociability Emotionality
Wong and Law Emotional Intelligence Scale (WLEIS) Wong and Law (2002)	Trait	Self-emotion appraisal Others' emotion appraisal Use of emotion Regulation of emotion
Rotterdam Emotional Intelligence Scale (REIS) Pekaar et al. (2018)	Trait	Self-focused emotion appraisal Other-focused emotion appraisal Self-focused emotion regulation Other-focused emotion regulation
Bar-On Emotional Quotient Inventory (EQ-i)	Mixed	Self-perception Interpersonal Decision making

Bar-On (1996)		Self-expressiveness Stress management
Emotional and Social Competence Inventory (ESCI) Boyatzis et al. (2000)	Mixed	Self-awareness Social awareness Self-management Relationship management
Genos Emotional Intelligence Inventory Palmer et al. (2009)	Mixed	Emotional self-awareness Emotional expression Emotional awareness of others Emotional reasoning Emotional self-management Emotional management of others Emotional self-control

Source: Authors' Compilation

These popular EI measures have been widely used in the organizational context across various industries and regions to test the EI of employees and its influence on various workplace behaviours and outcomes such as job satisfaction, performance, burnout, work-family conflict, citizenship behaviour and turnover intention (Gong et al., 2019; Giau et al., 2020).

The review of EI measures revealed that they consist of very generic statements/questions applicable across all contexts and life scenarios which are often slightly modified to suit the organizational context. It can be argued that EI measurement approach, composition and statements should be designed specific to industry/business for an optimal EI evaluation of its employees. Since there is no customized measure specifically designed to assess the EI of employees in microfinance sector, this study attempts to fulfil this research gap by developing and validating the EI-MF (Emotional Intelligence for Microfinance) measure from the Indian perspective.

II. Research Design and Methods

Scale Development

The study adopted the conventional scale development paradigm (Hinkin et al., 1997) which involved qualitative research, item generation, data collection, exploratory and confirmatory factor analysis to develop a reliable and valid EI-MF measure.

Item Generation

An initial list of items was generated using both inductive and deductive approaches. The inductive approach involved open-

ended interviews with eight employees working in MFIs to qualitatively explore the various facets of emotional intelligence required for their job. The sample of interviewees selected based on purposive sampling technique from various MFIs comprised five men and three women between 21 to 55 years of age. The interviewees were asked about their job responsibilities, stressors, emotional labour involved, coping mechanisms and impact of their actions on co-workers and clients. The interview content was used to generate an initial list of scale items. In the deductive approach, few items were adopted from literature based on their relevance to this study context. A total of 42 items were generated whose content validity was evaluated by two university professors. Redundant and irrelevant items were removed retaining 32 items for further study. A structured questionnaire was designed using these 32 items which were evaluated using the 5-point Likert scale (where 1–strongly disagree; 5–strongly agree).

Sampling Procedure

The study was conducted in Telangana which has been a hotbed of microcredit in India. The sample consisted of employees working in various branches of top five MFIs situated across nine districts in Telangana. The respondents were selected using convenience sampling technique based on their consent and convenience. An email survey was conducted where the link to self-report questionnaire was sent to branch managers of the five MFIs considered in this study. The managers mailed the survey to their employees and those interested filled the questionnaire. Overall, 232 valid responses were obtained which were used for further analysis. The profile of the respondents is presented in Table 2.

Table 2: Profile of the Respondents

	Characteristics	Number of Respondents	Percentage
Gender	Male	183	78.9
	Female	49	21.1
Age	<30 years	72	31.0
	31-40 years	85	36.6
	41-50 years	56	24.1
	>50 years	19	8.2
Income	<Rs. 10K	55	23.7
	Rs.10K - 25K	93	40.1
	Rs.25K - 50K	67	28.9
	>50K	17	7.3
Position	Field/front-line employee	87	37.5
	Branch employee	105	45.3
	Manager/Lead	40	17.2

MFI	Bharat Financial Inclusion Ltd (BFIL)	68	29.3
	Spandana Sphoorty Financial Ltd (SSFL)	52	22.4
	Share Microfin Ltd (SML)	41	17.7
	Asmitha Microfin Ltd (AML)	37	15.9
	Bhartiya Samruddhi Finance Ltd (BFSL)	34	14.7
	Total	232	100.0

III. Results and Discussion

Exploratory Factor Analysis

The 32 items were subjected to exploratory factor analysis (EFA) using SPSS Statistics v26 using principal components method and varimax rotation to determine the number of factors (Hinkin et al., 1997; Hair et al., 2006). A six-factor solution was obtained where eight items with low factor loadings (<0.4) and high cross-loadings (>0.4) were eliminated (Hair et al., 2006). The remaining items were subjected to EFA which yielded a six-factor solution with 24 items. The factor solution explained 73.2 percent of the total variance and exhibited KMO measure of 0.885 indicating data suitability for factor analysis. The validity and reliability of the factor structure was assessed using factor loadings, Average Variance Extracted (AVE), Composite Reliability (CR) and Cronbach's Alpha reliability coefficient. The factor loadings of the items ranged from 0.691 to 0.911. The AVE representing the amount of variance explained by the factors ranged from 0.580 to 0.715 which were above the approved limit of 0.5. The CR values of the factors ranged from 0.846 to 0.909 and the Cronbach's alpha coefficients ranged from 0.842 to 0.907 which were above the prescribed threshold of 0.7 (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994). The EFA results have been summarized in Table 3.

Table 3: Exploratory Factor Analysis Results

Items	Factor Loadings	Cronbach Alpha	AVE	CR
Aware of feelings I	0.911	0.859	0.653	0.88

have at work				2
Understanding of emotions I experience	0.762			
Distinguish different emotions I have	0.762			
Sense of why I have certain feelings	0.787			
Recognize emotions others experience	0.899	0.885	0.715	0.909
Understand things that make people feel valued	0.844			
Understand why people feel the way they feel	0.803			
Can empathize with people at work	0.834			
Control emotions & handle difficulties rationally	0.855	0.858	0.585	0.848
Adjust emotions as situation demands	0.703			
Able to calm down quickly when angry	0.696			
Can be patient with poor & illiterate clients	0.794			
Create a positive work environment	0.860	0.907	0.644	0.878
Motivate co-workers towards work goals	0.770			
Help co-workers feel better when down	0.778			
Alter emotional state of co-workers	0.799			
Motivate potential clients to avail services	0.814	0.863	0.632	0.873
Instil confidence in clients about services	0.780			
Encourage poor borrowers to repay loans	0.786			
Make clients feel important & valued	0.800			
Control emotions when dealing with poor clients	0.883	0.842	0.580	0.846
Prioritize company goals over personal values	0.691			
Express apt emotions to clients to get the job done	0.704			

Suppress moral beliefs if conflicts with company	0.754			
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The discriminant validity of the factor structure was assessed by comparing the AVE estimates of factors and their correlations with other factors using correlation matrix as presented in Table 4. Since the square root of AVE estimates (diagonal elements) were significantly greater than their corresponding correlation coefficients (non-diagonal elements), the factors were considered to exhibit adequate discriminant validity (Fornell & Larcker, 1981).

Table 4: Exploratory Factor Analysis – Discriminant Validity Results

Factors	1	2	3	4	5	6
1	0.808					
2	0.189	0.846				
3	0.144	0.296	0.765			
4	0.382	0.243	0.442	0.803		
5	0.445	0.237	0.231	0.473	0.795	
6	0.054	0.153	0.620	0.458	0.155	0.762

Note: Diagonal elements in bold are AVE estimates

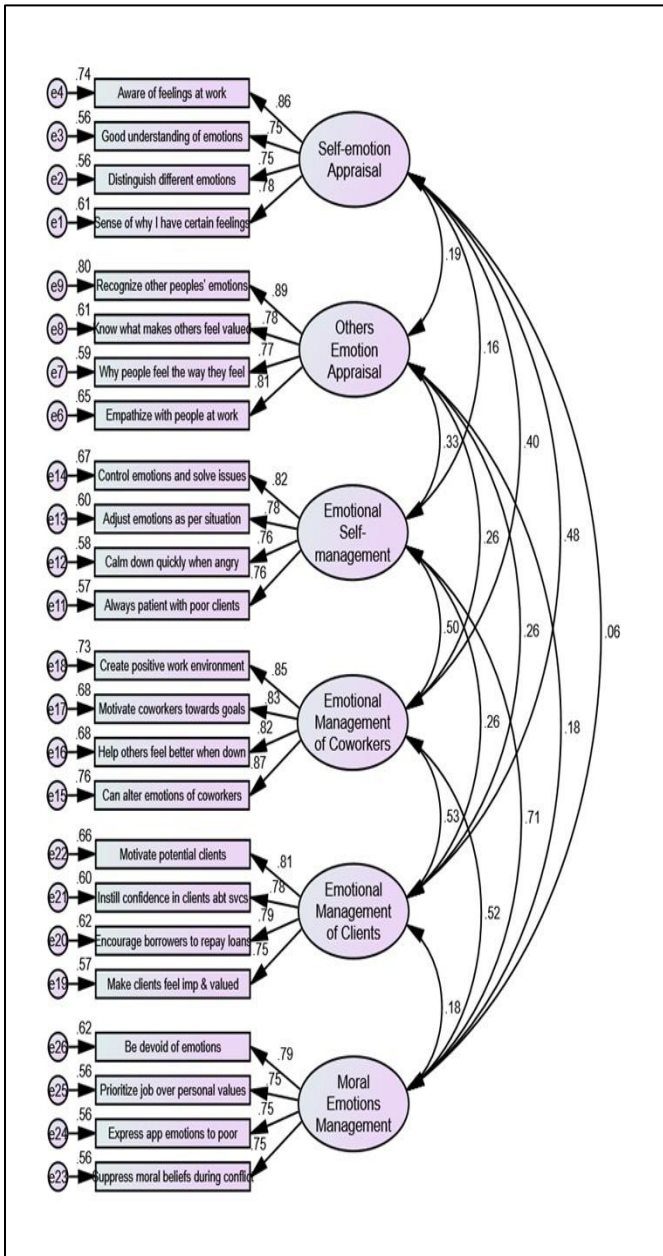
Thus, the EFA yielded a six-factor solution with adequate validity and reliability.

Confirmatory Factor Analysis

The confirmatory factor analysis (CFA) was conducted for thorough examination of scale's psychometric properties. Based on the EFA results, a 24-item six-factor measurement model was built as presented in Figure 1 and estimated using maximum likelihood (ML) method in SPSS AMOS v26. The evaluation of the measurement model fit revealed that the fit indices were above the acceptable thresholds ($\chi^2(237) = 313.35, p = .001; CMIN/DF = 1.322; GFI = .903; CFI = .975; NFI = .907; IFI = .976; RMSEA = .037$) indicating adequate model fit (Schermelleh-Engel et al., 2003). The CFA results

showed that the items' factor loadings ranged from 0.745 to 0.892 and squared multiple correlations (SMCs) ranged from 0.555 to 0.796. Hence, no items were removed (Hair et al., 2006).

Figure 1: Confirmatory Factor Analysis – Measurement Model



Similar to EFA, the validity and reliability of the scale was tested using CR and AVE estimates and its comparison with inter-factor correlations. As presented in Table 5, the CR estimates of the factors/dimensions ranged from 0.845 to 0.909 and the AVE estimates ranged from 0.576 to 0.713. The square root of AVE estimates of all dimensions was found to

considerably higher than their correlations with other dimensions exhibiting adequate discriminant validity (Fornell & Larcker, 1981; Nunnally & Bernstein, 1994) as presented in Table 5.

Table 5: Confirmatory Factor Analysis – Validity and Reliability Results

Dimensions	Mean	CR	Self-emotion appraisal	Others' emotion appraisal	Emotional self-management	Emotional management of coworkers	Emotional management of clients	Moral emotions management
Self-emotion appraisal	3.13	0.865	0.785					
Others' emotion appraisal	3.04	0.887	0.190	0.814				
Emotional self-management	2.93	0.860	0.163	0.329	0.778			
Emotional management of coworkers	2.91	0.909	0.402	0.261	0.499	0.844		
Emotional management of clients	2.75	0.863	0.480	0.258	0.261	0.526	0.783	
Moral emotions management	2.89	0.845	0.061	0.184	0.711	0.516	0.177	0.759
Overall EI	2.94							

Note: Diagonal elements in bold are AVE estimates

The CFA validated the psychometric properties of the 24-item six-dimensional scale obtained from EFA with sufficient evidence of validity and reliability. The mean values showed that the overall EI score was 2.94 and scores for the dimensions ranged from 2.75 to 3.13 indicating moderate EI of employees considered in this study. The employees perceived to have comparatively higher self and others' emotion appraisal traits whereas lower client and moral emotions management skills.

Emotional Intelligence for Microfinance (EI-MF) Measure

The six dimensions were appropriately termed based on the items' content, literature and experts' consultation. The operationalization of the scale/measure is presented in Table 6.

Table 6: EI-MF Measure with Dimensions and Statements

<p>Self-emotion appraisal</p> <p>I am aware of the feelings I have at work</p> <p>I have a good understanding of the emotions I experience at work</p> <p>I can distinguish the different emotions I have at work</p> <p>I have a good sense of why I have certain feelings at work</p>
<p>Others' emotion appraisal</p> <p>I recognize the emotions people experience when I interact with them at work</p> <p>I understand the things that make people feel valued at work</p> <p>At my workplace, I understand why people feel the way they feel</p> <p>I can empathize with people at work</p>
<p>Emotional self-management</p> <p>I am able to control my emotions and handle difficulties rationally at work</p> <p>At my workplace, I can adjust my emotions as the situation demands</p> <p>I can always calm down quickly when I am angry at work</p> <p>I am always patient while dealing with the clients who are poor and illiterate</p>
<p>Emotional management of co-workers</p> <p>I can create a positive working environment for my co-workers</p> <p>I can motivate my co-workers towards work related goals</p> <p>I can help my co-workers feel better when they are down</p> <p>I can alter the emotional state of my co-workers</p>
<p>Emotional management of clients</p> <p>I can motivate the potential clients to avail the essential services for their needs</p> <p>I can instil confidence in poor clients about the services they choose</p> <p>I am able to encourage the poor borrowers to repay their loans</p> <p>I know how to make the clients feel important and valued</p>

Moral emotions management

I can be devoid of emotions when dealing with poor clients at work

I can prioritize the company goals over my personal values and empathy

I am able to express appropriate emotions to the poor clients to get the job done

I can suppress my moral beliefs during client interaction when they go against my company's interests

Dimension 1: Self-emotion appraisal

Self-emotion appraisal can be defined as the extent to which employees perceive and understand the emotions they experience at work (Wong & Law, 2002; Pekaar et al., 2018). It comprises statements related to awareness, understanding of different emotions and reasons behind experiencing them. Perceiving one's own emotions is the most important and basic aspect of emotional intelligence (Salovey & Mayer, 1990) established in literature under various connotations such as intrapersonal intelligence (Gardner, 1983), self-perception (Bar-On, 1996), self-awareness (Boyatzis et al., 2000), emotional self-awareness (Petridas & Furnham, 2001; Palmer et al., 2009) and self-focused emotion appraisal (Pekaar et al., 2018). Appraisal of self-emotions precedes all other aspects of EI as per the hierarchical four-branch model proposed by Salovey and Mayer (1990) which implies that one should have a good understanding of their own emotions in order to regulate and utilize them effectively (Wong & Law, 2002).

Dimension 2: Others' emotion appraisal

Others' emotion appraisal can be defined as the extent to which employees perceive and understand others' emotions at work (Wong & Law, 2002; Pekaar et al., 2018). It consists of statements related to recognizing, understanding others' emotions and reasons behind them. Past research has established perceiving others' emotions as a distinct dimension of emotional intelligence in different terms such as empathy (Bar On, 1997; Petridas & Furnham, 2001), emotional awareness of others (Palmer et al., 2009) and other-focused emotion appraisal (Pekaar et al., 2018). Employees with higher emotion recognition ability tend to be better mind readers and more empathetic to others' feelings (Mayer & Salovey, 1990; Wong & Law, 2002). MFIs being highly labour-intensive and client-dependent business, employees need to possess and enhance their ability to perceive their co-workers'/clients' emotions to improve their relationship management and performance.

Dimension 3: Emotional self-management

Emotional self-management can be defined as the extent to which employees manage their own emotions at work to achieve organizational goals (Palmer et al., 2009; Pekaar et

al., 2018). It comprises statements related to control and adjustment of emotions at work when interacting with co-workers and clients. Emotional management of self is recognized in literature as a unique aspect of emotional intelligence under varying identities such as managing emotions (Mayer et al., 2002), self-control (Petrides & Furnham, 2001) and emotional regulation in oneself (Wong & Law, 2002; Schlegel & Mortillaro, 2019). Employees with higher ability to regulate their emotions have better coping skills who can effectively handle psychological stressors and perform better at work (Wong & Law, 2002). The job nature and work environment in MFIs is challenging, especially for field officers (loan/credit officers) who travel and interact with clients in remote villages. It is imperative for employees to have superior emotional regulation ability for their well-being and longevity in the organization.

Dimension 4: Emotional management of co-workers

Emotional management of co-workers can be defined as the extent to which employees can manage the emotions of co-workers to achieve organizational goals (Palmer et al., 2009; Pekaar et al., 2018). It comprises of statements related to motivating, helping co-workers and altering their emotional states. The ultimate goal of emotional intelligence is to change others' emotions and past research has acknowledged it as a superior EI trait in different connotations such as relationship management (Boyatzis, 2018), other-focused emotion regulation (Pekaar et al., 2018) and emotional management in others (Petrides & Furnham, 2001; Palmer et al., 2009; Schlegel & Mortillaro, 2019). It refers to the competency or adeptness at creating desirable emotions and responses in others involving a range of behaviours such as training, inspiration, conflict management and teamwork (Boyatzis, 2018). Microfinance being a high-pressure job, it is essential for employees to have the knowledge and ability to choose effective emotion regulation strategies to manage co-workers for better teamwork, performance and productivity.

Dimension 5: Emotional management of clients

Emotional management of clients can be defined as the extent to which employees can manage the emotions of their clients to achieve organizational goals. It comprises of statements related to motivating clients, inducing trust in the services and making them feel important. Though extant literature has established emotional management of others as an EI dimension in general and organizational settings (Petrides & Furnham, 2001; Palmer et al., 2009; Schlegel & Mortillaro, 2019), there are hardly any studies where EI measure incorporates client-focused emotional management. Unlike other businesses, microfinance is extremely challenging and emotionally laborious since the clients belong to the poor/economically weaker section of the society. The sustainability of microfinance business relies on developing and maintaining customer relationships which includes a

range of functions such as identifying potential clients, determining their creditworthiness, extending loans and other services, collecting payments, monitoring and encouraging their well-being and economic development (Visconti, 2016) such that it aligns the organizational goals. It is possible to effectively accomplish these tasks only if the employees have strong interpersonal skills, social networking ability and persuasive emotion regulation competency.

Dimension 6: Moral emotions management

Moral emotions management can be defined as the extent to which employees can manage their moral emotions at work to achieve organizational goals. Moral emotions are emotions that are linked to the interests or welfare either of society as a whole or at least of persons other than the judge or agent (Haidt, 2003). Some of the common moral emotions include other-suffering emotions (sympathy), other-condemning emotions (anger, disgust, contempt) and self-conscious emotions (shame, guilt) (Greenbaum et al., 2020). This dimension depicts the employees' ability to manage emotional dilemmas and dissonance caused due to discrepancy between their moral emotions and organizational goals. Unlike public service organizations where employees' job is to serve people, MFIs provide financial services to the underprivileged for their economic upliftment, but their business goal is to sustain and earn profits. Hence, employees are often instructed to express appropriate emotions and behaviour during their job and client interaction. For instance; employees need to hide their sympathy and compassion during debt collection, be calm and patient while dealing with poor and illiterate clients, selecting and offering services only to profitable clients, firmly denying services to unworthy poor people posing major liability/credit risk despite their dire needs. Employees' job goals may align their moral beliefs, but are often in conflict which needs to be managed. Moral emotions management has never been incorporated in EI measures, but has emerged as a crucial EI trait of employees in microfinance jobs who face moral and ethical dilemmas in their workplace.

IV. Conclusion

This study is a first-of-its-kind to propose an Emotional Intelligence measure specifically for employees working in microfinance sector offering a range of research and managerial implications. The proposed Emotional Intelligence for Microfinance (EI-MF) scale consists of six dimensions; self-emotional appraisal (SEA), others' emotion appraisal (OEA), emotional self-management (ESM), emotional management of co-workers (EMW), emotional management of clients (EMC) and moral emotions management (MEM). The first three dimensions (SEA, OEA, ESM) are generic and primarily derived from past EI research which are applicable across all industries and organizational settings. The EMW and EMC obtained in this study stem from the single EI

dimension 'emotional regulation of others' which is divided into two dimensions to differentiate the employees' ability to manage emotions of co-workers and clients. Since microfinance business has both office and client-facing jobs, each with their unique challenges, it is essential to assess the employees' emotion regulation ability in both fronts to evaluate their job compatibility and productivity.

The MEM has emerged as a distinct dimension specific to microfinance which has never been conceptualized before in EI measures and studies. The bottom-line is that although MFIs provide financial services to poor individuals and groups to promote their economic stability and standard of living which may resemble social welfare/service, it is ultimately a business run by a private enterprise. Hence, moral dilemmas and conflict management arising from differences in personal values and organizational goals is common in microfinance jobs which require higher moral emotions management (MEM) ability. The six dimensions obtained in this study encapsulate the different aspects of EI an employee working in microfinance sector should ideally possess. The EI-MF measure yields scores for the six dimensions and an overall EI score indicating the employees' level of emotional intelligence. Thus, the EI-MF measure is an extension of the existing EI measures with novel dimensions such as EMC and MEM as well as a value addition to EI research in organizational settings.

The practical applicability of the EI-MF measure offers various managerial implications and benefits for microfinance institutions and banks. Microfinance jobs require employees with higher EI who have greater job compatibility which eventually influences their performance, attitude and behavioural outcomes (Justus & Ramesh, 2009). The EI-MF measure can be used during recruitment and selection of new employees to estimate their job and organization fit. This measure can also be employed for regular EI assessment of existing employees to determine their job allocation and optimal training regime to improve EI. Past research has established that employees' EI can be improved with training and intervention programs (Mattingly & Kraiger, 2019), hence MFIs should incorporate EI courses in their regular employee training. The EI-MF score along with 360-degree assessment can be used as employees' key performance indicator and appraisal criteria by HR and top management. Although EI-MF scores may not be employed as a stand-alone indicator due to self-report bias, it is a convenient and effective supplement to other objective measures used for evaluating employees' potential and performance.

Limitations and Future Research Directions

The EI-MF measure was developed using the data collected from employees working in MFIs in nine districts in Telangana, India. Hence, researchers and managers must exercise caution while applying it to other regions. The six EI-

MF dimensions were derived based on qualitative research, literature review and data analysis conducted in this study. Theoretically, there can be several other EI aspects which were not included in this study. Besides, the respondents were selected using convenience sampling, a non-probability sampling technique which restricts the generalizability of the results.

Future research can focus on validating the EI-MF measure using a large, geographically diverse sample. The EI-MF scores of employees can be cross-validated with peer, supervisor and client feedback from MFIs. The measure can also be used to assess the impact of employees' EI on their various attitudinal and behavioural consequences such as job performance, satisfaction and turnover intention.

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PRE-MERGER AND POST-MERGER PERFORMANCE ANALYSIS OF BANK OF BARODA-A CAMEL ANALYSIS

Meera Mehta* Shikha Gupta**

Objective: On April 1, 2019 Dena Bank and Vijaya Bank were merged with Bank of Baroda. The objective of this paper is to study and compare the performance of Bank of Baroda for the years 2018-19 and 2020-21 (one year before and one year after the merger). This paper examines the before and after the merger financial performance of Bank of Baroda's.

