

# IMI Konnect

ISSN 2321 – 9378

Volume 11, Issue 3, 2022

An IMI Kolkata Publication

## Highlights

**Monopolization of Telecom Sector | Empathy Gap in Organizational Practices | Quality Aspects in Indian OFDs | Privacy and Security Concerns with Electronic Health Records |**



## **About *IMI Konnect***

*IMI Konnect* (ISSN 2321 9378) published quarterly from International Management Institute Kolkata is an open access scholarly publication in Management. It publishes original research articles, case studies, opinion pieces and viewpoints in business and interdisciplinary areas in management by scholars, business thinkers, practitioners and academicians. The publication currently enjoys a pan India reach and a growing audience in the international markets.

There are no processing fees or publication charges for publishing in *IMI Konnect* and publication considerations are entirely based on the quality of the contribution based on peer review that justifies the theme of specific issue or the overall aim.

## **Editorial Team**

### **Editor-in-Chief**

**Rituparna Basu**, IMI Kolkata, India

### **Associate Editors**

*Economics, Finance & Strategy*

**Sahana Roy Chowdhury**, IMI Kolkata, India

*Organizational Behaviour & Human Resources*

**Roma Puri**, IMI Kolkata, India

*Operations Management*

**Rohit Singh**, IMI Kolkata, India

*Management Information Systems and Analytics*

**Avinash K Shrivastava**, IMI Kolkata, India

### **Editorial Assistant**

**Amrita Datta**, IMI Kolkata, India

## **Editorial Advisory Board**

**Arindam Banik**, IMI Delhi, India

**Anoshua Chaudhuri**, San Francisco State University, USA

**Arpita Mukherjee**, Indian Council for Research on International Economic Relations (ICRIER), India

**Damodar Suar**, IIT Kharagpur, India

**Madhu Vij**, Faculty of Management Studies, India

**Subhrangshu Sekhar Sarkar**, Tezpur University, India

**Syagnik Banerjee**, University of Michigan-Flint, USA

# Contents

## *Article*

- Monopolization of Indian Telecom Sector: Back to Square One?** 1  
*Vivek Jadhav*
- Examining Quality Aspects in Indian Online Food Delivery Services during COVID-19 Pandemic: An NLP-based Qualitative Approach** 15  
*Lan Ma, Arghya Ray, Varda Sharma and Pradip Kumar Bala*
- We Need to be Gender Inclusive, Not Gender Neutral** 31  
*Priya Kataria and Shelly Pandey*
- Privacy and Security Concerns with Electronic Health Records- Shreds of Evidence from India** 41  
*Vinaytosh Mishra and Monu Mishra*

## Manuscript Submission

- IMI Konnect publishes original unpublished articles, case studies, opinion pieces and viewpoints
- Articles – full-fledged research articles
- Case Studies – case studies with citations, references and exhibits.
- Opinion Pieces – short write-ups involving opinion of experts from academia and/ or industry
- Viewpoints – firsthand perspectives of experts on pertinent issues

The manuscript should be within 2500-4000 words including an abstract of around 150 words, 3 to 5 key words and references in APA format. Any mathematical expressions or equations or technicalities of methods in the main text if required, may be explained in the Appendix. Appendix should be placed before References.

Academicians, practitioners and researchers are welcome to submit their original unpublished contributions on contemporary issues and topics related to business, viz. economics, finance, operations, strategy, OB & HR, analytics and marketing.

Please register at <https://imikonnect.imik.edu.in/> to submit your articles online.

and/or mail your manuscript to: [manuscript.konnect@imi-k.edu.in](mailto:manuscript.konnect@imi-k.edu.in)

Kindly adhere to the submission guidelines mentioned at <https://imikonnect.imik.edu.in/submission-guidelines.php>.