Design/methodology/approach: The paper is an explanatory study that describes the financial behaviour of the merged bank (BOB). To compare the pre-merger and post-merger performance the study uses CAMEL Model analysis. This model assesses the performance of a financial institute on certain criteria's namely Capital Adequacy; Asset Quality; Management Capability; Earning Quality; Liquidity Risk. For a better understanding Paired Sample Statistics is used. For statistical analysis t, p-value, mean and standard deviation of paired differences are calculated.

Findings: The parameters of CAMEL model point at no significant change in the performance of Bank of Baroda (BOB) after the merger. To further endorse our results a statistical analysis by way of paired t-test was performed after which the authors confirmed that there is no immediate change in the performance of BOB.

Originality/ Value: The present study is the pre-merger and post-merger performance analysis of Bank of Baroda. The study is way forward for research on impact of mergers on the performance of PSB in India. The study initiates debate on success of mergers of PSB on financial sector.

Keywords: Merger, Performance Analysis, Camel Model Analysis

JEL Code: G21; G34

The consolidation of public sector banks was on table since last decade or so which was given shape by 31st March, 2020 with the merger of 10 public sector banks into 4 big size banks. These mergers will set pace for the growth of public sector banks, rationalise the branches of nationalised banks competing with each other and above all will make them strong to compete with international banks. Further, the mergers are expected to check the dwindling profitability, increasing NPAs & expenses on staff and control avoidable branch expenses.

ABOUT Merger and Acquisition: Legal alliance of two or more entities into one entity is known as Merger whereas an Acquisition takes place when the ownership of one entity is taken over by another.

The Recent Mergers in Indian Banking Industry

BANKS MERGED	ANCHOR BANK
Dena Bank	Bank of Baroda
Vijaya Bank	(Merged on 01.04. 2019)
Oriental bank of Commerce (OBC)	Punjab National Bank
United Bank of India	(Merged on 01.04. 2020)
Syndicate Bank	Canara Bank
Canara Bank	(Merged on 01.04. 2020)

Andhra Bank	Union Bank of India
Union Bank of India	(Merged on 01.04. 2020)
Corporation Bank	Indian Bank
Allahabad Bank	(Merged on 01.04. 2020)
Indian Bank	

Statement of the Problem:

An analysis of bank performance: This paper is a study of pre-merger and post-merger performance of Bank of Baroda. The study is undertaken to study if the merger of Vijaya Bank and Dena Bank with Bank of Baroda is achieving the desired objectives.

Objective of the Study:

- To examine Bank of Baroda's financial performance before and after the merger using CAMEL Analysis.
- To compare the profitability of the BOB before and after the merger.

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I. Review of Literature

(Dash & Das, 2012) The paper studies a sample of fifty-eight banks operating in India, (29 public sector banks, and 29 private sector/foreign banks). The study covers a period of 5years (2003-2008). The study concludes that private/foreign banks performed better than public sector banks on most of the CAMELS components in the study period. The primary reason for the better performance of private/foreign banks were Management Soundness, Earnings and Profitability. The study suggests that public sector banks need to adapt to the changing market conditions, PSB's must improve their credit lending policies so as to improve asset quality and profitability and compete with private/foreign banks. PSB's should also monitor the repayment capacity of the borrowers, so as to reduce the risk of non-performing assets. They also must increase their customer base by improving marketing and distribution strategies. They should also undertake measures to improve employee motivation and productivity.

(Gupta, 2014) The paper evaluates the performance of PSB's in India using CAMEL model for a five year period from 2009-13. The study calculates the composite rating of the PSB's in India from group ranking of the PSB's for a period of 5years. On the basis of CAMEL model analysis the study concludes that Andhra Bank had the best results followed by BOB and State Bank of Hyderabad while UBI stood at the last place. One-way ANOVA test was applied on the data to determine if there is any significant difference in the means of CAMEL ratios. The study shows a considerable difference in the CAMEL Analysis of all the PSB's in India, thus, suggesting a significant difference in the performance of PSB. The paper suggests that the banks with poor ranking need to improve their performance.

(Kaur & Kaur, 2016) The paper studies the financial performance (from 2004-14) of 10 Indian public sector bank using the camel model. The paper categorises Bank of Baroda and PNB as the most stable banks; Indian Bank and IDBI banks, Canara Bank & SBI are categorised as average, and the Union Bank , Bank of India, Syndicate Bank & CBI are classified as below average, and hence need to be closely monitored.

(Kiran, n.d.)The present study measures the financial health of 7 public sector bank and 4 private sector Banks operating in India using CAMEL Analysis. The study uses data from 2013-14 to 2016-17. The paper concludes that PvSB's outperform PSB's. However, the PvSB have to work upon the liquidity aspect and PSB's have to focus on capital adequacy, asset quality, management efficiency and earning quality.

(Purohit & Bothra, 2018) The paper studies one public sector

bank (SBI) and one private sector Banks (ICICI Bank) as sample. The study concludes that ICICI bank needs to improve with regards to Capital adequacy and asset quality, Whereas, SBI needs to improve with regards to Management Efficiency, Earning quality and Liquidity.

(Panboli & Birda, 2019) The paper uses CAMEL rating, to measure the performance of PSB and PvSB. HDFC & AXIS Bank are found to be performing above average; whereas the performance of PNB & Canara Bank is below average. The study concludes that in all the parameters of the CAMEL Model, private sector banks outperform public sector.

(Shaifali Mathur, 2021) The paper uses CAMEL model to compare the pre-merger and post-merger performance of SBI. The study points that the merger has transformed SBI into a huge entity and that now it may lead to problem of "Too Big to Fail".

II. Research Design and Methods

The paper is an explanatory study that describes the financial behaviour of the merged bank (BOB).

Period of the Study:

As merger of Bank of Baroda, took place from 1st April, 2019. Therefore, the study uses data a year before and after the merger.

Pre-merger year- 2018-19

Post-Merger year- 2020-21

Sample Size: For the purpose of this research paper the recent merger of Bank of Baroda is being studied.

Hypothesis:

H0: There is no significant difference in the financial performance of Bank of Baroda before and after the Merger

H1: There is significant difference in the Pre and Post Merger financial performance Bank of Baroda.

About CAMEL Analysis:

From 1st April, 2019 a three-way amalgamation of Dena Bank, Vijaya Bank and Bank of Baroda was announced. This study uses CAMEL Analysis to analyse the performance of Bank of Baroda before and after the merger. Under CAMEL model the classic approach of ratio analysis is being used.

"The CAMELS ratings is a supervisory rating system originally developed in the U.S. to classify a bank's overall condition. It's applied to every bank and credit union in the U.S. supervisory regulators. Bank examiners (trained and employed by the country's central bank) award these ratings.

The CAMEL stands for various criteria through which bank performance is measured".(Kaur & Kaur, 2016).

Significance of the Components of Camel Model

COMPONENT	CATEGORY	SIGNIFICANCE
C	Capital Adequacy	Capital base promotes stability and efficiency of the financial institution. It also protects depositors against unforeseen contingencies.
A	Asset Quality	Asset quality reflects the credit risk exposure associated with a bank's loan and investment portfolio.
M	Management Capability of the Banks	The ability of management to detect, monitor, measure, and control risk is measured.
E	Earnings Quality	Determines a bank's ability to profit consistently. It determines a bank's profitability and describes its long-term viability and growth.
L	Liquidity Risk	Banks need to maintain sufficient liquidity, along with a cushion of unencumbered, high quality liquid assets, to withstand all kinds of stress events.

Source: Created by the authors

Component	Category	Ratios	Formula	Analysis
C	Capital Adequacy	Capital Adequacy Ratio	$(\text{Tier 1 capital} + \text{Tier 2 capital}) / \text{risk weighted assets}$	The capital adequacy ratio measures the ability of a bank to meet its obligations by comparing its capital to

				its assets.
		Advances To Total Assets Ratio	$(\text{Advances} / \text{Total Assets}) \times 100$	This ratio indicates the aggregate of assets that have been offered as the advances. A debt to asset ratio of greater than one, such as 1.2, can indicate that a company's liabilities are higher than its assets.
A	Asset Quality	Gross NPA To Gross Advances	$(\text{Gross NPA} / \text{Gross Advances}) \times 100$	A lower ratio is preferable
		Net NPA to Net Advances	$(\text{Net NPA} / \text{Net Advances}) \times 100$	A lower ratio is preferred as non-payments of advances leads to losses to the bank. It also indicates the poor quality of assets however not always an increased assets is the cause of lower ratio.
M	Management Capability of the Banks	Business per Employee	$(\text{Total Business} + \text{Advances}) / \text{No. of Employees}$	A higher ratio is favourable, as indicates the employees efficiency.

		Profit per Employee	Net Profits/No. of Employees	A higher ratio is favourable.
		Return on Assets (ROA)	(Net Income/ Total Assets) x100	A higher ROA is considered good.
		Return on Equity (ROE)	(Net Income/ Shareholder's Wealth) x100	A higher ratio is preferred.
E	Earnings Quality	Operating Profits to Total Assets	(EBIT/Total Assets x100)	A higher ratio is preferred as it shows that the assets are being utilised to full capacity thus generating maximum profits.
		Net Profits to Total Assets	(Earning after interest and taxes / Total Assets) x100	A higher ratio is preferable.
L	Liquidity Risk	Liquid Assets to Total Assets	(Liquid Assets / Total Assets) x100	A higher ratio is preferred.
		Liquid Assets to Total Deposits	(Liquid Assets / Total Deposits) x100	A higher ratio is preferred.

Source: Created by the authors

III. Results and Discussion

Table 1: Capital Adequacy (CAR)

Capital Adequacy	Pre-Merger (2018-19)	Post-Merger (2020-21)
Capital Adequacy Ratio	13.42%	14.99%

Advances To Total Assets Ratio	60%	61%
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Source: Calculated by the authors

Interpretation:

The post-merger CAR of BOB has increased. Also, the pre-merger and post-merger Capital Adequacy Ratios is higher than the standard ratio prescribed as per Basel norms and RBI guidelines. A high CAR indicates that the banks are adequately capitalised. The post-merger Advances to Total Assets ratio has also increased indicating that the bank has advanced out of their total advances.

Table 2: Asset Quality

Asset Quality	Pre-Merger	Post-Merger
Gross NPA to Total Advances	9.61%	8.87%
Net NPA to Net Advances	3.33%	3.09%

Source: Calculated by the authors

Interpretation:

A high Gross NPA ratio indicates that the quality of assets of the bank is poor. Table 2 indicates Post-Merger ratio of Gross NPA to Total advances has decreased. Also, Pre-Merger ratio of Net NPAs to Net Advance of the bank was higher than the post-merger Net NPA.

Table 3: Management Efficiency

Management Capability of the Banks	Pre-Merger	Post-Merger
Business per Employee	18.88	19.96
Profit Per Employee	0.78	1.01
Return on Asset (ROA)	0.05%	0.07%
Return on Equity (ROE)	0.94%	1.50%

Source: Calculated by the authors

Interpretation:

Table 3 compares the Pre-Merger average ratio of business per employee with the post-merger ratio for BOB. Before the merger it is Rs.18.88 and Rs.19.96 after merger. After the merger, the board of directors and top managers' ability to identify, measure, monitor, and control banking risks improves slightly. The profit per employee ratio has increased

both before and after the BOB merger. The growing tendency is also visible in the ROA and ROE ratios.

Table 4: Earning Quality

Earnings Quality	Pre-Merger	Post-Merger
Operating Profits to Total Assets	1.29%	1.78%
Net Profits to Total Assets	-0.88%	0.07%

Source: Calculated by the authors

Interpretation:

Table 4 indicates both Operating Profits to Total Assets and Net Profits to Total Assets ratio decreased after merger i.e. from 1.16% to -0.45% and 0.36% to - 0.19% respectively. Profitability of SBI is highly affected due to merger with less profitable and even unprofitable (State Bank of Patiala) associates.

Table 5: Liquidity

Liquidity	Pre-Merger	Post-Merger
Liquid Assets to Total Assets	11.36%	10.42%
Total Deposits to Total Assets	81.77%	83.69%

Source: Calculated by the authors

Interpretation:

Table 5 Indicates that the Liquid Assets to Total Assets ratio has declined from 11.36 percent to 10.42 percent, indicating a deterioration in liquidity position. While the Total Deposits to Total Assets ratio rises from 81.77 percent to 83.69 percent, indicating that BOB is more efficient in providing adequate liquidity to its depositors.

Table 6: Consolidated Table of Camel Model Analysis

Figures in Rs. (in lakhs)	Business per Employee	Profit Per Employee

Table 8: Hypothesis Testing: Paired Samples Statistics

		MEAN	N	STD DEVIATION	STD ERROR MEAN				
PAIR 1	Pre-Merger values of BOB	18.089	10	28.733	9.086085				
	Post-Merger values of BOB	18.548	10	29.272	9.256627				
Paired Differences									
		Mean	Std Deviation	Std Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			

Pre-Merger	18.88	0.78
Post-Merger	19.96	1.01

Source: Calculated by the authors

Table 7: Calculated pre-merger and post-merger ratios of BOB in percentage:

RATIO (%)	PRE-MERGER	POST-MERGER
Capital Adequacy Ratio	13.42%	14.99%
Advances To Total Assets Ratio	60%	61%
Gross NPA to Total Advances	9.61%	8.87%
Net NPA to Net Advances	3.33%	3.09%
Return on Asset (ROA)	0.05%	0.07%
Return on Equity (ROE)	0.94%	1.50%
Operating Profits to Total Assets	1.29%	1.78%
Net Profits to Total Assets	-0.88%	0.07%
Liquid Assets to Total Assets	11.36%	10.42%
Total Deposits to Total Assets	81.77%	83.69%

Source: Calculated by the authors

Statistical Analysis

For the analysis of the Paired Sample Statistics, before and after paired t-test has been used. This test allows us to test the differences between paired measurements. The following table summarises the values of calculated t, p-value, mean and standard deviation of paired differences and the (5% confidence interval of the paired difference

Pair 1	Pre-Merger average values of BOB-Post merger values of BOB	0.459	0.539	0.170542	-1.133	0.215	-1.541	9	0.158
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The Paired Samples results shows that t is -1.541, p value is 0.158 which is much above the 0.05 level of significance (.05).

As the computed p-value is greater than the significance level 0.05, one cannot reject the null hypothesis H0.

To conclude, the merger of Vijaya Bank, Dena Bank with Bank of Baroda did not bring any significant change in the financial performance of Bank of Baroda.

IV. Conclusion

The above analysis clearly points that the 3-way merger has no effect on the performance of Bank of Baroda. However, the fact that the study undertaken covers a period of one year for analysis should not be ignored also other challenges like technology issues, work culture of the organizations issues related to the customers, managing human resource need to be given due consideration while evaluating the post-merger performance. Hence the following needs to be periodically reviewed:

- Identify the branches merged or their businesses restricted so that they can now target new clientele.
- Whether the changed organization structure is giving the desired result from the point of view of growth.
- BOB should conduct customer survey and take measures to improve customer experiences.
- Rationalise operations to optimise costs.

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THE EFFECT OF COVID-19 ON EMPLOYMENT AND LIVELIHOOD

Mukesh Kumar Meena* Megha Sharma**

Purpose: *The objective of this study is to determine the impact of the outbreak of the pandemic COVID-19, on the Employment and livelihood of the people, and who all are the people whose employment actually got impacted due to coronavirus, and in which all ways its impact had its repercussions on their livelihoods.*

Design/methodology/approach: *The questionnaire was filled by the variety of people who belong to different demographics, survey was filled by 303 respondents present all over the world.*

Findings: *The change in the Employment growth due to COVID-19 is significantly associated with the change in the Employment Status of the people due to COVID-19. The 60.6% people have faced in the reduction in their income due to COVID-19, for 90.4% people's salary income is their primary source for livelihood, 36.3% people's promotion got affected, 51.4% people annual increment affected, 17% people were facing difficulties in paying their taxes and 23.3 % in paying EMIs.*

Originality/value: *The particular research could serve the purpose of problems to be conveyed to the government. With the help of this study, the government could take some of the measures, such as to organize workshops and seminars in order to develop skills in people.*

Keywords: COVID-19, Pandemic, Employment Status, Employment Growth, Income, Basic Need Expenses, Luxury Need Expenses

JEL Classifications Code: E-24, J-21, J-6, Q-52

The outbreak of the pandemic has caused a direct impact on the livelihoods of the people due to their employment conditions. With the lockdown imposed by the Indian Government from March 25, 2020 and since then many people have faced the loss in terms of their employment and livelihood conditions (Economic Times, 2020). Though the pandemics may differ, their impact on the society is more or less the same, be it The Black Death of 1347-1352, or the Spanish Flu of 1918- 1920, all have led to either the decrease in the wages and salaries of the people or a loss of job, making them unemployed (World Bank Blogs,2020).

For the purpose, a survey was conducted by Indian Society of Labour Economists (ISLE) through online mode in order to know the status of people during the COVID-19 crisis in the last week of May, 2020. With 520 respondents to the survey (who were the members of ISLE), the preliminary results showed that COVID-19 has impacted most severely in the employment sector. With the effect on the employment of people, a direct impact was generated on their livelihoods due to the same (Economic Times,2020).

With Unemployment being the short-term impact, the long-term impact could possibly be an unstable economy. Based on the ISLE survey, a two days virtual international conference was organised by Institute of Human Development (IHD), International Labour Organization (ILO) and ISLE, in the name of 'Implications of the COVID-19 crisis for Labour and

Employment in India: Impact, Strategies and Perspectives' on 8th and 9th June, 2020. Within the conference Alakh N Sharma, Director IHD mentioned, "The lessons from other countries suggest that active labour market policies including cash transfers and wage subsidy to small enterprises can be effective in mitigating the adverse impact of COVID 19 on livelihoods and employment of those worse affected in India" (Economic Times, 2020). According to the estimates, 80% of the urban employed population and 54% of the rural employed population have suffered job loss during the COVID period (Economic Times,2020).

According to the Human Capital theory, the educated and skilled workers would be easily able to cope up with the changes and adapt with the new normal, whereas, the uneducated or less educated or the unskilled ones would face much more difficulty when compared (World Bank Blogs,2020).

The severe repercussions of these would be the increasing gap in the wages and salaries of the skilled and unskilled

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labour or more educated and less educated employees. Workers in agricultural sectors may be more immune to an economic crisis, particularly in countries with more equitable land distribution, because they may be able to produce more food than they consume and are not dependent on other food sellers or that the unemployed in other sectors could be absorbed (World Bank Blogs, 2020). The income inequality would further lead to several repercussions. In order to avoid such situation or at least could control the effects for the same, the World Bank has come up with some suggestions, which are:

- Maintaining government expenditure levels on education.
- Providing income support and employment.
- Invest in Digital skills and technology.

As mentioned by the newspaper 'mint', the unemployment rate has rose to 23.4%. Based on the rough calculations of a former chief statistician of India Shri Pranab Sen, about 50 million people might have lost their jobs in just 2 weeks of the lockdown. He further added, "Since some may have just been sent home for now, the actual scope of unemployment maybe even higher and may be even higher and show up a little later". These words of Shri Pranab Sen had been recorded in the month of April, 2020 (Live Mint,2020).

The effect of the lockdown and the pandemic isn't just limited to a shorter period, the unemployment rate will tend to remain high even after the lockdown, and not only the developing countries are affected with this, but also the developed countries are also covered with the layer of unemployment. Roughly, 10 million US workers had filed the unemployment claims in the late March and early April (Live Mint,2020).

The US recorded an unemployment rate of 14.7% in the month of April, 2020, not only this, the researchers are estimating that 42% of the total pandemic induced layoffs are going to be a permanent job loss for the people (World Economic Forum,2020).

The story of impacts of COVID-19 doesn't end here, the worse is yet to come. The unemployment conditions haven't only impacted the livelihood of the people but also their growth opportunities. Even if the employees aren't terminated from their jobs they are forced to work at a certain percentage of their salaries at some places, refrained from promotions at other places and were to have a cut in their basic perks and allowance at other places.

I. Review of Literature

For the Literature review of the particular topic, few other research papers have been studied, in order to create the relevant survey for the people. The research papers which helped throughout the research showed some of the

information like mentioned below.

Definitely, COVID-19 has led to a lot of unemployment, for the purpose, we should pay attention and prevent large scale lay offs as employment serves as a foundation of livelihood, in order to support the financial conditions of people's lives and livelihood. Aspects of the service sector that heavily rely on population density and mobility and provide the most jobs, such as tourism, restaurants and sports/recreation/entertainment, almost completely stopped as a result of the outbreak, creating a tremendous employment challenge. For this purpose, certain policies are implemented to ensure tax deduction, secured lending and interest subsidies, and employment subsidies for enterprises that have hired workers from key groups (Zhang, 2020). One of the repercussions of the outbreak of the pandemic coronavirus is the great depression the world economy is going to face, which will somewhere lead to the increase in the prices in somewhere in 2022, not just that, the world unemployment rate which was recorded as 5.2% in 2019 is likely to cross 10% by the end of 2020. Due to the amount of unemployment and the difficulty in finding jobs for the people, the world is likely to hit Absolute Poverty, which will ultimately affect their livelihood. As seen in India, Due to the lack of employment, safe haven and food availability, the migrant workers needed to take the drastic measures to return to their villages. Calling poverty as a phenomenon there's going to be a lack of basic necessities, which would be beyond not having enough to feed or clothe a family but would extend to having a scarcity of a school or a clinic, or the land to grow food or a scarcity of support of credit. The highly affected group of people would be the people belonging to the entertainment industry during the lockdown phase, the people were sitting at their homes for a long period of time with no work and no source of income. (Buhenzi, Cunha, Beka, Mavric, Souza, Silva, Hanafi and Yein, 2020). Definitely a better employment condition can improve the livelihood conditions of the people (Chambers, 1995). As COVID-19 is hitting the US economy (developed nation's economy) two aspects takes place simultaneously, one is the decrease in the employment and the other is an increase in the online labour market. Reports also tell that the after effects of the pandemic would include an increase in the online market of labour and freelancers due to the massive unemployment taking place in the society (del Rio-Chanona et al., 2020). If the downscaling loss effect dominates and/or the market is flooded with additional labour supply, then people thus far earning their main income through online labour platforms are likely to join the ranks of self-employed people urgently in need of financial assistance. (Stephany, Dunn, Sawyer and Lehdonvirta,2020)

Objective

The objective of this study is to determine the impact of the outbreak of the pandemic COVID-19, on the Employment and

livelihood of the people, and who all are the people whose employment actually got impacted due to coronavirus, and in which all ways its impact had its repercussions on their livelihoods.

II. Research Design and Methods

Methodology

In order to conduct this study, a survey was conducted amongst the people who are employed. The questionnaire was filled by the variety of people who belong to different demographics. The short survey was filled by 303 respondents present all over the world. All the participants were the people who are permanently employed (79.2%), temporarily employed (15.8%) or employed on part time basis (5%). The final list of respondents involved both the genders (29.7% female and 70.3% male); and all types of employment (58.1% private job, 19.1% government or semi government job and 22.8% are businessmen) who are in a habit of using public transportation (42.6% daily, 16.9% once in a week, 12.1% once in a week and 28.4% once in a month).

The standardized questionnaire scale has been used for this study. For the reliability of questionnaire on our data we have calculated Cronbach alpha with the help of SPSS software. The Cronbach alpha checks the internal consistency of the questionnaire. Its checks weather all the items of a variable are explaining the same variable or not. Cronbach's Alpha (α) value ranges from zero to one. A value of Cronbach's Alpha (α) ≥ 0.70 provides good reliability (Nunnaly (1978)). Cronbach's Alpha (α) does not shows internal consistency for an individual item. It gives reliability results of internal consistency for a variable.

In our study we got Cronbach's Alpha (α) for employment variable 0.790, that is significant value. Which shows, all items of employment variable are explaining the same variable.

Cronbach's Alpha (α) for income variable 0.794, that is significant value. (Table 1) Which shows, all items of income variable are explaining the same variable. Cronbach's Alpha (α) for basic food variable 0.791, that is significant value. (Table 1) Which shows, all items of basic food variable are explaining the same variable. Cronbach's Alpha (α) for livelihood variable 0.937, that is significant value. (Table 1) Which shows, all items of livelihood variable are explaining the same variable.

Table 1: Factors and its Standardized Cronbach's Alpha

Factor	Standardized Cronbach's Alpha
Employment	0.790

Income	0.794
Basic expenses	0.791
Luxury Expenses	0.937

Source: Results of SPSS data analysis

Observation

Basically, the study was conducted so that in order to check the impact of COVID-19 on the employment and the livelihood of the people. For the purpose, several hypotheses had been developed on the basis of different variables which impacts the employment status of people and tests were done, after which the following observations were recorded:

- The first statement was taken as the impact of COVID-19 on type of employment (Private, Government/Semi-Government and Business), and H01 and HA1 was developed accordingly (Table 2). The results came out to be:

There is a significant relationship between type of employment and effect of COVID-19 on employment status, *chi-square* χ^2 (1, N = 292) = 6.027, p = 0.049. business sector employee's employment status gets affected more than government/semi-government and private sector employees (59.7% to 43.1% and 59.7% to 42.5 % respectively)

So here we reject the null hypothesis, and accepts the alternate hypothesis. Which means effect of COVID-19 on employment status is not independent from type of employment. effect of COVID-19 on employment status is dependent on type of employment.

Effect Size:

Cramer's V – applies to tables where at least one variable had only two categories; for example, 2x2 tables, 2x3 tables, etc.

Small = 0.10, medium= 0.30, large = 0.50

Cramer's V = 0.15 – small to moderate effect size (Table 2)

- The second statement was the impact on the income due to COVID-19 and its respective H02 and HA2 were generated (Table 2). And the results were:

There is a significant relationship between impact on income level due to COVID-19 and effect of COVID-19 on employment status, *chi-square* χ^2 (1, N = 292) = 97.337, p = 0.000. the employment status of employees with more than 10% reduction in income is impacted more than the employees with below 10% income reduction and no reduction in income (70.7% to 45.0 and 70.7% to 13.9 %respectively).

So here we reject the null hypothesis, and accepts the alternate hypothesis. Which means effect of COVID-19 on employment status is not independent from reduction in income level. Effect of COVID-19 on employment status is dependent on reduction in income level.

Effect Size:

Cramer's V – applies to tables where at least one variable had only two categories; for example, 2x2 tables, 2x3 tables, etc.

Small = 0.10, medium= 0.30, large = 0.50 Cramer's V = 0.577 – Larger effect size (Table 2)

Table 2: Summary of SPSS results

Hypothesis	No. of valid cases	Pearson Chi-Square value	Pearson Chi-Square Asymp. Sig. (2-sided), p	Cramer's V Symmetric Measures value	Cramer's V effect size	Hypothesis result
H01: There is no signification association between type of employment and effect of COVID-19 on employment status HA1: There is signification association between type of employment and effect of COVID-19 on employment status	292	6.027	0.049	0.15	Small to moderate	Rejects the null hypothesis
H02: There is no signification	292	97.337,	0.000	0.577	Very high impact	Rejects the null hypothesis

association between impact on income level due to COVID-19 and effect of COVID-19 on employment status HA2: There is signification association between impact on income level due to COVID-19 and effect of COVID-19 on employment status						is
H03: There is no signification association between impact on perks and allowances due to COVID-19 and effect of COVID-19 on employment status HA3: There is signification association between impact on perks and allowances due to COVID-19 and effect of COVID-19 on	292	36.0	0.000	0.351	Moderate to high impact	Rejects

employment status						
H04: There is no signification association						
between Gender and effect of COVID-19 on employment status HA4: There is signification association between Gender and effect of COVID-19 on employment status	292	0.280	0.597	0.31	No impact	Rejects the null hypothe sis
Source: Results of SPSS data analysis						

- The fourth statement is the gender effect in the employment status of the people, for which the hypothesis was H08 and HA8 (Table 2), whose results are:

There is no significant relationship between gender and effect of COVID-19 on employment status, *chi-square* χ^2 (1, N = 292) = 0.280, p = 0.597.

So here we do not have evidences to reject the null hypothesis and accepts the alternate hypothesis. So here we do not reject the null hypothesis. Which means effect of COVID-19 on employment status is independent of gender. effect of COVID-19 on employment status is not dependent on gender of the employee. (Table2).

In order to examine our variables more carefully, a regression test was also done, and for the purpose a set of hypothesis was also generated, which were:

- H05: All slopes coefficients are equal to zero.**
- HA5: All slopes coefficients are not equal to zero**

The logistic regression results are presented in table 3, where the dependent variable is binary variable, i.e. Impact of COVID-19 on Employment Status which observes a value 1 if the employee's employment status get impacted due to COVID-19, 0 otherwise. All the assumptions were met before applying the logistic regression. Few of the assumptions of linear regression do not requires to be met in logistic regression such as heteroscedasticity, autocorrelation, linearity of dependent variable and normality of error term. Still one of the important assumptions is need to be met i.e. multicollinearity. The data was not found affected from multicollinearity, verified from correlation matrix.

Table 3: Results of Logistic Regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-3.38276	0.601382	-5.624978	0
Income	0.280029	0.211651	1.323067	0.1858
Basic Need Expenses	0.009156	0.182962	0.050043	0.9601
Luxury need expenses	0.100383	0.169208	0.593253	0.553
Employment Growth	0.65269	0.192066	3.398261	0.0007
McFadden R-squared			0.098679	
LR statistic			39.80964	
Prob(LR statistic)			0	
Source: Based on research output (E views output)				

- The third statement taken was the impact of COVID-19 on perks and allowances of the employees, for the purpose H04 and HA4 were generated (Table 2) and the results were: There is a significant relationship between impact on perks and allowances due to COVID-19 and effect of COVID-19 on employment status, *chi-square* χ^2 (1, N =292) = 36.072, p = 0.000. the employment status is affected more for employees with reduction in perks and allowances due to COVID-19 than employees with no reduction in perks and allowances due to COVID-19(62.5% to 27.3%).

So here we reject the null hypothesis, and accepts the alternate hypothesis. Which means effect of COVID-19 on employment status is not independent from reduction in perks and allowances due to COVID-19. Effect of COVID-19 on employment status is dependent on reduction in perks and allowances due to COVID-19.

Effect Size:

Cramer's V – applies to tables where at least one variable had only two categories; for example, 2x2 tables, 2x3 tables, etc.

Small = 0.10, medium= 0.30, large = 0.50

Cramer's V = 0.351 – Moderate to High impact size (Table 2)

Table 3 presents results of logistic regression. Analysis has been done for every variable. For each variable there is distinct observation for each variable. We have not found any missing value from total 292 observations. The dependent variable impact of COVID-19 on employment status, which indicates a value 1 if the employee's employment status gets impacted due to COVID-19, 0 otherwise. The independent variable includes income measures impact on income of employees due to COVID-19, basic need expenses measures impact on basic food and non-food need expenses due to COVID-19, luxury need expenses measures impact of COVID-19 on luxury food and non-food need expenses, employment growth measures impact of COVID-19 on growth of employees employment the p value, coefficient, standard error and z statistics are reported for each variable along with the constant. Above the table, the other statistics relevant to the test has been reported.

Statistical Coefficient, LR statistic for the model is 39.80 with a significant value of 0.000, which is lower than that of critical p-value 0.05. that means the null hypothesis is rejected for the model, and the alternate hypothesis that all slope coefficients are not equal to zero is accepted. Based on the above analysis, it is evident that this model is a good fit and robust for the study. Though the explanatory power for the model for impact of COVID-19 on employment status is limited ($R^2 = 0.0986$), still one variable is significantly different from 0, which indicates that there is a significant relationship between impact of COVID-19 on employment status and impact of COVID-19 on income-expenditure of employees.

The positive and significant coefficient of Employment growth and Positive Employment Status (parameter 3.398 is significant at 5% level of significance), indicates that the employment status of employees with high opportunity of career growth (i.e. promotions) is more impacted due to COVID-19 than the employees with lesser options of career growth in employment.

The relationship between change in income/expenditures due to COVID-19 and impact on employment status due to COVID-19 found insignificant. That is indicating that impact on income and expenditure on livelihood needs due to COVID-19 is not differ by impact of COVID-19 on employment status.

Which indicates that all employee's income and expenditures got impacted due to COVID-19 whether their employment status got impacted due to COVID-19 or not.

III. Results and Discussion

With the results of Table 3 we can see that our all 4 variables, which are Income, Basic Need Expenses, Luxury Need

Expenses and Employment Growth have their Prob. as 0.1858, 0.9601, 0.553 and 0.0007 while our level of significance is 0.05. Let us examine each variable individually.

Taking Income into consideration, its prob. is 0.1858, which is higher than our level of significance. Therefore, we can conclude that the change in the income level of people due to COVID-19 doesn't show any significant association with the change in the employment status due to COVID-19, which means, that the study doesn't record any significant evidence that says that the change in the income of the people due to COVID-19 is a result of the change in the employment status of people due to COVID-19.

The next variable is Basic Need Expenses, whose prob. is 0.9601, is again higher than the level of significance. Therefore, we can conclude that the change in the Basic Need Expenses of the people due to COVID-19 isn't associated with the change in the employment status of people due to COVID-19. In other words, we could say that the study doesn't record any significant evidence that the change in the basic need expenses of the people due to COVID-19 is a result of change in the employment status of people due to COVID-19.

Taking Luxury Need Expenses into consideration, its prob. is 0.553, which is also higher than our level of significance, therefore, we can conclude that the change in the Luxury need Expenses of the people due to COVID-19 doesn't show any significant association with the change in the employment status due to COVID-19, which means that the study, doesn't record and significant evidence of the change in the Luxury Need Expenses of the people being a result of the change in the employment status of people due to COVID-19.

The last variable is Employment growth, whose prob. is 0.0007, which is less than our level of significance. Therefore we can conclude that the change in the Employment growth of people due to COVID-19 is significantly associated with the change in the Employment status of people due to COVID-19, which means that our study show a significant evidence that the Change in the Employment Growth of the People, is the repercussion of the Change in the Employment status of the people due to COVID-19.

Overall, we can conclude that according to our study, there is no significant evidence that the Change in the Income of the people, Change in the basic expenses of the people and change in the luxury expenses of the people due to COVID-19 are significantly associated with the Change in the employment status of people due to COVID-19. Whereas, the

change in the Employment growth due to COVID-19 is significantly associated with the change in the Employment Status of the people, due to COVID-19.

Discussion

When we consider our data set of the particular study, we notice a lot of variations throughout the different aspects of the whole research. When we talk about the effect on the income of the people due to COVID-19, we observe that only 39.4% of the people state that there has been no significant change in the income of the people due to COVID-19, rest 60.6% people have faced in the reduction in their income. Moreover, 15.4% of the population have faced more than 50% reduction in their income (Table4).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	115	39.4	39.4	39.4
2	20	6.8	6.8	46.2
3	37	12.7	12.7	58.9
4	32	11.0	11.0	69.9
5	23	7.9	7.9	77.7
6	20	6.8	6.8	84.6
7	45	15.4	15.4	100.0
Total	292	100.0	100.0	

Discussing further, we see that that only 9.6% of the sample size referred their income from employment as an additional source of income, rest 90.4% of the people's income from their employment is their primary source for livelihood (Table 5).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	264	90.4	90.4	90.4
2	28	9.6	9.6	100.0
Total	292	100.0	100.0	

Another element to consider is that only 29.8% people said that their promotion didn't get effected due to COVID-19, while 33.9% people were silent on the fact, 36.3% people agreed that their promotion got affected due to COVID-19 (Table 6).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	41	14.0	14.0	14.0
2	46	15.8	15.8	29.8
3	99	33.9	33.9	63.7
4	73	25.0	25.0	88.7
5	33	11.3	11.3	100.0
Total	292	100.0	100.0	

1	41	14.0	14.0	14.0
2	46	15.8	15.8	29.8
3	99	33.9	33.9	63.7
4	73	25.0	25.0	88.7
5	33	11.3	11.3	100.0
Total	292	100.0	100.0	

Not just stopping at the promotions, one of the other variables is also at stake due to COVID-19, which is the annual increment of the people. Out of the sample size only 24.7% people have disagreed to the fact that their annual increment hasn't decreased, whereas, 51.4% people have stated that their annual increment have been affected due to COVID-19, 24% people were neutral with the fact (Table7).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	33	11.3	11.3	11.3
2	39	13.4	13.4	24.7
3	70	24.0	24.0	48.6
4	89	30.5	30.5	79.1
5	61	20.9	20.9	100.0
Total	292	100.0	100.0	

Not just stopping here, the other element which got affected due to COVID-19 is the ease of paying Tax Liabilities due to COVID-19. While 44.7% people stated that they aren't facing any difficulty in paying off their taxes, 17% people are still there who are facing difficulties in paying their taxes, due to COVID-19 (Table8).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
1	41	14.0	14.5	14.5
2	85	29.1	30.1	44.7
3	108	37.0	38.3	83.0
4	33	11.3	11.7	94.7
5	15	5.1	5.3	100.0
Total	282	96.6	100.0	
Missing System	10	3.4		
Total	292	100.0		

The last but very important element to consider is the problems faced by people in paying off their EMI liabilities. While 43.1% people said that they don't face any problem in

paying off their EMI liabilities, still there are 23.3% people of the sample size is facing a problem in paying off their EMI liabilities (Table 9).

Table 9: problems faced by people in paying off their EMI Liabilities

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
	1	39	13.4	13.5
	2	85	29.1	29.5
	3	97	33.2	33.7
	4	49	16.8	17.0
	5	18	6.2	6.3
	Total	288	98.6	100.0
Missing	System	4	1.4	
Total		292	100.0	

IV. Conclusion

The particular research could serve the purpose of problems to be conveyed to the government. With the help of this study, the government could take some of the measures, such as to organize workshops and seminars in order to develop skills in people. Apart from that the government can do some investment within the economy, so that more jobs are generated. After going through the study, the government can reduce the loan rates so that people are able to get a better livelihood.

Limitations

Though the study has been conducted taking in account all the aspects, still it deals with some of the limitations. The first limitation of the study would be the limited sample size. For the particular study, the participation of only 303 respondents was taken into consideration. Apart from that the study was conducted in Delhi-NCR only, and this accounts for the second limitation of the study. The third limitation is that the respondents are all urban citizens and does not belong to the rural areas. The fourth and the final limitation is that the results taken out may not match many of the literature review, due to smaller sample size, and the set of respondents.

Further Scope of Study

In order to further study on the particular topic, one could simply increase the sample size, in order to get more relevant results. Apart from that a comparison between the employment and livelihood of urban employees and rural employees could also be done. A research on taking people from all the parts of India or the world could also be considered. Also respondents could be taken who are from different demographic segments.

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IS IT EASY TO RETAIN THE CUSTOMERS ONLINE? - DECIPHERING CUSTOMERS

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Purpose: *E-commerce is an ever-intriguing field of research for both businesses and academic researchers. The online medium makes it easy to set up the business, and hence the competition to make the customer stick to the website/ app is immense. In this research paper, the effort is made to derive the factors known to cause the retention of the customer viz., Loyalty (both brand and App), pricing strategy, sales return ease and possibility, customer service, wrt age of the respondents.*

Methodology: *Exploratory Factor analysis was applied to the 4700 responses received, to derive the factors which help a website/app recognize what factors matter more for a particular age group. A Kaiser-Meyer-Olkin (KMO) with a value of .823 indicates that the adequacy of the sample for Factor Analysis and Bartlett's test of Sphericity is the chi-square value 4740 and df is 120 and p-value is less than .001 reveals that the sample was suitable for the EFA.*

Findings: *Each age group is unique with its demands for the features that make them stay on the website and make repeated purchases. 18-24-year-old work on the simple mind mechanism, and that is, brand loyalty matters to them and is less demanding in terms of services compared to the other age groups. With most of the 25 – 34-year-olds being tolerant of all levels of customer service, e-commerce businesses are presented with an opportunity to maximize profits as consumers are less price and return policy sensitive. In these upper age ranges, this research furthers the idea that lenient return policies lead to a higher chance of retention; Respondents >45 years of age are brand Loyal and not App loyal. Variety is the key across all age groups.*

Originality: *The study is unique in its derivation of factors relevant to the different age groups, which can be considered while making efforts to retain the customers.*

Keywords: Customer Retention, Customer Service, Pricing Strategy, Sales Returns, Exploratory Factor Analysis

JEL Classification Code: M31

E-commerce, a widely known phenomenon, has affected technology, demand, and innovation within the retail sector for over two decades. The e-commerce marketplace now faces many challenges, including its consumers' ability to compare competing products with minimal personal time or effort. Therefore, differentiating in the e-commerce marketplace can be extremely difficult. Once a retailer has gained a customer's trust, their e-commerce retention becomes essential, leading to their ability to retain customers. E-commerce retention is built on a combination of factors; understanding those factors might explain why some e-commerce retailers do better than others. This research highlights the importance of potential e-commerce retention factors in the age criteria of demography based on attitudinal and behavioral criteria.

Customer retention has existed since the evolution of business and has become of paramount importance to any business trying to survive today. "Customer retention is the set of steps planned and implemented to reduce customer defections" (Alsmadi, 2017). It's always been known that maintaining an existing customer is more profitable than acquiring a new customer, especially in the hyper-competitive e-commerce landscape. Cash-crunched online businesses are struggling for revenues. Customer retention is the best way to maintain or increase revenues by providing lifetime value to customers in exchange for routine and repeat purchases.

Customers today are exposed to too much noise within product categories and, at the same time, are being drowned out by the vast gamut of newer products/services fighting for their attention. Voice-enabled assistants like Alexa, Google Home, Siri are struggling to make themselves known in an already overcrowded smart gadget category. All to woo customers, this hysteria has often backfired, leaving customers confused and searching for the familiar. E-commerce has allowed smaller and more budget restrained to compete with these conglomerates are components of the boom in e-commerce goods and services providers.

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This research answers the applied marketing question, "What are the factors, by age group, that affect online customers to stick to an online business?" Answering this question leads to a better understanding of what matters for online customers. The research provides a clear direction for businesses to increase customer retention to drive profits and what category-specific managerial implications should be taken away.

Research Question

Customer retention is a phenomenon that has existed since the evolution of business and has become of paramount importance to any business trying to exist today. The cash crunched online businesses are striving for revenues, and customer retention is the best way to increase the same by providing the lifetime value to the customer.

Customer today is exposed to too much choice within the category of products they are looking for, and at the same time, there is a vast gamut of newer products/services fighting for their mind-space.

The research question is to decipher the factors that cause customer retention to online businesses, with specific reference to age.

I. Review of Literature

The review of the existing literature has been divided into various parts to make the understanding vivid.

Brand Loyalty and App Loyalty

For this research, brand and App Loyalty have been split and measured- Brand loyalty is built on many different factors and studied extensively in psychological processes and marketing. At the same time, app loyalty is a less studied, more specific concept. A consumer can build trust with an app or platform through increased web interactivity, creating a sense of consumer participation. (Lee, 2012)

Customer loyalty is a vital part of online customer purchase behavior (Goode, 2004). It has long existed and is interpreted in various ways and often by various researchers having very different definitions(Eldridge et al., 2021)

Loyalty is "theory and guidance leadership and positive behavior including, repurchase, support and offer to purchase which may control a new potential customer"(Chegini, 2018).

Measures of Loyalty can predict how effective a firm is in creating e-commerce retention. Since Loyalty has become such a prominent area in marketing research, marketers are now looking at the critical factors of Loyalty and consumer perceptions of these factors. Trust is one of the critical factors

of Loyalty that firms use today to create retention and allow for customer retention (Goode, 2004). The notion of trust driving e-commerce loyalty is backed by Reichheld, "price does not rule the web; trust does" (Schefter, 2000). This assertion references the topic of price, which is another major factor that influences retention, as discussed in the next section of this literature review.

Apps are studied far less than brands in terms of Loyalty; however, apps are becoming one of the most widely used mediums worldwide. In this research, the importance of the results will lie in which the Loyalty factor is perceived to have more of an impact: brands or apps. App loyalty has a synergistic effect with Customization, allowing e-commerce apps to tailor the transactional environment to individual customers (Ponnavolu, 2002)

Loyalty programs have been instrumental in generating retention in the offline world, and their significance has only increased in the competitive online world. Alejandro delves into the basic human urge to belong to a community, takes pride in it, and associates it with "Loyalty Programmes"(Groza, 2016). The loyalty programs may be financial or non-financial/social.

"Leveraging loyalty programs to build customer-company identification", emphasizes the relevance of loyalty programs as a means to strengthen Customer-Company Identification. The study discusses the relevance of customer loyalty programs and how satisfied customers do not make repeat purchases if they are not a part of the loyalty program. The customer loyalty program needs to be revamped and updated as per the customer's needs.

Customer loyalty is significantly affected by emotional attachment and customer satisfaction; engendering the same can lead to fascinating findings that can be used to target the customers (Rai, 2018).

But e-commerce has been everything but predictable, and customer retention is the only hope it has to stay in business and be profitable. This study is an effort to derive factors that may help retain the existing online customers.

Pricing Strategy

Price has always held a place in the customers' minds, especially in the hyper-competitive e-commerce market. The relationship between different pricing models and strategies for e-commerce retention is a relatively new area of research. In previous literature, the researchers discovered that "price changes on the internet are smaller than in the traditional retail sector" and "price changes are also more common on the internet"(Wintr, 2011). Even though price changes are frequent, Reichheld points out that e-commerce customers are

"price rational but not price obsessive with a strong inclination towards loyalty."

The effect of a low price on brand loyalty is strong and has kept marketers from generating enough revenues to stay afloat. Unlike the more traditional pricing strategies, Cashback and Loyalty programs do not affect the price of the actual good or services. Still, Cashback and loyalty programs can be perceived by the customer positively or negatively, which creates a chance for stickiness. The concept of Cashback has been studied in-depth and concluded that "cashback payments shorten the time consumers take to make additional purchases" and "cashback payments increase the size of these purchases" (Bertini, 2018)

Sales Return

Sales returns are a masterstroke that helped customers of products that required the "touch and feel" get hooked to the apparel, furniture, etc. An easy and transparent returns policy creates a high level of trust and comfort with shoppers. This is a high figure to go by and makes a point of focusing on reverse logistics. The simple sales return adds to the most critical aspect of online shopping, i.e., convenience. 62% of online shoppers also want to buy items online and then make returns in-store.

Customer Service

The dimensions of Customer service have grown disproportionately. There was a time when no Customer Service department existed, then a department that operated within working hours of weekdays, and now it is 24/7.

Customer service can be defined as a series of activities designed to enhance customer satisfaction (Noshir Kaka et al., 2019) It has more to do with how the customer perceives it and remembers the product or service.

The irony is that excellent customer service might not get you loyal customers, but bad customer service would, by all means, take them away. ((Dixon et al., 2017). It is more to delight the customers and not only meet their expectations.

Customer service is also vital for both physical, and e-commerce retailers as the research between excellent customer service and customer satisfaction demonstrate a strong link (Choi, 2019). This notion is explicitly confirmed by e-commerce retailers in a study that concluded that "customer service reliability has a significantly positive effect on customer's perception of overall service reliability" and "customers want to receive reliable help timely" (Feng Xifei, 2015).

Besides receiving help promptly, another vital customer service requirement in e-commerce is returning products for

cash refunds with no hassle. Customer returns and refunds play a critical role in e-commerce as customers carry the burden of the inability to touch during their purchase decision, unlike in a physical retail setting (Hjort, 2018).

For this study, we reference the zone of tolerance customers have for specific factor statements on e-commerce sites in different age demographics. Our research aims to show precisely how lenient return policies and timely query responses are perceived by several different demographics, focusing on e-commerce apps. This study utilizes three factors (Loyalty, pricing strategy, and customer services), and examines what influences e-commerce retention by demographic characteristics.