For copies and queries, contact editorial team at

**Email:** [imikonnect@imi-k.edu.in](mailto:imikonnect@imi-k.edu.in)

**Telephone:** +91 33 6652 9664

**Address:** Amrita Datta

IMI Kolkata, 2/4C, Judges Court Road, Alipore, Kolkata 700027, India

# Monopolization of Indian Telecom Sector: Back to Square One?

Vivek Jadhav\*

## Abstract

*The Indian telecom sector has seen a long journey from a monopolized market to a competitive market structure. The sector regulator, as well as competition laws, have played a very critical role in the expansion and the development of the telecom sector in India. Over a period of time, efficiency, affordability and accessibility have all increased. But recent incidents are pointing out the critical side of the telecom sector. The Herfindahl-Hirschman Index (HHI) as a common measure of market concentration is calculated. The concentration index is showing an upward movement where the overall gain of the telecom sector is negative. These are the signs of monopolization of the market. The sectoral regulator (Telecom Regulatory Authority of India) and the Competition Commission of India (CCI) must be on the same page to promote competition and protect consumer welfare.*

**Keywords:** Market Concentration, Herfindahl-Hirschman Index, Competition, Regulation

## 1. Introduction

The Indian telecommunications sector has progressed from a monopolistic structure to a competitive one. As part of the process of liberalization, attempts were made to replace the Monopoly and Restrictive Trade Practices Act (MRTP) with the Competition Act 2002 and to establish the Telecom Regulatory Authority of India (TRAI) as the regulatory agency. These initiatives were useful to the telecommunications industry because they contributed to the development of a more competitive environment within the industry.

Over the course of the period from 2001-2019, the number of people who subscribe to mobile phone services rose from 3.58 million to 1161.71 million. During the same time period, there was a rise in tele-density that went from 3.58 per cent to 90.10 per cent (Department of Telecommunications, 2022). In terms of telephone users, the percentage of private operators increased from 57.01 per cent in 2006 to 88.72 per cent in 2019.

In 1991, a new economic policy was announced, which made the telecommunications industry available to private investors. In 1994, the government launched the National Telecom Policy, which supported the development of the industry by

---

\* PhD Scholar, Madras School of Economics, Chennai, India

providing world-class services at affordable costs, promoting exports and encouraging domestic and foreign direct investments. The entry of private players into the market made the establishment of regulations absolutely necessary. As a direct consequence of this situation, TRAI came into being in 1997 with the purpose of regulating telecommunication services. TRAI has been adopting and changing the rules from time to time, which has resulted in the transformation of the once government owned monopolistic telecom sector into an open and competitive market for several operators. Soon after that, in the year 1999, the New Telecom Policy was announced. This policy provided a detailed plan for the future. It opened all of the sectors in the field of telecommunications, which resulted in massive privatization.

According to Shanthi (2005), the privatization and liberalization that took place in the telecommunications industry helped to bring about competition in the market. This competition has resulted in cheaper tariffs as well as an increase in the number of products and services. Another beneficiary of this competition is the customer. Customers are drawn in by competitive tariff structures (Singh & Tiwari, 2019). Melody (1999) believes that an independent regulatory system is vital and that it should be considered alongside privatization and liberalization. It is of the utmost importance that the competition between the key players in an industry be relocated from the realm of

politics and bureaucracy into the marketplace, with the ultimate goal being the accomplishment of the performance goals set out by government policies for the industry. This is only going to be the case if regulatory decisions are made based on the actual merits of the issue at hand, rather than on the basis of political favouritism or the backdoor influence of the most powerful corporate actors. This can only be accomplished via the use of a regulatory procedure that is both independent and transparent (Melody, 1999). Independent institutions are essential for sectoral growth.