II. Research Design and Methods

This section describes the survey design, sampling, data collection, response rate, and statistical measures. The study's focus is to derive the factors that create e-commerce retention and are significant to e-commerce customers in India.

A sample of 10,000 e-commerce users was obtained from a third-party data provider. The online survey, using SurveyMonkey, was open for 30 days. Three emails were sent to the sample, with one initial contact email and two follow-up reminders. Of the 10,000 samples, three percent were invalid emails, opted out of the survey, or notified us that they would not respond. This reduced the sample size from 10,000 to 9,700 potential respondents. This study achieved an outstanding response rate of 48.4% response rate.

A convenience sample 4700 (Male=3051, female=16481; Age 18-24 years=2537, 25-34 years=1474, 35-44 years=506 and >45 years=183) was employed. Participation was voluntary, and the study's objective was shared with the respondents. Only those respondents who have been buying online were considered for the study.

The survey instrument used Likert Scales to determine constraints that impacted customer retention to a particular app/website; this included statements regarding perceptions, intentions, and use of e-commerce purchases regarding price, variety, brand loyalty, app loyalty. All the statements have been framed around the variables extracted from the review of the literature.

A Kaiser-Meyer-Olkin (KMO) with a value of .872 indicates that the adequacy of the sample for Factor Analysis and Bartlett's Test was done (Russel, 2002). Bartlett's test of Sphericity is the chi-square value of 4740 and df is 120 and the p-value is less than .001, reveals that the sample was suitable for the EFA.

For this study, Exploratory Factor Analysis using SPSS was applied to the questionnaire statements that were rated on the Likert scale. It was decided to use EFA since there is a shortage of studies outlining the factors for the Indian users.

This factor analysis used various statistical techniques to simplify the complex and diverse relationships observed in e-commerce stickiness factors. The next step in the process was to decide the number of factors derived. Using Principal Component Analysis, a rule of thumb was applied to choose the number of factors equal to the number of 'Eigenvalues' more than 1, which were calculated using the SPSS software. The component matrix formed was further rotated orthogonally using the Varimax rotation algorithm. The subsequent factors loaded, with correlation coefficients, are explained when the demographic age is factored against constraints that impacted customer retention, particularly app/website. Results were considered significant at factor loading of more than 0.5.

III. Results and Discussion

The naming of the factors is a subjective issue and is named for convenience and understanding of the variables being studied. The method of naming adopted is the one where the first two variables are loaded from the basis of naming.

The objective was to analyze the sliced data based on age. All significant results for each age demographic are recorded, analyzed, and discussed below. Each significant factor group and statement are sorted by age group to allow for the comparison of statistical data. Factor statements also enable the factors to be sorted into subfactors and give insights into the managerial implications specific to each department of the e-commerce retailer.

To go deeper into the study, slicing of the data was done based on age groups of 18-24 years, 25-34 years, 35-45 years and >45 years with the data of 4700 respondents across twelve statements. In this study, the factors are derived for each age group to facilitate the e-commerce companies to target each segment according to the significance they assign to the shortlisted factors.

The various factors emerge, defining the age groups around the Settled in, demanding or non-demanding, their App and Brand Loyalty, Comfort with the medium, cash backs, and Customization. The Settled-in customers do not make too much price comparison or cash backs being offered or some delay in the cash refunds does not make them anxious. Loyalty in terms of brands and apps is highlighted differently for different age groups. Apps in e-commerce are among the fastest-growing mediums available, so in this study, it was

imperative to gain insights into how customers perceive apps in terms of retention.

The connection between apps and retention is crucial. Customers may trust the App because it's a very accessible medium for accessing retailer-specific goods and services rather than brand-specific items. Customization is built off the idea of app loyalty to see if customers would perceive Customization as possibly a benefit of the App or the e-commerce retailer in general. Brand loyalty is a known driver of retention; however, it was included in this study to compare all the other types of loyalty customers perceive in terms of retention. In this study, each subfactor is represented by several value statements. In terms of customer service, promptness in providing solutions is an important factor.

Respondent Characteristics

The 4,700 respondents in this study are divided into several age-based demographic groups; 18 – 24, 25 – 34, 35 – 45 and >45 years old. This study includes shortlisted factors (Eigenvalue greater than one) that are derived for each age group based on topics that could potentially allow e-commerce companies to target each segment individually.

Results

The youngest age group, 18-24 year-olds, has a relatively large zone of tolerance regarding pricing and varying levels of tolerance in terms of Loyalty (Table 1).

The 18-24-year-old segment is the one that was born around the time e-commerce started and has witnessed online businesses thriving. Owing to this attribute, they are settled-in and are not looking for comparing prices upfront and are fine with the delay in refunds.

Loyalty programs provide benefits across the range of services, and the segment appreciated the simple loyalty programs. If given a choice of a Low price for the same product and is pitched to them, they would switch to the other app/platforms.

The evidence of synergy between younger audiences and pricing strategies can be found in this study as the appreciation for a simple loyalty program on an app is outstanding. That zone of tolerance drastically reduces when it comes to Loyalty. Loyalty to apps is suspect; however, Loyalty to brands remains strong. Brand loyalty appears to interact with app loyalty and influence where this specific age group will purchase. . Brands should remain mindful of those apps being used to represent the brand.

Age Group	Factor Group	Factor Statements	Loadings
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18-24 Years Old	Settled in Customer s	I don't compare prices of products online	0.646
		Delays in refunds are acceptable	0.629
	Loyalty programs for App Loyalty	I appreciate "simple" loyalty programs	0.744
		I will switch to other apps, if they give me a lower price	
	Brand Loyalty	I am loyal to brands and not to apps	0.669
		I will visit various platforms/apps to locate my favourite brand	0.645

The age group 25-34 year-olds year is shown in this study to be potentially one of the most tolerant demographic groups (Table 2).25-34 year segment is the least demanding of all the age-groups under study. They have the purchasing power and have grown up with the mediums growth-with some faltering and the others consolidating their positions. They have witnessed the good ones surviving and flimsy ones failing, so the trust and adaptability issue does not hold relevance.

A large number of participants in this age range "don't compare prices online," find "delays in refunds acceptable" and are "fine with only one or two payment options" as loading scores for these statements were 0.793, 0.706 and 0.767, respectively

They do not compare prices online (*Implying that they would buy easily from the app/platform they are comfortable with. The Comfort with the Payment Options is also apparent since the customers aged 25-34 years are fine with one or two payment options viz a viz giving as many payment options as possible. *This may lead to cost-saving for the e-players, once the additional lesser-used payment options are eliminated.

Age Group	Factor Group	Factor Statements	Loadings
25-34 Years Old	Settled in customers	I don't compare prices of products online	0.793
		Delays in refunds are acceptable	0.706
	Non- demanding	I am fine with one or two payment options	0.767

While younger age groups in this study present as tolerant of different customer service policies, the age group of 35-44 year-olds appears to be much more demanding of customer

service capabilities (Table 3). Regarding retention, customers of this age demographic put substantial importance on "immediate refunds" and "prompt responses to queries".with loading scores of 0.752 and 0.771, respectively. Astoundingly, most participants in this age group "access all the e-commerce companies through their apps only" as this factor statement obtained a significant positive loading score of 0.800. Customization in this study was found to have a negligible influence on the younger age demographics; however, between the ages of 35 – 44, Customization can potentially affect the retention of an e-commerce platform or App. Lastly, Cashback is not essential to retain customers in the 35 – 44-year-old age group, and this study's results question the efficacy of Cashback in regards to retention.

Age Group	Factor Group	Factor Statements	Loadings
35-44 Years Old	Demanding Customers	Cash refunds should be made immediately	0.752
		Prompt responses to my queries is a must	0.771
	Cash-back	I don't consider 'cashback' while shopping online	0.813
	Comfort with the medium	I access all the E- commerce companies through their apps only	0.800
		I am fine with one or two payment options	0.764
Customization	Customization of products/packages makes me go back to that platform/app	0.762	

Cashback in participants 45 years and older was once again perceived as a non-essential factor when considering the impact it may have on e-commerce retention (Table 4). Customer service is regarded highly in the over 45 age demographic as customers demand substantially more out of e-commerce retailers. Prompt customer service and timely responses to queries were deemed as a must by many participants as the loading scores were significantly immense at 0.802 and 0.796, respectively. Brand loyalty resonated strongly with the over 45 age group; however, the relatively new phenomenon of app loyalty is not perceived as being nearly as essential to retention in this demographic.

Age Group	Factor Group	Factor Statements	Loadings
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Over 45 Years Old	Cash backs	I don't consider 'cashback' while shopping online	0.770
	Prompt Response	Prompt customer service makes me stay with the platform/app	0.802
		Prompt responses to my queries is a must	0.796
	Brand Loyal	I am loyal to brands and not to platforms/apps	0.773
		I will visit various platforms/apps to locate my favourite brand	0.771

Discussion

An e-commerce business looking to attract people between the ages of 18 - 24 and above 45 needs to be aware now more than ever that brand loyalty is and always was a substantial factor in e-commerce retention. In accordance with previous research, we found that increases in branded app loyalty will lead to an increase in purchase intention (Chen, 2018). E-commerce platforms that rely on their brand while selling a wide range of products will need to harness brand loyalty. Unfortunately, the perception of app loyalty remains uninspiring in terms of retention. Not surprisingly, age of > 45 years, the majority of participants perceived app loyalty as non-essential and focused on getting the brand they wanted regardless of the platform where a brand can be found. Therefore, e-commerce apps that sell a wide variety of brands that are not owned by them will likely not benefit as the idea of app loyalty with no branded aspect did not resonate in this demographic. However, in the age group 35-44, it was found that respondents only access e-commerce companies through their App. Within the age range of 35 – 44, it is evident that apps are becoming a more happy medium for purchasing, and the development and maintenance of an e-commerce app will be vital to retention. Thus, if an e-commerce platform chooses to treat retention as equal to all and not focus on the differences found in this aforementioned age group, it would not benefit by capitalizing on what is most important in creating retention.

With most of the 25 – 34-year-olds being tolerant of all levels of customer service, e-commerce businesses are presented with an opportunity to maximize profits as consumers are less price and return policy sensitive. As previous studies have shown, increases in customer service affect customer satisfaction levels, which affects customer repurchase intentions (Choi, 2019). This study furthers this research by showing that customers who differ in age will perceive the importance of customer service differently, potentially affecting retention in different demographics. Suppose an e-

commerce platform is aiming to reach a target demographic 18-34 year-olds, it is essential to understand the level of tolerance for customer service quality these ages will tolerate. In two lower age groups, the results demonstrated that consumers are perceived as less demanding of e-commerce goods and service providers that may have been previously stereotyped. This research furthers the idea that lenient return policies lead to a higher chance of retention in these upper age ranges. Similar quantitative studies should be done in other regions to compare the perceptions of India's people.

Loyalty programs in e-commerce apps can also be an example of increasing web interactivity on apps. It is important to note that the results on perceptions of app loyalty were far less promising than these loyalty programs, such as the Cashback factor and other simple loyalty programs that can be included in e-commerce apps. The cashback factor, a mix of pricing strategy and loyalty program, had shown promise as a potential driver of retention in previous studies; however, this was not the case. Yet, the Cashback factor, being a new form of a loyalty program, was found to be something participants had either never considered or found to be negligible in all age ranges in terms of retention.

IV. Conclusion

To treat retention as equal in all age demographics would be a massive blunder in terms of an e-commerce company's ability to target consumers. The mistake of not targeting specifically to create retention will hinder an e-commerce retailer from attempting to maximize retention through all the factors being studied. Different factor groups affect retention in some form and are perceived in significantly different ways depending on age. This study's results outline the need for continued research both in various countries around the world and by possibly dividing the age categories into even smaller ranges to further explore e-commerce retention in differing ages. Our study also furthers the idea that a concise retention strategy for an e-commerce business could lead to remarkable results in terms of retention if an e-commerce retailer understands its target demographic age. E-commerce companies that seek to continue business in this massive, ever-growing, hypercompetitive market will need any advantage in terms of available factors for retention. E-commerce retention is now shown to be perceived quite differently depending on the age and category of retention. The awareness of e-commerce retention created in earlier literature allows retailers to become more customer-centric as e-commerce loses some of the interpersonal connections found in a physical store. This opportunity for e-commerce retailers to capture the power of different demographics and change strategies to maximize retention will inevitably lead to a more efficient and profitable business.

The research in e-commerce retention needs to focus on all the demographics viz., gender, culture, geographical boundaries, and many more. But the research in focus was done for the Internet and Mobile Association of India (IAMAI), which represents e-commerce companies in India, based on age group.

Therefore, for any future research, the slicing of the data based on gender, location, and culture would be value addition. The study can also be done by comparing customers from different countries, to provide a broader outlook.

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A BIBLIOMETRIC ANALYSIS ON PERSONAL FINANCIAL MANAGEMENT AND FINANCIAL LITERACY: TRENDS AND FUTURE DIRECTIONS

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Purpose: *Financial literacy is a powerful tool for effective personal financial management. It inculcates financial awareness, which enables the development of a systematic plan throughout life. The study intends to provide a descriptive analysis of personal finance research outcomes.*

Design/methodology/approach: *Using Bibliometric analysis, an extensive analysis of articles published in the Scopus database over the past three decades was conducted.*

Findings: *The study explores the most significant articles and authors based on their publication and citations, affiliation, and location within the network. Therefore, this paper sought to raise awareness of personal financial management through Bibliometric analysis and anticipated that this work would bring more interest to research in this*

Originality/value: *Unlike the prior analysis, the study methodology used in this research is an amalgamation of network analysis, clusters evaluation, and systematic literature review (SLR), which enabled the recognition of the intellectual structure (IS) and producing an inclusive summary of the study area.*

Keywords: Bibliometric; Personal Finance; Scopus; Personal Financial Management; Financial Literacy

JEL Classification: D1, D14

Money is the key to lifelong success for an individual (Oleson, 2004). One has to manage their money so that each money unit provides them with complete satisfaction. Personal and financial satisfactions result from a systematic process called "Personal financial Planning" or "Personal money management." Personal financial planning has emerged as a critical tool for assisting individuals in developing strategies for meeting their financial goals (Cooper et al., 1983; Puelz and Puelz, 1991; and Swart, 2002). Financial planning entails determining an individual's present and future financial situation. Effective money management is a continuous process of achieving one's future goals through effective money management. Financial management is the subset of personal financial planning related to the current decision for future events (Chieffe and Rakes, 1999; and Tang et al., 2002). The decision entails cash flow management, credit utilization, tax planning, appropriate budgeting, insurance planning, retirement, and estate planning (Ahmad and Salleh, 2016; Mitra et al., 2016; Hallman and Rosenbloom, 2003; Chieffe and Rakes, 1999). Household financial planning has existed for an extended period but in an imprecise form. Taking control of your finances does not mean creating a daily household budget. Additionally, it entails planning for future expenses, which may be predictable or unpredictable, as well as ensuring stress-free post-retirement years through a proper financial plan (Kidwell and Turrisi, 2004; Copur and Gutter, 2019). It encompasses all factors that contribute to an individual's financial success. However, as the standard of living increased, complex

financial structure and aggressive taxation were formed the sophisticated financial planning. Despite its complexity, financial planning has been unable to establish academic, organizational, and customer acceptance levels (Altfest, 2004).

Financial knowledge is essential to understand personal financial planning (Ahmed and Salleh, 2016; Ameriks et al., 2003; and Lusardi et al., 2007). It is a set of skills, knowledge, and attitude that helps to make sound financial decisions (Atkinson et al., 2012; Fox, Bartholomae, and Lee 2005; Tang et al., 2003), but adults have a low level of knowledge about the fundamentals of financial concepts (Lusardi et al., 2010; Garg & Singh, 2018; Yoong, 2010; and Lusardi & Mitchell, 2017). Therefore, it is imperative to eradicate financial illiteracy (Bernheim et al., 2001). Furthermore, sound financial decisions based on financial knowledge assist individuals in

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accumulating wealth, funding retirement, and avoiding over-indebtedness (Banner & Schwarz, 2018; Grohmann & Menkhoff, 2015; Wolla, 2017). After addressing the concept of personal financial planning and financial literacy, the authors were compelled to explore the more relevant studies for debate. The study will examine the relationship between personal financial planning and financial literacy.

The fundamental objective of the research is to draw attention to the numerous extra areas or elements that pertain to it. Sub-objectives pertinent to this objective are listed in the next section. Furthermore, the study will provide a list of keywords to potential scholars. Subsequently, the researcher will categorize future research in terms of the role and influence of financial literacy on personal financial planning, investment decisions, and wealth creation.

I. Review of Literature

This study uses bibliometric analysis to identify publications and trends in personal financial planning and financial literacy. We discovered different studies on personal financial management (Goyal et al., 2021) and financial literacy (Bedi et al., 2019 and Goyal and Kumar, 2021). Each of these studies examines the associated consequences in isolation. However, they do not establish a link between financial literacy and personal financial management. Personal financial management is a very interdisciplinary area, and various researchers coined different names to understand it.

Godwin (1990) defines it as "family financial management," which comprises planning, implementing, and analyzing current income and wealth to obtain family financial goals. Richard (1905) considered personal finance the "cost of shelter or living." Garman and Frgue (1988) state that personal financial management entails proper planning of own finance, managing expenditures, safeguarding own income and assets, planning for investment, and retirement planning. Gitmen and Joehnk (1990) and Whittaker et al., (1990) broaden the scope of financial management by including insurance planning, credit management, managing essential assets, tax & estate planning, and financial advice.

Swart (2002) asserts that personal financial management includes career, health care, and immigration planning. Woerheide and Ernst et al., (2004) state that personal financial management includes investment, insurance, tax, assets, saving, career, health, immigration, retirement, and estate planning, and also include accommodation planning and funds for marriage and divorce. Thus, personal financial management encompasses a variety of components that touch on every element of the individual life. Financial knowledge

is a fundamental tool for achieving implicit or explicit financial goals.

Kidwell and Turrisi, (2004); Copur and Gutter, (2019) having control of finances entails not only creating a monthly budget but also saving and investing in order to build a cushion for future expenses and began as a profession taught to women in the home (Abel, 1921). Modigliani and Brumberg (1954) state that the individual consumer's decisions on consumption and savings are influenced by parental attitude. The study examines how financial literacy affects personal financial planning. This bibliometric study examined the effects of financial knowledge on personal financial planning and related fields. The paper aims to consolidate research on financial literacy and personal financial planning into a single framework.

- To analyze the publication trends in the arena of personal finance.
- To study the most influential author's collaboration patterns.
- To examine the most prominent journals and persuasive documents in the field of personal finance.
- To study the extensively researched topic in this arena within academics.
- To investigate the emerging theme of research among researchers.

This study will assist researchers in identifying the most dynamic past topics and explore future research directions. Financial literacy is studied more than personal financial management, such as emergency planning, insurance planning, retirement, and estate planning. Over half of the study's articles addressed financial literacy. To address the aforementioned concerns, we used bibliometric to analyze visual media, such as published papers and books (Donohue 1973). Pritchard (1969) coined the term "bibliometric" is "the application of mathematical and statistical methods to books and other forms of communication." The published work was analysed quantitatively to determine field trends (De Bellis, 2009). The bibliometric analysis provides insightful information about the study's objectives (Block and Fisch, 2020; Kaushal et al., 2020). It is ideal for conducting academic research reviews (Castriotta et al., 2019; and Kaushal et al., 2021). As a result, the study applied bibliometric analysis.

The following section of the paper delineates the data and research methodology, and the bibliometric analysis. The study's methodology section will detail all databases, instruments, and software applied in the research. As illustrated in Fig.1, all relative components will be included in the bibliometric and network analysis. Additionally, the concluding sections of the paper discuss the effects of the

current study's objectives, the study's limitations, and the conclusions drawn.

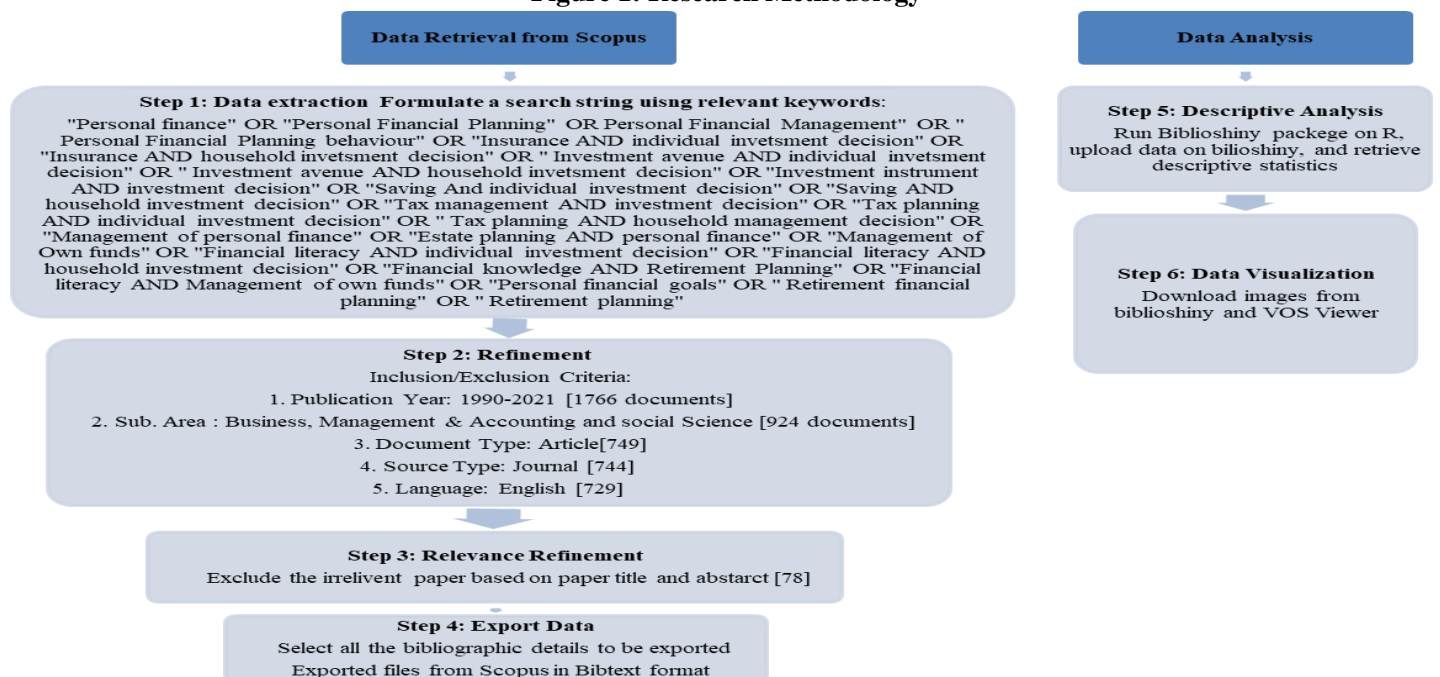
II. Research Design and Methods

The Scopus database was used to determine the research productivity in the area of personal financial planning and financial literacy. Scopus incorporates all document types and indexes all authors, institutional information, and bibliographic references for each document (Mongeon and Paul, 2016). Our investigation began on July 21, 2021, in the Scopus database, using a similar search string. Furthermore, we focused on a string containing corresponding keywords to ensure that this keyword contains all of the required elements. Our search string incorporated (TITLE-ABS-KEY "Personal finance" OR "Personal Financial Planning" OR Personal Financial Management" OR " Personal Financial Planning behaviour" OR "Insurance AND individual investment decision" OR "Insurance AND household investment decision" OR " Investment avenue AND individual investment decision" OR " Investment avenue AND household investment decision" OR "Investment instrument AND investment decision" OR "Saving And individual investment decision" OR "Saving AND household investment decision" OR "Tax management AND investment decision" OR "Tax planning AND individual investment decision" OR " Tax planning AND household management decision" OR "Management of personal finance" OR "Estate planning AND personal finance" OR "Management of Own funds" OR "Financial literacy AND individual investment decision" OR

"Financial literacy AND household investment decision" OR "Financial knowledge AND Retirement Planning" OR "Financial literacy AND Management of own funds" OR "Personal financial goals" OR " Retirement financial planning" OR " Retirement planning"). After applying the search string, we obtain a total of 1879 articles. Following that, we used the inclusion and exclusion principle to trim our outcomes. Figure 1 depicts the six-step methodology we used to locate the appropriate articles to address the research problems

Initially, the documents were considered to publish between 1990 and 2021, and 1766 articles were discovered. From the 1766 article, we refined the search based on inclusion and exclusion criteria. We classified the appropriate documents for the final evaluation in four steps. To begin, we select 729 articles from 1766 publications that meet the criteria for subject area (business, Management & Accounting, and Social Science), document type (article), and source type (Journal) and get 729 articles. Following that, publications were considered exclusively in the English language. Finally, 729 articles were retrieved in order to begin the study's analysis. Continuing to follow that, we determined the articles' relevance by reading the title and abstract. Abstract screening involves reading the abstract of all retrieved document to determine their relevance to the research topic. As a result, we eliminate 78 articles due to their lack of relevance. Finally, draft the pattern of articles retrieved from the database compatible with the software 'Biblioshiny (version 3.6.3)' and 'Vosviewer (1.6.15)'.

Figure 1: Research Methodology

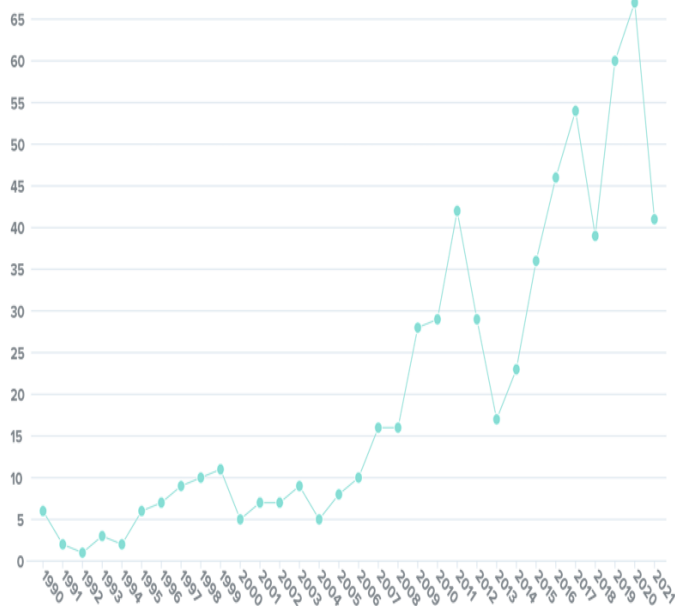


III. Results and Discussion

Publication Trends (Yearly basis)

Figure 2 illustrates the evolution of personal financial planning from 1990 to 2021, as shown by the movement of annual publications. From 1992 to 2020, the number of publications rose from 1 to 67. After 2008, the publishing industry saw a slight rise. As a result of the 2008 global financial crisis, the individual's opinion on personal financial planning has changed. On the other hand, most of the papers published are in 2020. Since July, seven months ago, 41 articles have been published within that time period.

Figure 2: Annual Publication of articles on personal financial planning



Most Productive Journals and AJG Rating

The top ten journals contributing to this field are listed in Table 1, along with their impact factor, AJG (academic journal guide) rating, the total number of publications, and citations. At a glance, the majority of articles were published in the International Journal of Bank Marketing (19 articles), which has been cited 277 times, followed by the Journal of Extension (17 articles) and the Journal of Pension Economics and Finance (17 articles) (17 articles). Academic Journal Guide (AJG) rates the quality of business and management journals; thus, we used it to determine document superiority. It sequentially classifies high-quality journals as 1, 2, 3, 4, and 4* (Tüselmann et al. 2016; Mingers and Willmott 2013). We discovered that the journal of vocational behavior receives a 4 rating among the top ten journals. In contrast, the pension economics and finance journal, the international journal of consumer studies, and the journal of consumer affairs all received a rating of two.

Table 1: Top Journals

S. No	Sources	Publication Name	TC	NP	Impact factor	AJG 2021 rating
1	International Journal of Bank Marketing	Emerald Group Publishing	277	19	4.06	1
2	Journal of Extension	Extension Journal, Inc.	59	17	0.36	NA
3	Journal of Pension Economics and Finance	Cambridge University Press	1375	17	0.67	2
4	International Journal of Consumer Studies	Wiley-Blackwell Publishing Ltd	181	15	1.53	2
5	Journal of Gerontology	Routledge	186	13	0.97	NA
6	Journal of Consumer Affairs	Wiley-Blackwell Publishing Ltd	371	13	1.95	2
7	Journal of Economic Psychology	Elsevier Inc.	573	12	2.00	2
8	Family and Consumer Sciences Research Journal	Wiley-Blackwell Publishing Ltd	79	11	1.02	NA
9	Journal of Women and Aging	Routledge	187	11	1.21	NA
10	Journal of Vocational Behavior	Elsevier	523	10	4.07	4

NP= Net production, TC= Total citation

Affiliation Analysis

Worldwide universities and institutions heavily invested in the field of personal finance. Oklahoma State University is the most prolific institution in this field, with 13 publications.

Table 2 shows that the University of New South Wales came in second with ten publications. All of these institutions are located in Southeast Asia. The United States of America is the most productive nation, with 3097 articles (Table 3). Following that, Australia produced 667 publications, each with an average of 23 citations.

Table 2: Top Affiliations

Sr. No.	University	Articles
1	Oklahoma State University	13
2	University of New South Wales	10
3	Montana State University	9
4	University of Toronto	8
5	University of Florida	7
6	University of Minnesota	7
7	Cornell University	6
8	Florida State University	6
9	Iowa State University	6
10	North Carolina State University	6

Table 3: Top Most Countries

Sr. No.	Region	Research Articles	Average article citation
1	USA	3097	17.01
2	Australia	667	23.00
3	United Kingdom	518	15.69
4	Malaysia	397	14.70
5	Hong Kong	205	29.28
6	Canada	197	10.94
7	Italy	197	39.40
8	Sweden	194	24.25
9	Netherlands	190	38.00
10	Spain	172	24.57
11	Germany	137	10.53
12	India	59	4.21
13	Brazil	53	7.57
14	New Zealand	44	22.00
15	Ireland	42	8.40

Top Author's Production

Based on the study's second research objective, we examined how researchers around the world are constantly investigating how personal financial planning affects their financial goals, and financial knowledge enables individuals to effectively manage their finances. Figure 3 shows that, Hershey DA has the longest history, going back to 1990.

Similarly, the size of the bubble indicates the proportion of the document to the total number of documents, and Lusardi published five documents in 2011 and four articles in 2017. Similarly, Hershey DA and Foziah published three articles between 2016 and 2019. Furthermore, the color's intensity is proportional to the total number of citations per year. The document "Financial literacy: an overview" by Lusardi (2011) has received 39.09 total citations per year.

Citation Analysis

Citation analysis illustrates how often other publications cite a particular article to establish the article's prestige and ascendancy within the scientific group (Ding et al., 2011). In total, 651 articles were considered for citation analysis based on the "total time cited count" conferred by 'Scopus.' Referencing and citation analysis enable the establishment of intellectual connections (Appio et al. 2014). Biblioshiny is used to deal with citation analysis. The following table 4 summarizes the most cited research publications worldwide. The term 'worldwide reference' means acknowledging other works that refers to articles in the information database, which spans multiple research areas and disciplines. Lusardi et al., (2007) "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education" cultivate the most cited article in the area of personal finance with 578 citations, followed by again Lusardi et al., (2011) "Financial literacy around the world: an overview" with 459 citations.

Figure 3: Top author production over the time

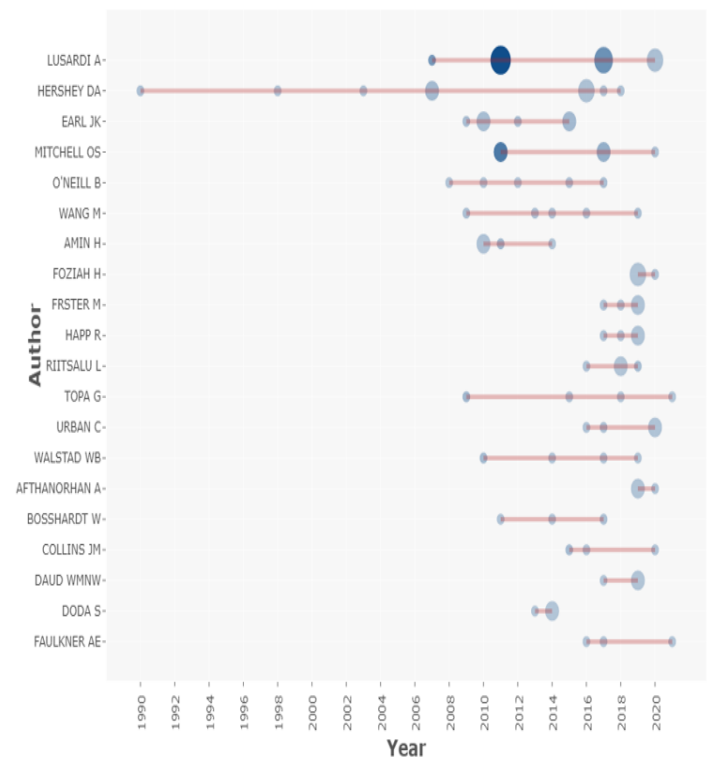


Table 4: Top Cited Documents

Document	Title	DOI	Year	LC	GC	TC	LC/GC ratio
Lusardi A, 2007, Bus Econ	Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education	10.2145/20070104	2007	39	539	578	7.24
Lusardi A, 2011, J Pension Econ Financ	Financial literacy around the world: an overview	10.1017/S1474747211000448	2011	29	430	459	6.74
Lusardi A, 2011, J Pension Econ Financ-A	Financial Literacy and Retirement Planning in the United States	10.1017/S147474721100045X	2011	29	240	269	12.08
Van Rooij MCJ, 2011, J Econ Psychol	Financial Literacy and Retirement Planning in the Netherlands	10.1016/j.joep.2011.02.004	2011	24	163	187	14.72
Hershey DA, 2007, J Adult Dev	Psychological Foundations of Financial Planning for Retirement	10.1007/s10804-007-9028-1	2007	19	82	101	23.17
Bucher-Koenen T, 2011, J Pension Econ Financ	Financial Literacy and Retirement Planning in Germany	10.1017/S1474747211000485	2011	18	140	158	12.86
Topa G, 2009, J VocatBehav	Antecedents and consequences of Retirement Planning and Decision-making: A meta-analysis and model	10.1016/j.jvb.2009.03.002	2009	17	144	161	11.81
Taylor-Carter Ma, 1997, Educ Gerontol	Planning and Expectations of the Retirement Experience	10.1080/0360127970230306	1997	15	64	79	23.44
Sekita S, 2011, J Pension Econ Financ	Financial Literacy and Retirement planning in Japan	10.1017/S1474747211000527	2011	13	78	91	16.67
Wong JY, 2009, J Vocat Behav	Towards an integrated model of individual, psychosocial, and organizational predictors of retirement adjustment	10.1016/j.jvb.2009.12.010	2009	13	72	85	18.06
Noone Jh, 2009, Res Aging	Preretirement Planning and Well-Being in Later Life	10.1177/0164027508330718	2009	13	67	80	19.4
Ekerdt DJ, 2001, J Gerontol Ser B Psychol Sci Soc Sci	Eddies in the Stream: The Prevalence of Uncertain Plans for Retirement	10.1093/geronb/56.3.S162	2001	13	54	67	24.07
Fornero E, 2011, J Pension Econ Financ	Financial literacy and pension plan participation in Italy	10.1017/S1474747211000473	2011	12	96	108	12.5
Kosloski K, 2001, J Gerontol Ser B Psychol Sci Soc Sci	The Role of Job-Related Rewards in Retirement Planning	10.1093/geronb/56.3.P160	2001	12	59	71	20.34
Alessie R, 2011, J Pension Econ Financ	Financial literacy and Retirement preparation in the Netherlands	10.1017/S1474747211000461	2011	11	89	100	12.36

Walstad WB, 2010, J Consum Aff	The Effects of Financial Education on the Financial Knowledge of High School Students	10.1111/j.1745-6606.2010.01172.x	2010	11	104	115	10.58
Almenberg J, 2011, J Pension Econ Financ	Financial literacy and Retirement planning in Sweden	10.1017/S1474747211000497	2011	10	70	80	14.29
Klapper L, 2011, J Pension Econ Financ	Financial literacy and retirement planning: the Russian case	10.1017/S1474747211000503	2011	10	77	87	12.99
Mutran EJ, 1997, Res Aging	Factors that Influence Attitudes toward Retirement	10.1177/0164027597193001	1997	10	70	80	14.29
Hershey DA, 2007, J Cross-Cult Psychol	Mapping the Minds of Retirement Planners A Cross-Cultural Perspective	10.1177/0022022107300280	2007	9	50	59	18

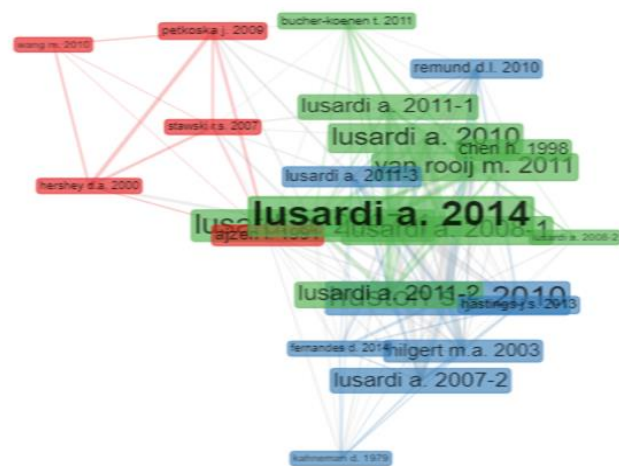
Clustering Network

Clustering is the process of classifying objects into groups whose members are somehow related (Anderberg, 1973). A cluster is a set of objects that are comparable to one another but not to other clusters' objects. Cluster analysis enables to make of a distinction between research issues of the papers. For this analysis, we adopt the CoC network to support a content analysis on the theme of "Personal Financial Management and Financial Literacy." To create a network of CoC, we compute all the co-citations between each pair of cited papers (Small 2009). A CoC network is composed of nodes and edges; each node denotes the listed articles, while the edge depicts the associations indicating the co-occurrence of nodes (Leydesdorff, 2015). We conducted the CoC analysis using the biblioshiny software. The Biblioshiny software-generated co-citation links from the representative collections (651 articles) to create clusters. The finalization of the centrality, closeness, and page rank clustering of well-known papers occurred here. To facilitate systemic consideration and utility, we chose to present the co-citation network for these key documents as a single group, as illustrated in fig. 4.

Cluster –I: Psychology for personal financial planning

This cluster is the most significant of the three and was first observed in 1991. This cluster examines how individuals' psychology affects their personal financial planning. The cluster discussed the most widely accepted theories, including "theories of planned behavior," "role theory," "rational choice theory," "expectancy theory," and "image theory." The cluster focuses on the factors that influence an individual's financial decisions, including attitudes, subjective norms, and perceived behavioral norms. Financial planning is also influenced by one's personality, financial life cycle, and individual goals.

Figure 4: Co-citation clustering network



Cluster-II: Financial Literacy and financial behavior for financial management

Since 2003, this cluster has consistently focused on financial literacy, financial knowledge, and financial behavior for personal financial planning. The cluster began by debating the concept of financial literacy. Then, as interest grows in the effect of financial literacy on financial management, the focus gradually shifts. Huston (2010) discusses the value of financial knowledge and how financial literacy has evolved into a necessary component of acquiring financial knowledge for making financial decisions. Hilgert (2003) established a connection between financial knowledge and financial decisions (cash flow management, credit management, savings, and investment). Lusardi et al. (2011) discussed the causes and consequences of financial literacy on post-retirement life. As a result, financial literacy is essential for sound and effective financial planning.

Table 5: Top Articles using Page Rank

Author	Betweenness	Closeness	Page Rank
Cluster-I			
Ajzen I. 1991	17.3184959	0.037037	0.0402227
Stawski R.S. 2007	4.72910782	0.0294118	0.029048
Petkoska J. 2009	4.24871855	0.0285714	0.0307396
Cluster-II			
Hershey D.A. 2000	0.80742275	0.0238095	0.0260426
Wang M. 2010	0	0.0222222	0.015297
Cluster-III			
Huston S.J. 2010	6.08462337	0.037037	0.0736721
Lusardi A. 2011-3	5.236158	0.0384615	0.0448686
Lusardi A. 2007-2	2.37437137	0.0357143	0.0490626
Hilgert M.A. 2003	2.18186434	0.037037	0.0472518
Cluster-III			
Fernandes D. 2014	1.56427755	0.0322581	0.0277049
Cluster-III			
Lusardi A. 2007-1	20.2092991	0.0384615	0.0663851
Lusardi A. 2014	14.1565293	0.04	0.0935603
Lusardi A. 2011-1	8.29638365	0.0384615	0.0525627
Lusardi A. 2010	3.66670347	0.0357143	0.0586601
Lusardi A. 2008-1	3.91830519	0.037037	0.0602604

Cluster-III: Women's Retirement Planning and Financial Literacy

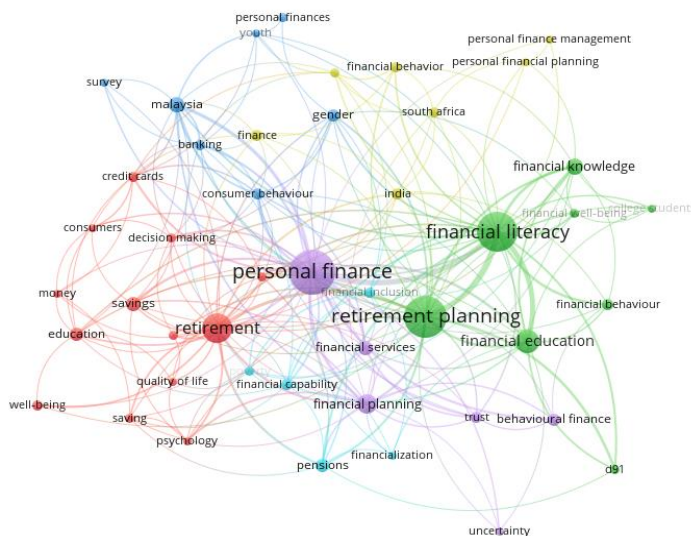
It is the second-largest cluster, having formed in 2007. This cluster discussed the level of financial literacy among women and the development of a scale for measuring financial literacy by Lusardi (2008). Additionally, Lusardi et al. (2014) examined the economic significance of financial literacy and framed it as an investment in human capital. Moreover, the researcher in this cluster examined women's investment decisions and retirement planning. As a result, it has been determined that this cluster has shed light on the critical nature of financial knowledge for making sound investment decisions and planning for retirement.

Author Keywords Analysis

This section identifies the author's keywords for topic-related research. Strozzini et al. (2017) demonstrate the importance of assessing the article's competence. This study examined personal finance research from a multidisciplinary perspective. We extracted keywords from 651 connected papers and built a network with VOSviewer. For systematic results, we allowed five keyword co-occurrences. Only 46 of 1677 keywords met our criteria. It discovered that 'personal finance' had been the most frequently occurring keyword, appearing 129 times. 'Personal finance' is the most significant node in the network depicted in Figure 5. Keywords that share a common colour have a unified identity. Personal finance encompasses retirement planning, financial literacy,

financial education, and financial planning. It recommends personal finance research. Thus, 'personal finance' as a multidisciplinary approach to study purposes is diverse.

Figure 5: Author's keywords



IV. Conclusion

The following is a summary of research findings from the previously discussed objectives:

- Bibliometric analysis reveals that personal finance research follows an ebb and flow pattern. From 2014 to 2020 saw steady progress and the United States, Australia, Malaysia, the United Kingdom, and Canada published the most articles. Emerging markets (primarily Asian markets) are underserved in personal finance sector.
- Oklahoma State University (13), University of New South Wales (10), Montana State University (9), and University of Toronto (8) have been identified as the most renowned universities in the country where the researcher conducted this study.
- The Journal of Bank Marketing, with 19 articles and 277 citations, and the Journal of Economics and Finance, with 17 articles and 1375 citations, have made significant contributions to this area. The Journal of Vocational Behavior has been classified as a Grade 4 journal in the AJG 2021 journal guide.
- Lusardi (2007), Lusardi (2011-2), and Van et al. (2011) have obtained the highest number of global citations among the 651 papers. Citation CoC analyses revealed that both of the aforementioned documents are also the most locally cited publications within the reference list of 651 articles.
- An examination of Cluster analysis enabled us to identify three primary streams for studying of personal financial management and financial literacy. Cluster- I explore the theories and psychology underlying individuals' attitudes

toward personal financial management. Cluster two discusses financial literacy concepts and the behavior of individuals when it comes to investment decisions. Cluster three highlights research on financial literacy scale development, women's literacy levels, and retirement planning

Implications of the study

The current study provides numerous insightful implications for future research directions. According to bibliometric analysis, academic research focuses on the financial knowledge segment, with a larger gap between the two. Another significant observation is that most articles are shared by developed countries, specifically the United States of America, Malaysia, the United Kingdom, Australia, and Canada. Emerging markets (primarily Asian markets) are a less-targeted region in the personal finance arena. Another noteworthy finding is that most studies examined individuals in the service sector rather than business owners. The analysis revealed that the majority of financial literacy research focuses on providing relevant information to help individuals make sound financial decisions and financial planners better understand their clients

Limitation of the study

This study refined 651 Scopus-indexed papers from the last 30 years using specific search terms. It enables researchers use more keywords, which may change results. The current study used only one database, future research could use additional databases such as Web of Science, Google Scholar (via Harzing's Publish and Perish tool), Pubmed, and EBSCO. The inclusion and exclusion criteria are another constraint. Only 651 articles are available on the topic at the definite period discussed in the previous section, allowing researchers to consider peer-reviewed journals and books, as well as various subject areas such as Economics, Econometrics and Finance, Art and Humanities, and Decision Science, among others. The the study is restricted to articles written in the English language only. Due to language criteria, some articles were excluded. Other methods and software (VOSviewer) may produce different classifications.

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DECOMPOSITION OF INTERNATIONAL ECONOMIC LINKAGES AMONG TOP FIVE GDP HOLDER COUNTRIES' STOCK MARKETS AFTER THE SPREAD OF COVID-19

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Purpose: *The spread of COVID-19 has a dramatic impact on financial markets across all over the world. It has created an unprecedented level of risk, resultant in short term losses to investors during this period. Therefore, this paper is an attempt to investigate the international economic linkages between the Indian stock market and stock markets of selected countries during the pandemic period.*

Design/methodology/approach: *The objectives of the study have been completed with the help of daily closing index data collected for the period of 1st February, 2020 to 31st March, 2021. The selected countries namely U.S.A, China, Japan, Germany and India are the top five GDP holder countries according to the IMF world economic outlook report of 2020. The results were further analyzed with the help of Johansen co-integration test, Vector error correction method, granger causality test, variance decomposition and impulse response test.*

Findings: *The results of the study indicates that the Indian stock market is co-integrated with other developed countries' stock markets in the long run, and there exists a significant unidirectional relationship with stock indices of USA, Japan and Germany. The results suggests that still there is scope for portfolio diversification for investors in other countries.*

Originality/Value: *The study offers unique insights into the economic interconnections of the top five GDP-holder countries throughout the pandemic period, as well as implications for portfolio diversification for investors in other countries.*

Key Words: International Economic Linkages, Covid 19, Investment decision, stock market integration.