Institutions can be seen as humanly devised constraints that influence human interaction (North, 1991). Institutions have an effect on the players in the market via regulations and incentives; more precisely, institutions govern the behaviour of players in the market. The economic regulations are the rules that govern the firms, while the competition laws encourage both efficiency and innovation in the market (Kumar, 2006). According to Almunia (2010), market efficiency may be improved by the implementation of regulations as well as competition rules. Regulations try to achieve consumer welfare by directly influencing prices, whereas competition laws achieve consumer welfare by encouraging and ensuring competition among market players. Both regulations and competition aim to improve the well-being of consumers. However, regulations accomplish this goal more directly than competition laws do (Katz, 2004). Long term, competition rules

may benefit welfare because they prevent market monopolization, which is a major threat to economic growth. In a nutshell, regulations and competition laws both promote efficiency as a means to improve consumer welfare in an environment where competition is an essential condition. However, the present circumstances seem to be troublesome for competition in the telecommunications industry, which could create a dominant position for players. The abuse of such a dominant position is anti-consumer and also affects market access (Nag, 2014). Therefore, prevailing competition should be the important objective of the policy.

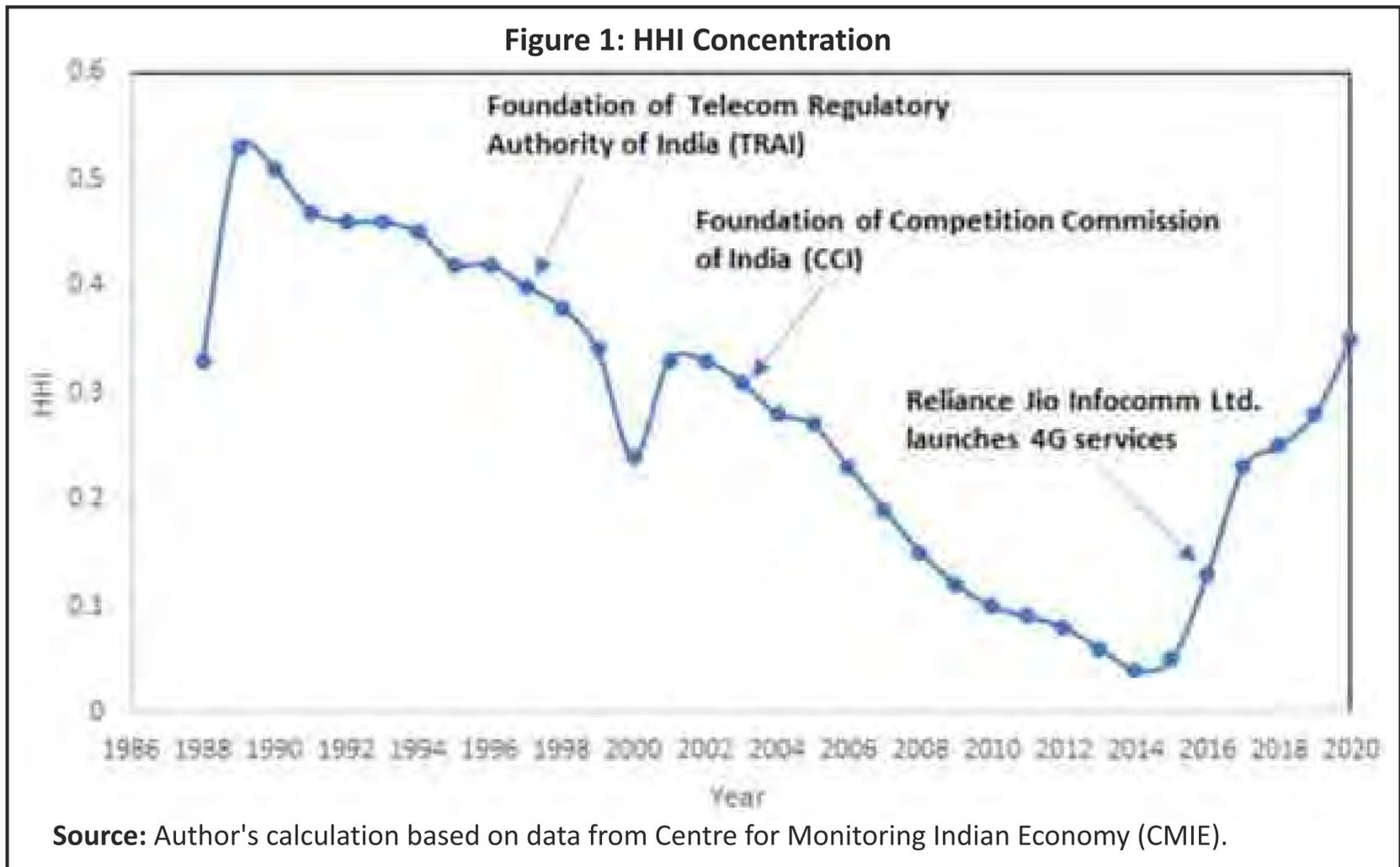
The recent occurrences in the telecommunications industry need to be evaluated through a more holistic lens since they pose a risk to the sector's claim of being very competitive. The telecommunications industry is struggling with several significant problems. As a consequence of this, they are unable to even pay their dues. Despite the fact that the Supreme Court of India has extended the deadline for payment of adjusted gross revenue (AGR) related dues for telecom companies by 10 years, the government is looking into ways to allow telecom companies to pay their AGR dues over a period of 20 years. This is being done so that the government can allow telecom companies to pay their dues over a longer period of time. However, this will not solve the problem. According to the findings of a study

conducted by Jefferies Equity Research, for Vodafone Idea, in order to continue operating profitably in the telecommunications industry, the company could have to increase its prices. This kind of pressure to raise tariffs, combined with low revenue per user and the threat of a tariff war from other competitors, would be detrimental to competition in the telecom industry. Due to the fact that the existing scenario poses a danger to competition, the functions of the regulatory authority and the competition authority must be rethought in order to foster more collaboration (Parsheera, 2018).

## 2. Back to Square One?

Evidently, the telecommunications market has gradually undergone a smooth transition from a monopoly to a competitive market. The fundamental factors driving the transition were the alterations in the institutional landscape (Gupta, 2012). According to Figure 1, it seems that the trends in concentration have been decreasing throughout the course of time. The trends, however, are now pointing in an upward direction.

The author has calculated the concentration index (Herfindahl-Hirschman Index) by using total income as a proxy for firms' presence in the telecom sector. Herfindahl-Hirschman Index (HHI) is a commonly used index to measure market concentration. The HHI is constructed by adding the square of the income share of the

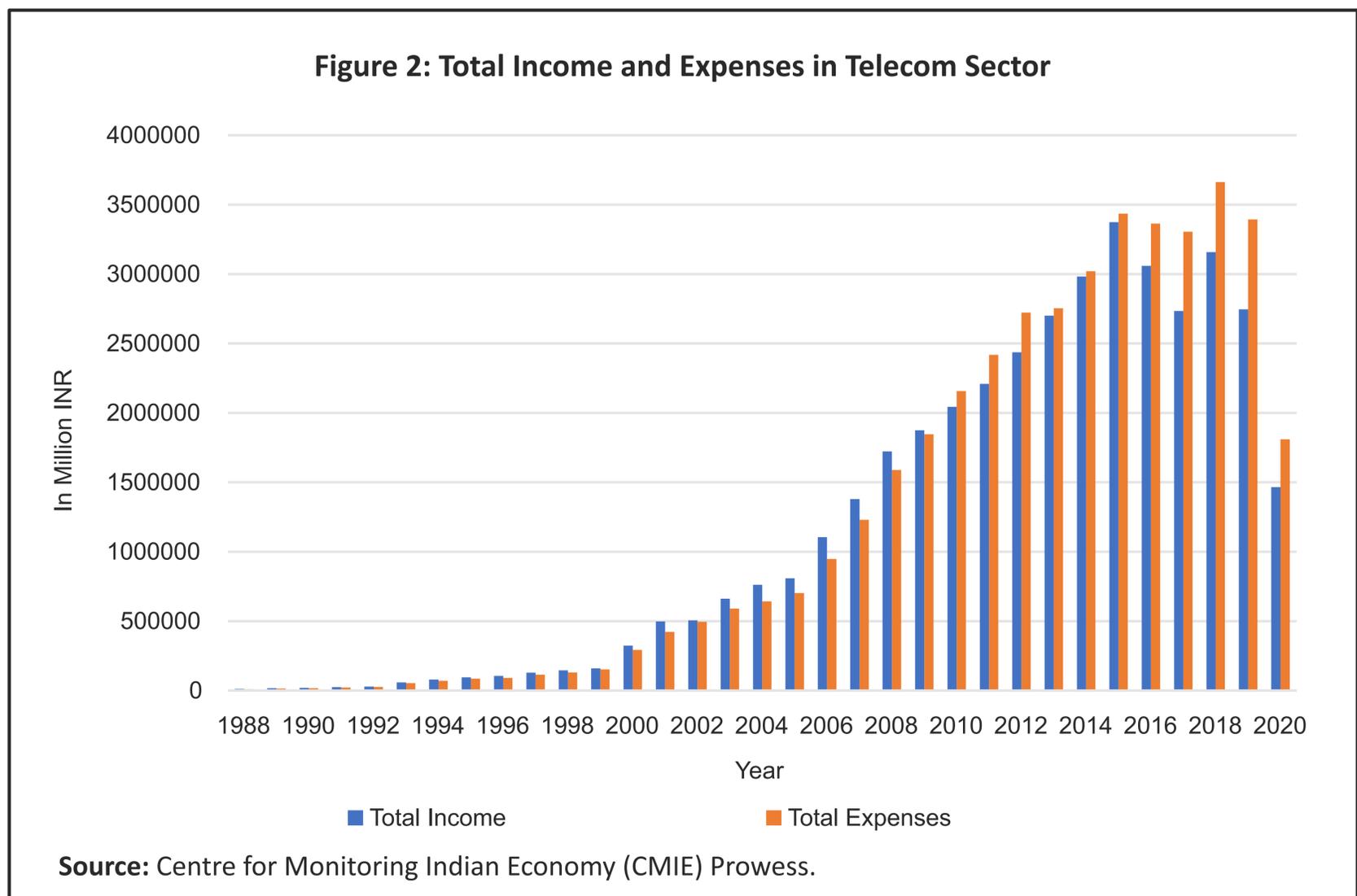


individual firms in the market. This index lies between 0 and 1. The higher the value, the greater the concentration in the market. HHI is calculated by using the following formula:  $HHI = \sum_{i=1}^n s_i^2$  where  $s_i$  is the market share of  $i^{th}$  firm.