JEL classification: F02, F15, F36

According to World Health Organization(WHO), first confirmed case found in U.S.A was on 20th January,2020 in China on 04th January,2020 , in Japan on 14th January,2020 , in Germany on 28th January,2020 and in India on 30th January,2020. On 11th March, 2020, COVID-19 has officially declared as global pandemic by WHO. As of 27 March, 2020, the number of confirmed cases surpassed 500,000 and it continues to rise. The short run solution adopted by many countries was strict quarantine that have impacted their economic activities on a large scale. The longer-term consequences may arise in the form of mass unemployment and business failures.

The exact global economic impacts are not yet clear but financial markets have already responded with dramatic movements. The live example is the US stock market that has hit the circuit breaker mechanism four times in ten days. Since its inception in 1987, the breaker has ever been triggered only once, in 1997. Together with the US crash, stock markets in other countries have also plunged. Although most stock markets have recently begun rebounding, though a great deal of uncertainty still remains as the pandemic continues. To begin with first-hand description of the scenario and to understand the patterns of international economic linkages, this paper explores the available data and attempts to answer

the following questions:Up-to what extent the international economic linkages present in the stock markets of top five GDP holder countries during COVI-19? Is there still a scope for portfolio diversification through cross countries investment?

The integration of stock markets inhibits important implications for decision making. Markowitz in 1952 propounded that the benefits of diversification can be generated when there exists a low correlation between different investment avenues as it can lead to a reduction of systematic risk. In an extreme case, when investments are perfectly negatively correlated than risk is completed reduced. Earlier international portfolio investment was working on the assumption that there exists no or less correlation between

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economies of different countries and therefore it is beneficial for investors to diversify their investment in different avenues across different countries. On the other hand, stock market integration on a larger scale may lead to failure of the entire economy followed by downfall in a few institutions. The earlier studies documented the transfer of benefits to foreign investors because of the low correlation between stock markets of different countries. (Grubel, 1968; Levy & Sarnat, 1970; Wincoop, 1994; Solnik, 1995; Hillier et al., 2006). But the recent studies especially after the 1987 global market crash extracted that the degree of correlation between stock indices of countries is increasing resulted in fewer opportunities for international investors to reap the benefits from diversification. (Arshanapalli et al., 1995; Jinwoo, 2016; Bozkurt et al., 2018). Also, an increase in integration and advancement in communication has resulted in the quick transfer of information from one market to another, which has given birth to the concept of contagion. The Contagion effect refers to the spread of crises especially economic crises from one market to another.

The main aim of the study is to investigate the integrated relationship of the Indian stock market with stock markets of the USA, China, Japan and Germany during the period of COVID-19. The selected countries are the top five GDP holder countries, according to the IMF world economic outlook report of 2020. The leading stock market indices i.e. Dow Jones index, SSE composite index, Nikkei 225, DAX performance index, BSE SENSEX are taken as proxies to represent the economic strength of U.S.A, China, Japan, Germany and India.

The study is organized as follows: Section 1 deals with some crucial concepts related to financial integration. Section II provides a brief review of the literature on major studies related to international economic linkages and their impact on financial integration. Section III enunciates research methodology and various econometric tools used to decompose linkages. Section IV deals with the discussion of results. Section V gives concluding remarks with implications and future directions for research.

I. Review of Literature

Literature has shown a deep interest in the study of international financial integration among stock markets particularly after the liberalization of financial regulations. The trend of change in economic circumstances intensifies the eagerness to know more about such linkages.

The research in this particular area began somewhere is 1968 with seminal research paper by Grubel, (1968) followed by (Agmon, 2017; Hamao et al., 1990; Hillier et al., 2006; Johansen, 1988) to name a few. All of them have considered co-integration hypothesis to analyze the international

economic linkages among financial markets. Their work was mainly focused on the analysis of developed countries. And the main objective of all the studies was to ascertain whether diversification of portfolios on the international level is beneficial or not. The results portray that markets have some economic linkages but with a low level of correlation. With the advent of more research in this area, the analysis was not limited to correlation only and hence with more sophisticated econometric tools decomposition of the structure of inter-linkages can be done on a deeper level.

The studies done particularly concerning the Indian stock market found that there exists the scope of financial integration between the stock markets especially after the financial crisis of 2007-08. Rao & Naik, (1990) conducted a study with the help of cross-spectral analysis before the adoption of the LPG policy. The study found that the Indian economy was characterized by heavy controls that resulted in poor relationships with the international market. Agarwal, (2001) examined the impact of financial integration of the Indian capital market using regression analysis in terms of volatility, growth and market efficiency. The results of the analysis revealed that the Indian stock market is poorly integrated with developed countries' stock markets. Wong et al., (2004) collected weekly data and found that there was no integration between the Indian stock market and the stock market of the USA, UK and Japan for the post-liberalization period. Bose & Mukherjee, (2005) also didn't find the association of the Indian Stock market with seven Asian countries' stock markets namely Japan, South Korea, Singapore, Hong Kong, Malaysia, Thailand and Taiwan. In the study by Mukherjee & Mishra, (2007) it was found that the Indian stock market was integrated with emerging stock markets of some Asian countries i.e. Indonesia, Malaysia, Korea, Philippines and Thailand. Palamalai et al., (2013) examined the stock market integration of emerging economies of Asia. The sample time frame of the study was 4th Jan, 2000 to 31st Jan, 2013. The result of the study evidenced the presence of the long run as well as short-run relationships among major stock markets of Asian Countries.

Choudhary & Siag, (2015) explored the short and long-run linkages among some of the developed stock markets. The results indicate the presence of linkages in the short term among developed stock markets. However, in long term integration no robust results were found. Warne & Suman, (2018) studied the integration of the Indian stock market with China, Hong Kong and the United States with the help of the ADF, Granger causality test, Johansen co-integration test, Vector auto-regression model, variance decomposition analysis and impulse response function. The findings of the study reveal that portfolio diversification benefits are available to international investors only in the short-run as markets were not found to be integrated in the long run. The

Careful analysis of all the related studies indicates that scope financial integration among stock markets has experienced a change in different phases. During the early phase of the post-liberalization period, financial integration among the stock market was not very strong, but with the advent of time and an increase in bilateral trade with other countries, the bond of financial integration becomes stronger. The impact of integration can be seen in the form of diversification benefits of investors and also in form of spread of financial turmoils; that can be readily observed during the financial crisis of 2008-09. Due to financial turmoils in the year 2008-09; exports of India declined from 28.19% to 0.57%, GDP declined to 14.86% from 15.75%, SENSEX value also declined to 12365.55 from 16568.89.

Hassan & Naka, (1996) found that portfolio diversification benefits accrue largely in the short run and not in the long run. Yang et al., (2003) studied nine East Asian markets for the period of 1990-2000. The results shed evidences of short-term linkages. Unlike the short-run relationship, no long-run co-movements were observed.

Marashdeh, (2005) studied financial integration among the US, UK and Germany from 1994 to 2004. The result suggests that there exist long-run benefit opportunities for investors. Kurniawan, (2005) the study examined the long-run as well as a short-run association by employing daily basis data for 2001-05 with the help of co-integration, granger causality and impulse response analysis and found that Indonesia stock market does not portray the long-run relationship with stock markets. However, short-run relationship exists with all the selected markets although the direction of the relationship varies from country to country. Raj & Dhal, (2008) examined the co-integration of European stock markets from 1988 to 2002. The results indicate that the long run began to strengthen in the late 1990s. Tripathi & Seth, (2014) study witnessed high correlation, long-run relationship and the bi-directional relationship between India and selected stock markets. Based upon the extensive literature review following hypotheses are framed:

H1: There exists a significant level of financial integration between Indian stock market and stock market of selected countries During pandemic period of Covid 19.

H2: The Indian stock market is significantly influenced by stock markets of selected developed countries during Covid 19.

II. Research Design and Methods

Objectives of the Study

The overall objective of the study is to decompose the international economic linkages between the Indian stock

market and stock markets of selected developed countries during pandemic of COVID-19 with the help of various sophisticated econometric tools. The above objective is discerned with the help of following objectives:

- To investigate the level of integration between stock markets of Indian and selected developed countries.
- To investigate the causal relationship between stock markets of Indian and selected developed countries.

Sample Selection and data sourcing

For the empirical analysis, stock market returns of five countries were considered namely U.S.A, China, Japan, Germany and India for the period ranging from 1st February, 2020 to 31st March, 2021. The daily closing index of stock market returns is taken into consideration. The details regarding selected indices are summarized below in Table-1.

Table 1: Detail of indices and sources of data

Country	Index	Currency	Source of data
India	BSE SENSEX	INR	Yahoo. finance
U.S.A	Dow Jones Index	USD	Yahoo. finance
China	SSE Composite Index	CYN	Yahoo. Finance
Japan	Nikkei 225	JPY	Yahoo. finance
Germany	DAX Performance Index	EUR	Yahoo. finance

Source: Authors' computation

Data mining

The role of data mining in the following study is very important as it helps to answer out three major issues related to time series data. The first issue is regarding the frequency of data, i.e. whether researcher considering daily, monthly, quarterly or yearly data. Based on the literature review it was found that most of the studies have used weekly or daily basis data. In the following study, daily basis data is used to unveil the interactions. The second major issue is currency denomination. As the study is cross country analysis, therefore retrieved data was in different currencies. To have the consistency of data, all the stock market returns value are converted into a single currency i.e. the US dollar. At the time of collection and data mining, it was found that 1 INR=0.0131558 USD, 1 CNY=0.141008 USD, 1JPY=0.00935114USD, 1EUR=1.10153 USD and accordingly time series data is converted. The value of the exchange rate was retrieved from the world's trusted currency authority named XE currency converter. The third issue is regarding the days on which all the stock exchanges are opened. Therefore only those days are considered on which stock markets of all countries were opened.

III. Results and Discussion

In order to access the distributional properties of all the stock market indices, descriptive statistics are estimated and presented below in table 2. The statistics reveal that the average return of all the selected countries comes out to be positive and ranges between 0.235313 - 18.81915. The mean or average return of the Indian stock market was found to be 0.57 approximately which is comparatively high in comparison to China and Japan. The kurtosis value is greater than 4 in all cases suggests that the time series data for all variables is sharply peaked as compared to normal distribution. The Jarque-Bera statistics depict that the p-value is 0.000, which is highly significant and thereby rejects the null hypothesis for the normal distribution of data for all the selected countries' stock market indices.

Table 2: Descriptive Statistics of Returns of Selected Countries Stock Markets

	DCCP	DGCP	DICP	DJCP	DUCP
Mean	0.437328	9.292272	0.565768	0.235313	18.81915
Median	0.480373	9.055164	1.260218	0.081790	42.12500
Maximum	37.01084	1126.080	33.84996	13.13594	2112.980
Minimum	-23.09455	-1499.472	-39.90568	-10.85954	-2997.100
Std. Dev.	6.336850	280.4524	9.903230	3.365638	561.7832
Skewness	0.398030	-0.690038	-0.528149	0.033988	-1.075785
Kurtosis	7.665584	8.471519	6.032548	4.784356	9.713736
Jarque-Bera	231.4810	329.0354	106.5585	32.94832	513.6029
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	108.4573	2304.484	140.3104	58.35751	4667.150
Sum Sq. Dev.	9918.449	19427431	24224.27	2797.898	77953303
Observations	248	248	248	248	248

Source: Authors' Computation

Table 3: Correlation Matrix of Selected Countries Stock Index Returns

	DUCP	DGCP	DJCP	DICP	DCCP
DUCP	1	0.72820324...	0.36797855...	0.52847717...	0.30695065...
DGCP	0.72820324...	1	0.51842615...	0.56565254...	0.30128315...
DJCP	0.36797855...	0.51842615...	1	0.45797560...	0.42996729...
DICP	0.52847717...	0.56565254...	0.45797560...	1	0.36397156...
DCCP	0.30695065...	0.30128315...	0.42996729...	0.36397156...	1

Figure: 1

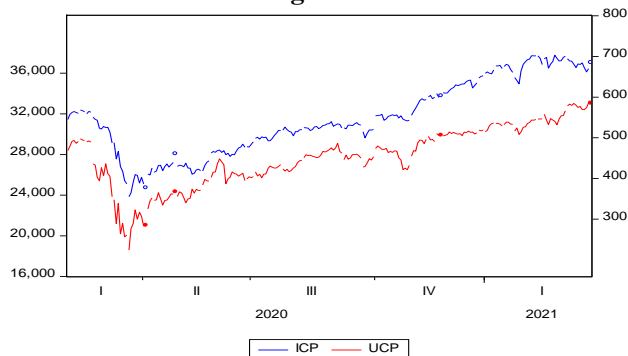


Figure: 2

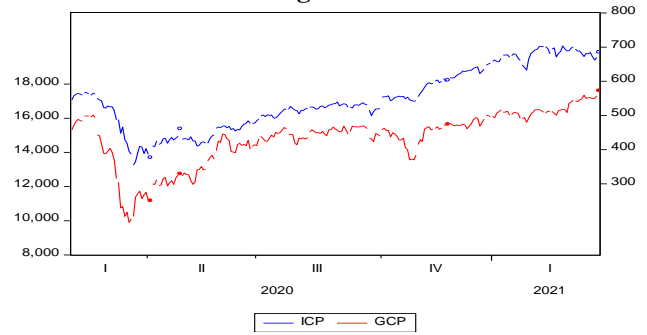


Figure:3

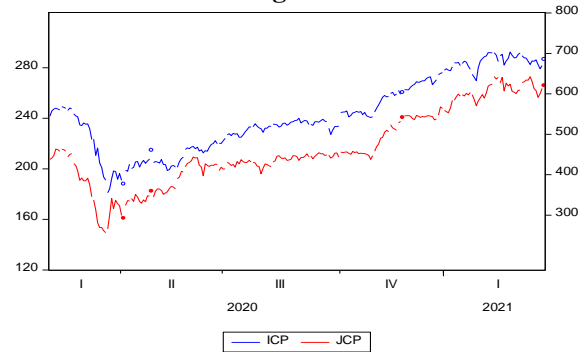


Figure: 4

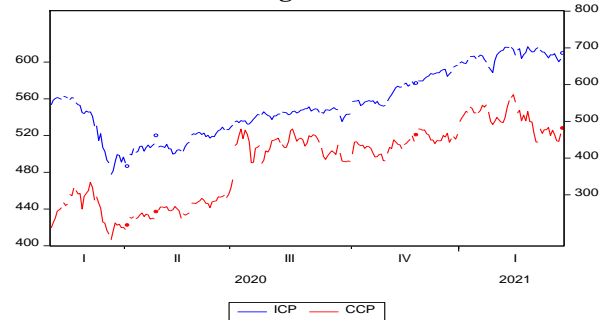


Table 3 reports the results of the correlation matrix across countries' stock market indices. The cross-correlation summary statistics provide preliminary view of stock market integration. The matrix depicts the presence of a positive correlation between all the selected indices.

Figure: 1, 2, 3 and 4 graphically presents the presence of co-movement trends among stock market indices of India with USA, China, Japan and Germany during the selected time frame.

Unit Root Test

Tables 4 & 5 consists of the result of the ADF and PP unit root test. The result indicates that none of the time series data is stationary at level (with constant, with constant & trend and without constant & trend) as the p-value in all the cases in more than 0.05%, therefore the null hypothesis that variables have unit root is accepted. Hence the data is converted into stationary at first difference.

Table 4: ADF

UNIT ROOT TEST RESULTS TABLE (ADF)						
Null Hypothesis: the variable has a unit root						
<u>At Level</u>						
With Constant	t-Statistic	CCP	GCP	ICP	JCP	UCP
	Prob.	-1.0829 0.4387	-0.8554 0.8009	-0.1809 0.9376	-0.1221 0.9445	-0.8273 0.8092
With Constant & Trend	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-2.4401 0.3580	-2.6117 0.2755	-2.8092 0.1954	-2.9388 0.1519	-4.0698 0.0079
Without Constant & Trend	t-Statistic	n0	n0	n0	n0	n0
	Prob.	0.9437 0.9081	0.4288 0.8055	0.8580 0.8946	1.0739 0.9262	0.3651 0.7892
<u>At First Difference</u>						
With Constant	t-Statistic	d(CCP)	d(GCP)	d(ICP)	d(JCP)	d(UCP)
	Prob.	-14.3116 0.0000	-14.4292 0.0000	-15.7071 0.0000	-9.2879 0.0000	-9.0896 0.0000
With Constant & Trend	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-14.2940 0.0000	-14.5087 0.0000	-15.8506 0.0000	-9.3829 0.0000	-9.2375 0.0000
Without Constant & Trend	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-14.2841 0.0000	-14.4471 0.0000	-15.0959 0.0000	-9.2508 0.0000	-9.0931 0.0000

Table 5: PP

UNIT ROOT TEST TABLE (PP)						
<u>At Level</u>						
With Cons...	t-Statistic	CCP	GCP	ICP	JCP	UCP
	Prob.	-1.7524 0.4036	-1.2094 0.6709	-0.2943 0.9224	-0.2948 0.9224	-0.8361 0.8067
With Cons...	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-2.4401 0.3580	-2.8713 0.1737	-2.8258 0.1894	-3.0350 0.1249	-3.2370 0.0797
Without C...	t-Statistic	n0	n0	n0	n0	n0
	Prob.	0.8675 0.8962	0.3168 0.7764	0.7808 0.8812	0.9483 0.9085	0.4733 0.8164
<u>At First Difference</u>						
With Cons...	t-Statistic	d(CCP)	d(GCP)	d(ICP)	d(JCP)	d(UCP)
	Prob.	-14.2705 0.0000	-14.5810 0.0000	-15.7527 0.0000	-15.4914 0.0000	-19.3788 0.0000
With Cons...	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-14.2508 0.0000	-14.8335 0.0000	-15.9829 0.0000	-15.5557 0.0000	-19.5103 0.0000
Without C...	t-Statistic	n0	n0	n0	n0	n0
	Prob.	-14.2038 0.0000	-14.5980 0.0000	-15.7455 0.0000	-15.4623 0.0000	-19.3883 0.0000

Source: Authors' calculation.

Notes:

- The table represents the results of ADF and PP unit root test
- *, **, and *** indicate significance at 10 per cent, 5 per cent, and 1 per cent levels, respectively.
- n0 indicate not significant
- Lag length based on SIC

Lag Length Selection

The study has considered the maximum resultant value of lag length as suggested by the above mentioned criterion. Therefore optimal lag length selection in this case is 5 (table 6).

Table 6

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-5653.457	NA	2.07e+14	47.15381	47.22632	47.18302
1	-5575.590	151.8402	1.33e+14	46.71325	47.14833*	46.88856*
2	-5548.101	52.45921	1.31e+14*	46.69250*	47.49015	47.01390
3	-5524.940	43.23231	1.33e+14	46.70784	47.86805	47.17532
4	-5514.276	19.46217	1.50e+14	46.82730	48.35008	47.44087
5	-5491.628	40.39006*	1.53e+14	46.84690	48.73224	47.60655
6	-5471.831	34.47937	1.60e+14	46.89026	49.13817	47.79600
7	-5454.264	29.86281	1.71e+14	46.95220	49.56268	48.00404
8	-5437.623	27.59638	1.85e+14	47.02186	49.99491	48.21978

Source: Authors' calculation.

Johansen co-integration Model

The results of the test are reported below in table 7 and 8:

To detect the co-integration between the variables, it is necessary to compare Eigen and Trace statistic's with their critical value. If Trace statistic and Maximum Eigenvalue exceeds the critical value for none (first row) the null hypothesis of no co-integration is rejected and an alternative hypothesis with the presence of one co-integrated vector is accepted. If critical value is rejected for 1 co-integrated vector than the hypothesis for 2 co-integrated vectors is accepted.

Table 7

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.134171	70.83098	69.81889	0.0414
At most 1	0.075038	35.82247	47.85613	0.4054
At most 2	0.041436	16.86793	29.79707	0.6498
At most 3	0.026017	6.584432	15.49471	0.6264
At most 4	0.000735	0.178574	3.841466	0.6726

Table 8

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.134171	35.00851	33.87687	0.0365
At most 1	0.075038	18.95454	27.58434	0.4180
At most 2	0.041436	10.28350	21.13162	0.7176
At most 3	0.026017	6.405858	14.26460	0.5617
At most 4	0.000735	0.178574	3.841466	0.6726

Source: Authors' calculation.

Notes: ** indicate significance at 5 per cent

As the result of the study rejects the null hypothesis that there is no co-integration between selected countries and accepts the alternative hypothesis that there exists long run co-integration between selected countries stock indices. The results further suggests to move with VECM model in order to explore the hidden facts of their relationship.

Vector Error Correction Model

The VEC has co-integration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge to their co-integrating relationships while allowing for short-run adjustment dynamics. The co-integration term is known as the error correction term since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

For all the selected countries the coefficients of error correction terms (ECT) with India was negative but not significant. Thus, the results in table 9 indicate lack of significant adjustments towards long run equilibrium in any dis-equilibrium situation.

Table 9

Error Correction:	D(DUCP)	D(DCCP)	D(DGCP)	D(DICP)	D(DJCP)
CointEq1	-2.596877 (0.38383)	-0.015175 (0.00536)	-0.335957 (0.22277)	-0.016030 (0.00798)	-0.004043 (0.00248)
—	[-6.76567]	[-2.83277]	[-1.50811]	[-2.00996]	[-1.62775]
D(DICP(-1))	-33.45253 (5.06180)	-0.129428 (0.07065)	-10.15941 (2.93776)	-1.136190 (0.10518)	-0.143329 (0.03276)
—	[-6.60882]	[-1.83203]	[-3.45821]	[-10.8027]	[-4.37566]
D(DICP(-2))	-28.26410 (5.87103)	-0.094461 (0.08194)	-11.67510 (3.40742)	-0.954187 (0.12199)	-0.145974 (0.03799)
—	[-4.81416]	[-1.15278]	[-3.42637]	[-7.82178]	[-3.84216]
D(DICP(-3))	-16.80026 (6.04413)	-0.170437 (0.08436)	-7.662647 (3.50789)	-0.716020 (0.12559)	-0.117662 (0.03911)
—	[-2.77960]	[-2.02041]	[-2.18440]	[-5.70135]	[-3.00828]
D(DICP(-4))	-10.00296 (5.49519)	-0.089141 (0.07670)	-5.786921 (3.18929)	-0.468065 (0.11418)	-0.110708 (0.03556)
—	[-1.82031]	[-1.16227]	[-1.81448]	[-4.09931]	[-3.11324]
D(DICP(-5))	-8.565822 (4.07869)	-0.007335 (0.05693)	-3.771897 (2.36719)	-0.152258 (0.08475)	-0.083928 (0.02639)
—	[-2.10014]	[-0.12886]	[-1.59341]	[-1.79657]	[-3.17981]

Source: Authors' calculation.

Granger Causality Test Results

The result of the test as depicted in Table 10 shows that there exists some kind of causal relationship between the Indian stock market and all the selected stock markets of developed countries. US-India and China-India depict Bi-directional relationships. The outcome of the causal relationship between US and Indian stock markets are rather intuitive as the US market is one of the world's developed securities market and has a heavy influence on the stock market of all countries. Hence it is not surprising that US stock market indices granger cause the Indian stock market. (Arshanapalli et al., 1995; Bose ICRA Ltd & Mukherjee, 2005; Click & Plummer, 2005; Dhanaraj et al., 2013; Hawati Janor et al., 2007). Our results in the selected time frame depict that the Indian stock market also granger cause U.S stock market in the short run.

Table 10

Null Hypothesis:	Lag Value	F-statistic	Probability	Decision	Causality	Direction of Causality
------------------	-----------	-------------	-------------	----------	-----------	------------------------

DUSA does not Granger Cause DINDIA	5	5.56547	7E-0.5	Reject	Uni-directional relationship	→
DINDIA does not Granger Cause DUSA	5	1.65803	0.1457	Accept		
DINDIA does not Granger Cause DCHINA	5	0.89451	0.4855	Accept	No relationship	—
DCHINA does not Granger Cause DINDIA	5	0.65403	0.6614	Accept		
DJAPAN does not Granger Cause DINDIA	5	2.76633	0.0190	Reject	Uni-directional relationship	→
DINDIA does not Granger Cause DJAPAN	5	0.94447	0.4529	Accept		
DINDIA does not Granger Cause DGERMANY	5	2.10834	0.0653	Accept	Uni-directional relationship	→
DGERMANY does not Granger Cause DINDIA	5	5.64755	6E-0.5	Reject		

Source: Authors' calculation.

The result of Granger Causality indicates that Uni-directional relationship between selected developed countries and Indian stock market except in case of China. The Uni-directional relationship suggests that USA, Japan and Germany influence Indian Stock market. The reliability of results can be anticipated as these countries are developed countries as compared to India, therefore their influence can be predicted. No relationship was found between India and Chinese stock market reason may be other countries are considering China as the generator of COVID virus and investors may hesitate to invest.

Variance Decomposition Analysis

The results of this analysis will provide further fruitful insights on pattern of international economic linkages. Statically if variable explains most of its own shock, then it do not allow variances of other variables and considered exogenous. (Palamalai et al., 2013a). The results of the test based on period of 1-10 trading days are presented below in table 11.

Table 11

Variance Decomposition of DCCP:						
Period	S.E.	DCCP	DGCP	DICP	DJCP	DUCP
1	6.322595	100.0000	0.000000	0.000000	0.000000	0.000000
2	6.389146	98.64876	0.773772	0.001059	0.535472	0.040939
3	6.449662	97.09547	1.233748	0.565824	0.967191	0.137765
4	6.473463	96.39177	1.612333	0.618011	1.031684	0.346203
5	6.477113	96.28606	1.637819	0.644844	1.084925	0.346349
6	6.480299	96.19219	1.675497	0.645030	1.111822	0.375456
7	6.480671	96.18236	1.682957	0.645809	1.113284	0.375592
8	6.480900	96.17615	1.685381	0.646353	1.115541	0.376575
9	6.480997	96.17335	1.687193	0.646352	1.115926	0.377183
10	6.481036	96.17229	1.687846	0.646417	1.116086	0.377357

Variance Decomposition of DGCP:						
Period	S.E.	DCCP	DGCP	DICP	DJCP	DUCP
1	271.2709	10.56885	89.43115	0.000000	0.000000	0.000000
2	278.5985	10.34917	85.53305	2.938666	0.000202	1.178914
3	285.3120	9.870895	84.04653	2.898631	0.237903	2.946042
4	285.8201	9.898694	83.97592	2.928761	0.237424	2.959206
5	286.2899	9.912312	83.77899	2.951152	0.317113	3.040434
6	286.4920	9.906702	83.74486	2.948638	0.328120	3.071677
7	286.5715	9.909721	83.72764	2.952990	0.333316	3.076336
8	286.6031	9.909821	83.71991	2.953951	0.336473	3.079845
9	286.6184	9.909671	83.71753	2.954052	0.337365	3.081378
10	286.6241	9.909739	83.71632	2.954253	0.337797	3.081890

Variance Decomposition of DICP:						
Period	S.E.	DCCP	DGCP	DICP	DJCP	DUCP
1	9.491475	12.71519	20.61006	66.67474	0.000000	0.000000
2	9.689612	12.20246	20.79041	65.79885	0.000808	1.207470
3	10.06325	11.42374	25.47520	61.35087	0.612443	1.137751
4	10.10896	11.33541	25.49119	60.99702	0.761355	1.415023
5	10.11566	11.32150	25.47260	60.91969	0.764369	1.521835
6	10.11615	11.32063	25.47295	60.91261	0.771786	1.522024
7	10.11646	11.32232	25.47146	60.91145	0.772476	1.522285
8	10.11652	11.32222	25.47178	60.91070	0.772498	1.522800
9	10.11655	11.32227	25.47198	60.91045	0.772499	1.522792
10	10.11655	11.32228	25.47197	60.91044	0.772506	1.522794

Variance Decomposition of DJCP:						
Period	S.E.	DCCP	DGCP	DICP	DJCP	DUCP
1	2.978665	18.92571	17.24850	0.977306	62.84849	0.000000
2	3.322698	14.76248	27.18982	4.447980	51.88758	1.712136
3	3.406250	14.51026	27.17221	4.537661	51.90397	1.875907
4	3.438843	14.24308	27.14501	4.506749	51.68014	2.425030
5	3.442019	14.21794	27.19589	4.498484	51.64770	2.439979
6	3.444700	14.20533	27.19811	4.498204	51.63507	2.463289
7	3.445774	14.19799	27.21169	4.495744	51.61864	2.475943
8	3.446264	14.19610	27.21949	4.495598	51.60926	2.479553
9	3.446458	14.19538	27.22167	4.495695	51.60587	2.481385
10	3.446557	14.19496	27.22329	4.495613	51.60377	2.482360

Variance Decomposition of DUCP:						
Period	S.E.	DCCP	DGCP	DICP	DJCP	DUCP
1	512.5742	12.05033	44.66121	2.176052	0.079396	41.03302
2	532.1060	12.25561	41.44437	5.546691	0.518425	40.23490
3	565.6324	12.46079	43.36784	5.157254	0.990094	38.02402
4	570.0611	12.64800	43.40166	5.453959	1.009941	37.48645
5	572.5938	12.63892	43.54637	5.472657	1.075856	37.28630
6	573.8263	12.63287	43.60665	5.477372	1.094077	37.19902
7	574.2258	12.63204	43.62324	5.480165	1.093613	37.17094
8	574.3833	12.63077	43.62902	5.480473	1.098080	37.16165
9	574.4571	12.63026	43.63206	5.480549	1.100199	37.15693
10	574.4873	12.63011	43.63304	5.480695	1.101216	37.15494

Cholesky Ordering: DCCP DGCP DICP DJCP DUCP

Source: Authors' calculation

The results give the indication that 67% (app.) of shocks in the Indian stock market were explained by own shocks on the 1st trading day, which has been reduced to 61% (app.) on the 10th trading day. The shocks of other indices in India ranges between 0.07% to 25% on the 10th day, indicating that the degree of influence by other stock indices is petite.

Moreover, the results indicate that all the stock indices, viz., China (100%) followed by Germany (89%), India (85.25%), Japan (63%) USA (41%) are considered to be exogenous stock markets, as the maximum variations because of shocks in stock returns are explained by themselves on 1st trading

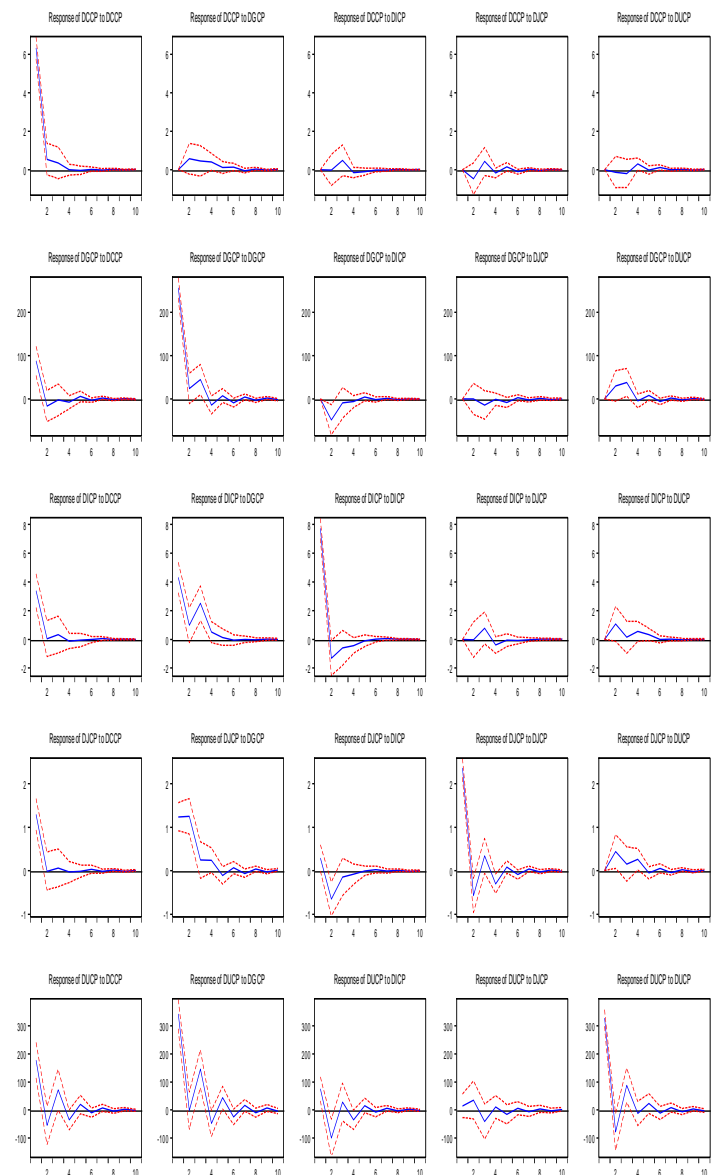
day. Furthermore China, Germany, India, Japan and USA accounts for 0.4% to 6.4%, 0.4% to 9.9%, 0.07% to 25% , 2.5% to 27%, 1.1% to 13% respectively of shocks explained in case of stock returns of other countries on 10th trading day. The results of the variance decomposition test further suggest that feasible opportunity exists for short-run portfolio diversification benefits, whereas in the long run portfolio diversification benefits are bit limited.

Impulse Response Analysis

The impulse response analysis in the form of 25 response graphs is presented in figure 5 in order to have a better glimpse of co-movement among stock market indices and their cross country analysis. The results as graphs are presented below:

Figure 5

Response to Cholesky One S.D. (i.f. adjusted) Innovations ± 2 S.E.



The X-axis represents the number of periods and the Y-axis represents the number of variations in variables with regard to a unit impulse. The results represent in how many days the effect of shocks in one market cools down in other markets. The impact of shock can either accelerate or decelerate depending on the situation. Here impulse response function is presented for the next 10 days.

The careful study of graphs represents its US, Japan and Indian market exerts some form of impact on all other stock indices. In the case of the Indian stock market, it can be observed that shock emanated from the market die out slowly in 4 to 5 trading days.

IV. Conclusion

From a policy perspective, it is assumed that highly co-integrated stock markets may give rise to financial stability, as they don't deviate from each other in the long run and investors cannot readily able to reap the benefits of diversification. However, profits can be made by the arbitrage process in the short run. The Correlation analysis depicts the existence of correlation among stock markets, although the degree of correlation varies from country to country. It implies that it is beneficial for Indian investors to invest funds in those markets where the degree of correlation is not very high. The long-run co-movement of selected stock markets is analyzed with the help of the Johansen Co-integration test, where the daily closing index for the period of 1st February, 2020 to 31st March, 2021 is taken into consideration. The result of the study suggest that in the long run, the Indian stock market is found to be integrated with other country's stock market analyzed in the study. On close analysis, it is found that the USA, Germany and Japan depict the presence of Uni-directional causal relations, but the suggest of the no such relationship with China. The reason behind such a Uni-directional relationship may be the increase in bilateral trade relations with these countries. The results give the implication that however the benefits of portfolio diversification cannot be maintained in the long run, but the scope of benefits is present in the short-run especially with countries that present less co-integration.

Together with that variance decomposition analysis gives a clear indication that all the stock market indices are exogenous in nature as the maximum representation of variations because of shocks in stock returns are explained by themselves on the 1st trading day. The degree of exogenous nature varies from country to country as depicted at the highest rate by China. The results Impulse response analysis further claims that shock emanated from other stock markets die out gradually in the next 5 trading days.

The results of the study suggest to accept the alternative hypotheses framed from the literature review for USA, Germany and Japan (a) There exists a significant level of financial integration between Indian stock market and stock market of selected countries During pandemic period of COVID-19(b) There exists significant long term causal relation between the Indian stock market and the stock market of selected countries. (c) There is significant scope to make optimal portfolio of different investment avenues through cross country investment.

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IMPACT OF SUSTAINABLE DEVELOPMENT ON ECONOMIC GROWTH: EVIDENCE FROM OECD COUNTRIES

Simmar Preet *Supriya Chopra **Ankita Gulati***

Purpose: *The purpose of the research is to estimate and evaluate the association amongst Sustainable Development and Financial growth in the OECD nations.*

Design/ methodology/ approach: *The study adopts the Conservational Kuznets Curve hypothesis as an approach to pact with the effect of Sustainable Development on Trade and Industry growth. For this a delineated setting of fifty-three statistics of sustainability given by Global Reporting Initiative on the thirty-five member countries of OECD focusing on the aspects like “materials”, “energy”, “biodiversity”, “emissions, effluents and waste”, “economic performance”, “market presence”, “labor practices and decent work performance indicators”. The study also aims to investigate the link between exhaustive list of sustainable indicators listed by Commission on SD and the GDP growth of the member economies of OECD over a period of fifteen years. For this a panel data regression analysis during 2004-2020 for thirty-five member countries of OECD has been employed. Also, another model is made to understand the relationship between Ecological Sustainable Development and Fiscal Growth.*

Findings: *The conservational hypothesis (Kuznets curve) describes the connection amongst ecological sustainability and monetary development. It is found that there is a correlation amongst monetary development and environmental education following the Kuznets curve. The result proposes that the conformist policies in the developed countries center more on the pollution control and supports the policies concentrating on environmental proficiency characteristics of sustainable development during the procedure of monetary expansion.*

Originality/ value: *The outcomes contribute to the literature by presenting the coexistence of monetary development and sustainability. This study provides insights into the policymakers and economist during the decisions on monetary advancement.*

Keywords: Sustainability; OECD; GDP per capita; Environment Sustainability Index; Environment Kuznets Curve; Global Reporting Initiative.

JEL Classification: C62, F18, G34, M14, M48, Q53, Q56.

All through the last few decades, the achievements of the mankind for advanced and progressed standards of living have been commendable. The developed, expanding and rising financial system have demonstrated noteworthy growth in the Gross Domestic Product rates. Nevertheless, the resources of energy were used inconsiderately for the monetary expansion. Supposedly, it is assumed that an escalation in the movements for monetary expansion inevitably suggests the degradation of the environment which eventually leads to ecological collapse. Conversely, other school of thought suggests that the economic growth and environmental degradation are conflicting concepts.

This gap in the empirical evidences regarding impact of growth in the economy on the environment gives direction to this study.

Sustainable Development

The objective of ecological development is to congregate the requirements of the current day short of conceding the capability of impending generations to congregate their personal requirements. So far in this period of extraordinary

trade and industry expansion, accomplishing this purpose can seem more of an objective than a certainty. As financial systems internationalize, innovative prospects to engender affluence and value of life are evolving from commerce, information-sharing, and gaining access to expertise.

The OECD Countries

The Organization for Economic Co-operation and Development (OECD) focuses on a wide-ranging continuum

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of sustainability interests throughout its curriculum of employment. Through offering associate nations with an exclusive opportunity to share encounters, explanations and best run-throughs, and by backing up those events with investigative study and know-how on financial, ecological and community issues, the OECD assistances offer nations with real-world methods for accomplishing sustainable development.

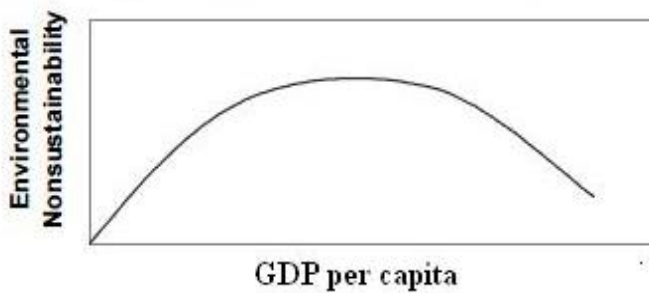
Sustainable Development & Economic Growth

In conjunction with the rapid pace of the international financial prudence, homo-sapiens have destroyed substantial environmental resource since industrial revolution. Environmental degradation is on an accelerating phase. Monetary expansion and sustainability have been much discussed area now. And, the association amongst monetary development and ecological deprivation has tremendously imperative policy implications. In case, a pessimistic connection amongst financial development and ecological deprivation, then the cogent preference for the mortal race is to constrain the financial expansion and to reduce environmental pollution. Contradictory to this, if the correlation amongst the financial expansion and the ecological dilapidation are congenial, then the coherent choice can be to accelerate economic growth, because rapid financial development will straight away be in the lead to the advancement of ecological excellence.

Environmental Kuznets Curve

The Environmental Kuznets Curve can be succinctly placed as ensues: At the insignificant degrees of financial advancement the intensity of ecological dilapidation is constrained to the influences of wherewithal fiscal events and to constrained multitudes of recyclable squanders. As financial advancement hastens with the expansion of economic development and food production, the prices of supply reduction commence to surpass the rates of reserve redevelopment, and garbage production grows in amount and perniciousness. Kuznets curve diagrams the theory that as a financial system improves, market forces at first place improve and then decline financial disparity.

Figure 1: Environmental Kuznets Curve



Source: A study on the economic theory, Vogel & Michael

I. Review of Literature

Kuznets (1995) discussed and familiarized us by Kuznets curve. The curve examines the relationship between income and inequality. In its initial phase of the curve increase in income leads to a strident surge in the income inequalities. Later, at the breakeven an increase in income tends to decrease in the inequalities. Grossman and Krueger (1991, 1995) did the application of the Kuznets curve on the data of 42 different countries and observed an inverse U-shaped relationship between environmental degradation indicator and GDP per capita. The research explains that initially at low level of per capita GDP the per capita emissions increases. After the per capita emissions reaches at its maximum point, it starts falling with the increase in per capita GDP. The research concluded that with increase in industrialization initially the environment gets degraded but after the threshold level, the economic growth and the environment quality both improves.

Stern, Common, Barbier (2006) decisively explored the hypothesis of the environmental Kuznets curve. An upturned U-form association amongst environmental deprivation and income per capita was recommended, so that, ultimately, expansion diminishes the ecological influence of financial interest. The theory is reliant on a prototype of the financial system in which there is no comment from the value of the environment to fabrication opportunities, and in which business has an unbiased influence on ecological deprivation. The definite infringement of these expectations creates structural difficulties in approximating the constraints of an EKC. The research recognizes other econometric difficulties with appraisals of the EKC and evaluates a number of experimental researches. The implication from some such EKC assesses that additional advancement will decrease ecological deprivation is reliant on the hypothesis that planet per capita income is usually disseminated when in fact average income is far lower than average income.

Shafik and Bandyopadhyay (1992) used different functional forms (log-linear, log-quadratic, and log-cubic polynomial) in which they took 10 different environmental indicators to test the inverse U-shape relationship. The results were based on the data collected for 30 years (1960-1990) from 149 countries. The bell shaped curve emerged only for two indicators showing an ambiguous pattern and a complex relationship between environmental sustainability and economic growth. Panayotou (2003) in the research used a log-quadratic model on a cross-sectional data collected from late 1980s for four different environmental indicators. The research results confirmed the presence of inverse U-shape relationship between environment sustainability and GDP. Another research done by Holtz-Eakin and Selden (1995) confirmed the existence of bell shaped Kuznets curve. The

results were based on the data of between per capita CO₂ emissions and GDP per capita and for the quadratic specification the curve is inverse U-shaped and for cubic specification the curve is N-shaped.

Ozocku and Ozdemir (2017) worked on the review of literature after which it was observed that still the results are ambiguous about to the relationship between environment sustainability and growth rate. Galeotti et al. (2009) mentioned that the EKC hypothesis is fragile as the values and relationship changes on the basis of selection of countries, to the estimation method applied, to the type of pollutant and the type of explanatory variables included in the analysis, and to the functional form chosen for the estimation. The research done by Ozocku and Ozdemir (2017); Dinda (2004); and by Lee et al. (2009) provides the similar results. Sterpu, Soava, and Mehedintu (2018); Liu et.al. (2018) used different set of dependent variables. Therein they used GHGs (of European Union (EU) countries) and ecological footprint (of three Eastern Asian Countries).

Awan Abdul Ghafoor (2013). The research principally explores the association amongst atmosphere and sustainable commercial advancement. The resultant goals of the research are to heave light on how environmental economic advancement can be accomplished. How can ecological humiliation be dictated? The investigation approach embraced by the authors has been illustrative in temperament for the reason that it primarily implicated the explanation of ecological concerns and indicating the techniques how they can be resolved? The research reckons that thoughtful consumption of ecological resources is a vital requirement for sustainable economic advancement.

Also, Cadoret and Padovano (2016) mentioned that there is a very important role to be played by the environment regulators and of political institutions which is not taken into consideration in the empirical analysis of Kuznets curve. Lagreid and Povitkina (2018) claim that the countries having governments who are non-corrupt with democracy and societal participation tends to create a lesser emissions of pollutants. This was empirically tested by taking data of 140 countries for a period of 42 years. As to the role of environmental regulation, a recent paper by Shapiro and Walker (2018) in the research has done on the US environmental policies for a period 18 years mentioned that presence of stringency of environmental policies has led to reduction in air pollutants emissions.

Porter and van der Linde [4]) supported the view that a stringent environmental policy tends to increase the competitiveness and thus the productivity through innovation. Such policies push the manufacturing units to work on their innovation processes leading to betterment in the environment

and products both. Brunel and Levinson (2013), Fisher and Newell (2008), and Galeotti et al. (2017) supported the view of stringent environmental policies by stating its advantages in terms of productivity and competitiveness. However they also argued because there are also limitations of such polies like its multidimensionality.

II. Research Design and Methods

Data

To investigate the connection amongst sustainability and commercial development, GDP per capita growth (annual %) is taken as the dependent variable. The data is analyzed from year 2004 to 2020 for 35 member countries of OECD.

Sustainable Development Indicators

The research underlines on examining the connection amongst the financial development and ecological advancement. The UNCED established the statistics that might perform an essential part in assisting nations make up apprised determinations pertaining to sustainable development. At the global level, the Commission on Sustainable Development endorsed Sustainable Development Indicators in 1995. They have been comprehensively examined, utilized and employed in many nations as the foundation of advancement of nationwide statistics of sustainable development. Table 1 offers the indicators of Sustainable Development: Guidelines & Methodologies provided by the UN.

Table 1: CSD Indicators of Sustainable Development

<i>Premise</i>	<i>Fundamental indicator</i>
Poverty	Percentage of inhabitants below federal poverty line
	Proportion of federal income of top to low down quartile
	Percentage of inhabitants utilizing an upgraded hygiene facility
	Percentage of inhabitants utilizing an upgraded water source
	Proportion of homes without power
	Percentage of metropolitan inhabitants in favelas
Governance	Proportion of inhabitants having paid inducements
	Quantity of premeditated homicides per 100,000 population
Health	Infant mortality rate
	Fraction of inhabitants with right to use basic wellbeing facilities
	Dietary position of children
Education	Aggregate consumption ratio to the last

	degree of principal schooling
	Grownup learning rate
Demographics	Inhabitants development rate
Natural hazards	Proportion of inhabitants in danger predisposed areas
Atmosphere	CO ₂ discharges
	Utilization of ozone exhausting ingredients
	Ambient absorption of air contaminants in metropolitan areas
	Percentage of land obscured by jungles
Oceans, seas and coasts	Proportion of aggregate inhabitants in coastline areas
	Percentage of fish stockpiles contained by nontoxic biotic thresholds
	Percentage of seafaring
Freshwater	Percentage of aggregate water reserves utilized
	Existence of fecal coliforms
Biodiversity	Percentage of continental area safeguarded
Economic development	Per capita Gross domestic product
	Debt to Gross National Income fraction
	Engagement-inhabitants ratio
	Leisure Industry impact on GDP
Global economic partnership	Ratio of Current account deficit (CAD) to GDP
Consumption and production patterns	Substantial concentration of the economy
	Yearly power utilization

Source: Indicators of Sustainable Development: Guidelines & Methodologies, Third Edition, United Nations

Panel data analysis

Panel data analysis methodology has been applied as the data set consists of cross sectional data of 35 countries studied over 16 years. The data consists of 16 observations for each of 35 countries. The panel statistics assessment is favorable in times of stationarity. ADF examination to evaluate the Stationarity of the statistics, Phillips-Perron assessment to evaluate the long-term / short-term correlation of the explanatory and descriptive variables, and further test to evaluate the collinearity / multi-collinearity among the variables was applied on a data set of 35 member countries of OECD in the span of recent 16 years. Table 2 enumerates the CSD indicator themes which are alongside the boundaries of the four mainstays – social performance indicators, economic performance indicators and environmental performance indicators emphasizes the multi-dimensional nature of sustainable development

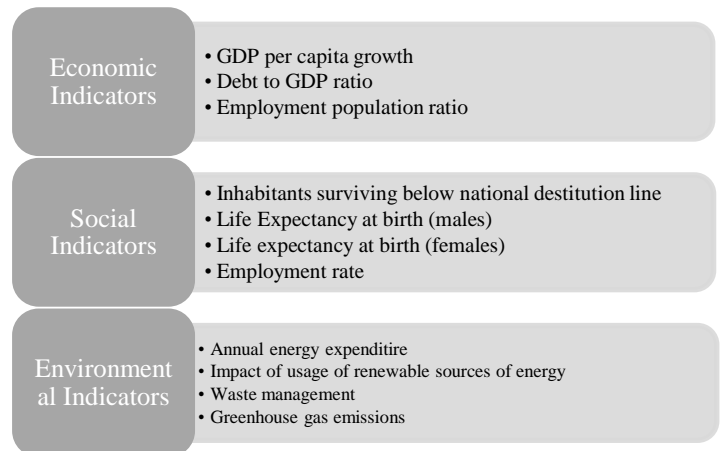
Table 2: CSD indicator themes

CSD Indicator themes
Atmosphere
Biodiversity
Consumption and production patterns
Demographics
Economic development
Education
Freshwater
Global Economic partnership
Governance
Health
Land
Natural Hazards
Oceans, Seas and Coasts
Poverty

Source: Indicators of Sustainable Development: Guidelines & Methodologies, Third Edition, United Nations

Anticipated to the restricted extent of the investigation, a set of indicators representative of the economic growth of a nation have been narrowed down keeping the broader view of the investigation to evaluate the correlation amongst monetary expansion and sustainable growth in mind. Figure 2 lists the selected indicators used in the regression modeling of the study:

Figure 2: List of select CSD Indicators of sustainable development



Source: Indicators of Sustainable Development: Guidelines & Methodologies, Third Edition, United Nations

The panel data regression model is given the form of equation:

Model 1:

$$Y_{it} = \alpha_i + \beta_{1i}debt_gdp_{it} + \beta_{2i}emp_pop_{it} + \beta_{3i}poverty_{it} + \beta_{4i}le_{fit} + \beta_{5i}lem_{it} + \beta_{6i}emp_rate_{it} + \beta_{7i}energy_{it} + \beta_{8i}ren_energy_{it} + \beta_{9i}waste_{it} + \beta_{10i}GHG_{it} + \epsilon_{it}$$

In the above equation, Y_{it} represents the dependent variable, i.e., GDP per capita growth (annual %) of OECD countries. The independent variables on the other side of the equation correspond to the statistics of sustainability. Table 3 itemizes the comprehensive list of gauges of sustainability distinguished by CSD.

Table 3: Variables defined

Variable	Description
debt_gdpit	Debt to GDP ratio
emp_popit	Employment population ratio
povertyit	Percentage of inhabitants surviving below national destitution line
le_fit	Birth Life expectancy (males)
lemit	Birth Life expectancy (females)
emp_rateit	Employment rate
energyit	Twelve-monthly power expenditure
ren_energyit	Portion of renewable sources of energy
wasteit	Waste management
GHGit	Greenhouse gas emissions

In the panel data regression model, FE technique is applied as the sample of the components of the chosen sample compile an unnavigable sample of 35 member nations of OECD. The panel data regression modeling allows the investigation of control of the autonomous variables on every one of the nation's Gross Domestic Product per capita separately and later, together.

III. Results and Discussion

Table 4 exhibits the ADF panel data unit root tests' results for investigating the stationarity of the series.

Table 4: Augmented-Dickey Fuller Unit Root Test

Series	LL-statistic	Prob.	Unit Root
Y	-3.50	0.00	No
debt_gdpit	-7.25	0.00	No
emp_popit	2.32	1.00	Yes
povertyit	3.22	1.00	Yes
le_fit	-4.11	0.00	No
lemit	-3.25	1.00	No

emp_rate _{it}	2.01	1.00	Yes
energy _{it}	9.65	1.00	Yes
ren_energy _{it}	8.14	0.00	Yes
waste _{it}	-3.33	1.00	No
GHG _{it}	2.10	1.00	Yes

The Augmented Dickey Fuller assessment indicates the existence of the unit root in Employment population ratio, percentage of inhabitants surviving below nationwide deficiency line, rate of employment, almanack consumption of energy, segment of renewable sources of energy in total energy usage and Green-house gas emissions. The stationarity of the GDP growth rate series implies that the GDP growth rates show signs of low volatility and indicate regressing behavior. The empirical evidences from the literature reviewed also endorse the GDP growth rates of especially developed countries exhibiting low volatility over time. Apposite runs of differentials were applied to achieve stationarity of the data series of Employment population ratio, percentage of inhabitants surviving below nationwide scarcity line, rate of employment, twelve-monthly consumption of energy, portion of renewable sources of energy in total energy usage and Green-house gas emissions. The Table 5 and Table 6 show the estimates of the regression model and its statistics results.

Table 5: Regression Model estimation

Independent Variable	Dependent Variable: Gross Domestic Product growth rate			
	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.32	6.44	4.12	0.25
Debt to GDP ratio	0.52	0.21	3.23	0.21
Employment population ratio	0.85	0.11	4.14	0.32
Percentage of inhabitants surviving below national destitution line	0.92	0.31	1.21	0.14
Birth Life expectancy (males)	0.23	0.12	2.22	0.07
Birth Life expectancy (females)	0.48	0.11	3.32	0.18
Employment rate	0.56	0.06	0.41	0.06
Annual energy consumption	0.92	0.36	0.47	0.22
Portion of renewable sources of energy	0.92	0.45	1.32	0.15
Waste generation & management	0.96	0.32	0.14	0.25
Greenhouse gas emissions	0.99	0.14	0.55	0.66

Table 6: Regression Statistics

R-squared	1.72
Adjusted R-squared	1.45
F-statistic	625.55
Prob(F-statistic)	0.65
Durbin-Watson stat	0524
Log likelihood	-1.06
Schwarz criterion	3.55

From the table 6 above, which give the regression estimation and statistics of the Regression model, a reasonably high R^2 and Adj R^2 values are observed. Furthermore, the Durbin-Watson indicator is additionally appropriate at 0.15, indicating extremely low or zero probability of autocorrelation in the data set as it is well in the range of 0 and 4.

The above paradigm examines the connection amongst fiscal progression and sustainable development of the member OECD countries. The prototype evaluates the consequences of financial, societal & ecological statistics of sustainable advancement on the monetary growth of the nation taken in the section. The employed paradigm is exemplified by permanent effects, divert is continuous term, and the gradient measurements diverge amongst the representative OECD nations. The purpose of the paradigm is to examine the consequence of the descriptive variables on Gross Domestic Product per capita of the nation. The experimental conclusions represent considerable arrangement of the statistics of sustainable development with the statistic of the nation's economic growth.

Model 2:

Environmental Sustainability Index

The Environmental Sustainability Index is a complex indicator that tracks a disparate set The Environmental Sustainability Index offers an apparatus of usual reserve perpetuities and conservational history, contamination pillories and streams, and reserve abstraction rates as well as recognized apparatuses and capabilities to modify imminent contamination and reserve usage routes. The table shown below provides a comprehensive EPI Structure offered by Global Metrics for the ecosystem.

Table 7: EPI framework 2016 given by Global Metrics for the environment, Environmental Performance Index, Yale University

Classification	Index
Ecological Health	Ecological Hazard Exposure
	Domestic Air Quality
	Air Contamination – Mean Exposure to PM2.5

Ecosystem Vitality	Air Contamination – Mean Exposure to NO ₂
	Precarious Hygiene
	Water Consumption Quality
	Wastewater Management
	Variation in Forest Cover
	Fish Reserves
	Continental Safeguarded Areas
	Aquatic Protected Areas
	Genus Fortification (National)
	Genus Fortification (Global)
Drift in Carbon Intensity	
Variation in CO ₂ Emissions per kilowatt hour	

Source: Global Metrics for the environment, Yale University

Correlation amongst Ecological Sustainable Development and Fiscal Growth

The exploration employs the panel data to approximate the correlation amongst sustainable development and the monetary growth arrangements for the member countries of OECD. The estimation model is given as below:

$$ESDI = \beta_1 + \beta_2 GDP_{it} + \beta_3 Tr_Open + \beta_4 Ind + \epsilon$$

where,

ESDI: Environmental Sustainable development Index

GDP_{it}: Gross Domestic Product per capita

Tr_Open: Market-directness, a fiscal metric computed as the percentage of nation's total commerce to the nation's GDP.

Ind: Industry value added (% of GDP) as Industrialization.

$$\beta_1, \beta_2, \beta_3, \beta_4 > 0$$

The study adopts panel data modeling, Hausman's test with fixed effects, OLS estimation, Lagrange Multiplier theorem and VECM to approximate long-term co-association amongst the variables. The explanatory variables are country-specific economic variable which include the GDP per capita, trade variable and industry value-added (as a % of GDP) termed as industrialization. Table 8 contributes the results of Lagrange Multiplier hypothesis and Hausman's test for panel data to assume the appropriate effects model.

Table 8: Lagrange Multiplier and Hausman's Test Results

Test	Test-Statistic	P-value	Result
LM	105.52	0.0055	Random Effects
Hausman	8.54	0.4122	Random Effects

As the p-value for the Lagrange Multiplier is <5% and for Hausman's equation test is >5%, both the tests suggest OLS estimation with Random effects. The study proceeds the panel data modeling with random effects as suggested by Lagrange Multiplier and Hausman's RE/FE model. The table below gives the results of the OLS estimation model 2:

$$ESDI = \beta_1 + \beta_2 GDPit + \beta_3 Tr_Open + \beta_4 Ind + \epsilon$$

Table 9: Model 2 OLS estimation results

Explanatory variables	Coefficient	t-statistic	Probability
GDP per capita	0.00251	3.5415	0.0024
Trade openness	0.01414	4.2142	0.0218
Industrialization	0.03282	3.9842	0.0085
F	6.5242		
P-value	0.0011		
R2	0.8875		
Adjusted R2	0.8972		

IV. Conclusion

The association amongst Ecological Sustainability and monetary development for representative OECD nations has been developed. The conservational hypothesis (Kuznets curve) describes the connection amongst ecological sustainability and monetary development. The study uses the Environmental Sustainability Development Index to define the connection amongst commercial development and environmental expansion. The empirical results of Regression model 2 reiterate the correlation amongst monetary development and environmental education following the Kuznets curve. The result proposes that the conformist policies in the developed countries center more on the pollution control and coalesce the policies concentrating on environmental proficiency characteristics of sustainable development during the procedure of monetary advancement.

The elemental intention of the investigation is to evaluate the association amongst financial development and sustainable development, for which a dependable setting of sustainability statistics was chosen. A defined convention of sustainability gauges documented by CSD at the UNCED that could perform a critical part in assisting nations achieve apprised determinations regarding sustainability were chosen as parameters to represent Sustainability indicator of the nations. There are additional sustainability gauges held by CSD, nevertheless few of them are identified as the caption gauges. The CSD disconnects the sustainability gauges into the subsequent rudimentary groups: Scarcity, Ascendancy,

Wellbeing, Edification, Natural Threats, Troposphere, Terrestrial, Seas, Pecuniary development, Worldwide pecuniary collaboration, and Expenditure & fabrication arrangements. Every Single caption gauge is the greatest ambassador of its individual classification. The sustainability statistics have unique consequence in OECD representative nations. The Organization for Economic Co-operation and Development utilizes its abundance of evidence on a comprehensive assortment of issues to assist administrations' nurture affluence and battle abject poverty throughout pecuniary growth and economic permanence. Organization for Economic Co-operation and Development facilitates to safeguard the ecological consequences of pecuniary and social advancement are considered. OECD's job is based on continuous supervising of incidents in representative nations as well as elsewhere in the Organization for Economic Co-operation and Development area and comprises frequent predictions of short-term and medium-term pecuniary improvements. The Organization for Economic Co-operation and Development Secretariat accumulates and evaluates data, after which agencies examine strategy concerning this data, the Council produces rulings, and then administrations execute commendations.

The statistics demonstrated to be statistically considerable for the set of Organization for Economic Co-operation and Development representative nations; nevertheless, the disproportion amongst the numbers parades the requirement for sundry strategies, procedures and agendas that should be functional at the countrywide level. Additionally, the constrictive of the supervisory structure could produce outcomes in the required course. On the unabridged act procedure of sustainable development founded on societal, pecuniary and ecological physiognomies demarcated by income scarcity, income disparity, hygiene, clean consumption water, access to power, existing circumstances, exploitation, impermanence, wellbeing care conveyance, alimentary status, edification level, inhabitants, environment change, ozone layer exhaustion, air quality, use of land and desertification, waste generation, waste management and energy use attributes of each country must be expanded.

The two models that assess the OECD member countries for their correlation between trade and industry development and sustainable development show agreement for all the indicators of sustainability. Analyzing Gross Domestic Product development rate and sustainable development in the member OECD countries, it can be concluded that Waste generation & management, Green-house gas emissions and annual energy consumption extant the maximum coefficients and consequently should be reflected with larger concern. At the national level, the considerable digression of the coefficients discloses the opportunities and weaknesses of each country based on diverse socio-economic scaffold.

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IS OLA DOORWAY TO TWO WHEEL R‘EV’OLUTION A STRATEGICAL DECISION OR NOT -A CASE STUDY

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The study attempted to investigate the current two-wheeler electric vehicle (EV) scenario in India, factors that favour EVs, and barriers to electric two-wheeler adoption in India. In India, many companies sell electric vehicles (EVs) in the two-wheeler category, and Ola Electric has also entered the EV production market. The study is focused on whether the decision taken by Ola Electric to enter the two-wheeler electric vehicle industry is a strategic decision or not. The study discovered a good potential for the Two-Wheeler Electric Vehicle (EV) in India, but it also highlighted some of the challenges that must be overcome for the easy adoption of electric two-wheelers in India.

JEL Classification Code: M31



Two-wheeler electric mobility has more than twenty OEMs in India, and new brands are expected in the near future. There are many electric vehicles (EVs) in the two-wheeler category in India, thus it's clear that electric vehicles are the future of mobility. Nitin Gadkari, Union Minister of Road Transport and Highways, said about EVs "India is moving ahead towards making electric vehicles (EVs). In due course, we will be the number one EV maker in the world."

Petrol and diesel prices are at all-time highs, which is the crucial factor in favour of EVs. Because of the cost advantages, EVs are more desirable than conventional vehicles. Many problems in India can be solved with electric vehicles, such as air pollution and high oil import costs that deplete our foreign exchange reserves. These are two examples of these issues. We know that any new technology, however, comes with a price at first. EVs also cost more than

their counterparts for petrol. As more electric vehicles are created, the cost of lithium-ion batteries, which make up about half of the cost, has fallen dramatically over the previous decade.

As Jeetender Sharma, MD & Founder, Okinawa Autotech, said about EV growth, "India's EV sector has been rapidly growing over the last three years as both the central and state governments have been taking initiatives to promote adoption of EVs."

Keeping all the above factors in mind, Bhavish Aggarwal, Chairman and Group CEO, Ola, said, "Electric is the future of mobility and we are reimagining the entire user experience." He decided to manufacture two-wheeler electric vehicles.

Ola Electric Mobility Private Limited

Based in Bangalore, India, Ola Electric Mobility is a manufacturer of electric two-wheelers. The company's manufacturing facility is located in the Indian state of Tamil Nadu. Ola Electric Mobility, a wholly-owned subsidiary of Ola Cabs' parent company ANI Technologies, was founded in 2017 as a standalone entity. After separating from its parent firm in March 2019, Ola Electric was bought out by its creator, Bhavish Aggarwal. After signing an agreement with the Government of Tamil Nadu, the firm declared its plan to build a manufacturing factory in Tamil Nadu at a cost of 2,400 crore in December 2020. A 500-acre plot of land was purchased near Pochampalli, and construction of the facility began in February 2021.

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Ola chairman and Group CEO Bhavish Aggarwal said, "We are building the world's largest two-wheeler factory which will have 15 percent of the world's two-wheeler production with production of 10m scooters or one scooter every 10 seconds. This scale is the only way we can bring the electric revolution here fast and make electric two-wheelers accessible to everybody. "

Mr. Aggarwal announces 'Mission Electric' – "a pledge that no petrol two-wheeler will be sold in India after 2025. This is a mission that we are putting forward to the industry and to the consumers to reject petrol and fully commit to electric."

Funding of the project

To collect the funds for the project, Ola Electric raised \$250 million from Softbank in July 2019. Furthermore, the company raised \$100 million of debt from the Bank of Baroda.

Highlights of the product:

The following are the key highlights of the products launched by Ola:

- The top speed is 115 km/h.
- 181 KM range
- 3.0 seconds from 0 to 40 km/h.

Product Specification and Price:

Currently, the company has launched two variants of two-wheelers named Ola S1 and Ola S1 Pro, which have very good specifications (Exhibit-1). The ex-showroom range of the two-wheeler is Rs. 85,099 to 1,29,999 depending on the model and state (Exhibit-2).

The Current Two-Wheeler Electric Vehicle (EV) Scenario in India

The idea of driving a battery-powered vehicle instead of a normal fossil fuel-powered vehicle may take some time to catch on with Indian consumers. In large part, this is due to the lack of charging infrastructure in the country at this time. However, the times are swiftly changing. In a few years, the number of EVs sold is likely to skyrocket. Unfortunately, most of the electric vehicle manufacturers are now facing issues such as parts shortages and limited dealer outlets. The majority have begun growing manufacturing and dealer networks as well as expanding the number of cities where EVs can be purchased, among other things. Chairman and Managing Director, Hero MotoCorp, Pawan Munjal, rightly said of the electric vehicle's future, "For the world and for us, the way forward is electrification." At present, Hero MotoCorp, the world's No. 1 two-wheeler OEM, has a combined manufacturing capacity of 9.8 million units across 5 plants in five states. The following is the comparative details of electric two-wheelers sold in India in FY2020 and FY2022.

ELECTRIC TWO-WHEELER SALES IN INDIA				
Company	FY2022	FY2020	Change (in units)	Change (in %)
Hero Electric	65,303	14,771	50,532	342
Okinawa Autotech	46,447	6,972	39,475	566
Ampere Vehicles	24,648	5,903	18,745	318
Ather Energy	19,971	4,401	15,570	354
Pure Energy	14,862	2,079	12,783	615
Ola Electric	14,371	0	14,371	NA
TVS Motor Company	9,458	837	8,621	1030
Revolt Intellincorp	7,623	1,793	5,830	325
Benlign India Energy and Technology	7,084	1,108	5,976	539
Bajaj Auto	7,012	1,470	5,542	377
Jitendra New EV-Tech	3,788	619	3,169	512
Mew Electricals	2,760	327	2,433	744
Goreen E-Mobility	2,741	227	2,514	1107
KLB Komaki	1,882	38	1,844	4853
RGM Business Plus	791	0	791	NA
Eithor Energy	525	57	468	821
Eco Fuel Systems	439	48	391	815
Booma Innovative Transport Solutions	241	0	241	NA
Chandana Corporation	233	0	233	NA
Others	1,159	396	763	193
Total	2,31,338	41,046	1,90,292	464

Source: <https://www.autocarindia.com/industry/new-car-suv-sales-sees-12-percent-uptick-in-fy22-424045> retrieved on 11-05-2022 at 10:22.

From the above, we can interpret that top six companies for the FY22: Hero Electric (65,303 units), Okinawa Autotech (46,447 units), Ampere Vehicles (24,648 units), Ather Energy (19,971 units) and Pure Energy (14,862 units), Ola Electric (14,371 units) accounted for 80 % of the market share.

Factors that favour EVs

As a result of expanded government policies encouraging battery-powered vehicles, the electric two-wheeler market in India is growing rapidly. In addition, environmental awareness is on the rise. The price of petrol is rising, which is again in favour of EVs. There were many provisions and rebates for battery-powered automobiles in the 2019 Union Budget. Environmental pollution and greenhouse gas emissions are becoming increasingly well-known, and this knowledge is developing.

There has been an increase in the adoption of electric vehicles in India due to government incentives and long-term fuel savings. In addition, they are more environmentally friendly than other options.

Challenges to Electric Two-wheeler Adoption:

"Lack of charging infrastructure is still a chicken and egg problem as without it there is range anxiety and, as a result, EVs do not proliferate. Our effort is to break that cycle," says Sameer Ranjan, one of three co-founders of Charzer.

Two-wheeler electric mobility has more than twenty OEMs in India, and new brands are expected in the near future. So we can expect tough competition in future.

In India, the idea of owning a battery-powered vehicle instead of one that runs on fossil fuels would require some time for buyers to warm up to it.

Providing home service as the company claims can be a big challenge for the company. Initially, it may be possible, but when the number of customers increases, it will be very difficult to provide home service to all.

The following are the major challenges for the adoption of electric two-wheeler:

- High cost of Electric Two-wheeler as compare to the traditional one.
- Limited battery life which required replacement and the cost of battery is very high.
- Lack of charging stations and lack of proper charging set up in the home.
- The performance of the EV's can be affected by the temperature. In case of extreme hot and extreme cold regions EV's are not likely to perform well.
- Charging time is very long as compare to the traditional one.
- Lack of standardization in terms of charging port. This is becoming a hurdle to setting up a proper charging ecosystem as every second electric vehicle-making company has its own different charging port.
- Lack of service station.
- Will increase the demand of electricity which dependent on burning fossils for generating electricity. Indirectly it will add to the air-pollution which is against the objective of introducing EV's.
- Risk of mishaps is another very important challenge for the adoption of EV's as we have seen several electric scooters from manufacturers like: Ola, Pure EV, Okinawa have been involved in fire accident.

Discussion Points

- Is the decision taken by the company to enter the two-wheeler electric vehicle industry justified?
- What other options are there for raising funds for the company?
- Do the SWOT Analysis of Ola Electric.
- By using Porter's Five Forces framework, a company can decide which strategy to adopt.

Abbreviations Used

EVs – Electric Vehicles
 OEMs - Original Equipment Manufacturers
 KM – Kilometre
 KW – Kilowatt
 KMPH – Kilometre per hour

Exhibit-1: Specification



	Ola S1	Ola S1 Pro
MAX SPEED	90 KMPH	115 KMPH
0-40 KM/H	3.6 s	3 s
RANGE	121 KM	181 KM
MODES	Normal, Sports	Normal, Sports, Hyper
COLOURS		
PEAK MOTOR POWER	8.5 kW	8.5 kW
EX-SHOWROOM PRICE	₹99,999	₹1,29,999

Exhibit-2: Price

EFFECTIVE EX-SHOWROOM*	Ola S1	Ola S1 Pro
DELHI	₹85,099	₹1,10,149
GUJARAT	₹79,999	₹1,09,999
MAHARASHTRA	₹94,999	₹1,24,999
RAJASTHAN	₹89,968	₹1,19,138
ALL OTHER STATES	₹99,999	₹1,29,999

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