As shown in Figure 1, the level of market concentration in the telecom industry has been decreasing for some time. However, beginning in 2015–2016, this indicator began displaying an increasing trend. The HHI is projected to continue its upward trend for 2020 on the basis of the data that is currently available. However, given that figures are only available for a limited number of companies, the HHI may be exaggerated. On the other hand, after hitting a high point in 2015, the

overall revenue of the telecom industry is now on the decline as seen in Figure 2. The gap between total expenditure and total revenue for the telecommunications sector is increasing. The graphical representation suggests that there are two significant shifts discernible in the HHI concentration. First, there was a drop after 1991, followed by a rise after 2016. Therefore, it becomes important to understand the structural breaks in the concentration index to comprehend the impact of the policy framework and entry-exit of players in the telecommunication sector.

The objective of this study is to identify the structural breaks in the HHI concentration index of the Indian telecommunication sector. Identifying years will help to understand how



changes in telecommunication policies and changes in market structure are affecting the level of market concentration in a given sector. As a result, structural break analysis may be performed in order to get an understanding of the shifts in the HHI concentration. It would be helpful to have an understanding of whether or not the entry of any player has caused the disruptions.

### 3. The Structural Break Analysis

The structural break analysis may be split into two steps. The first step is to determine whether or not the time series data is stationary. If HHI is stationary, then it means there is no change in either the level or the

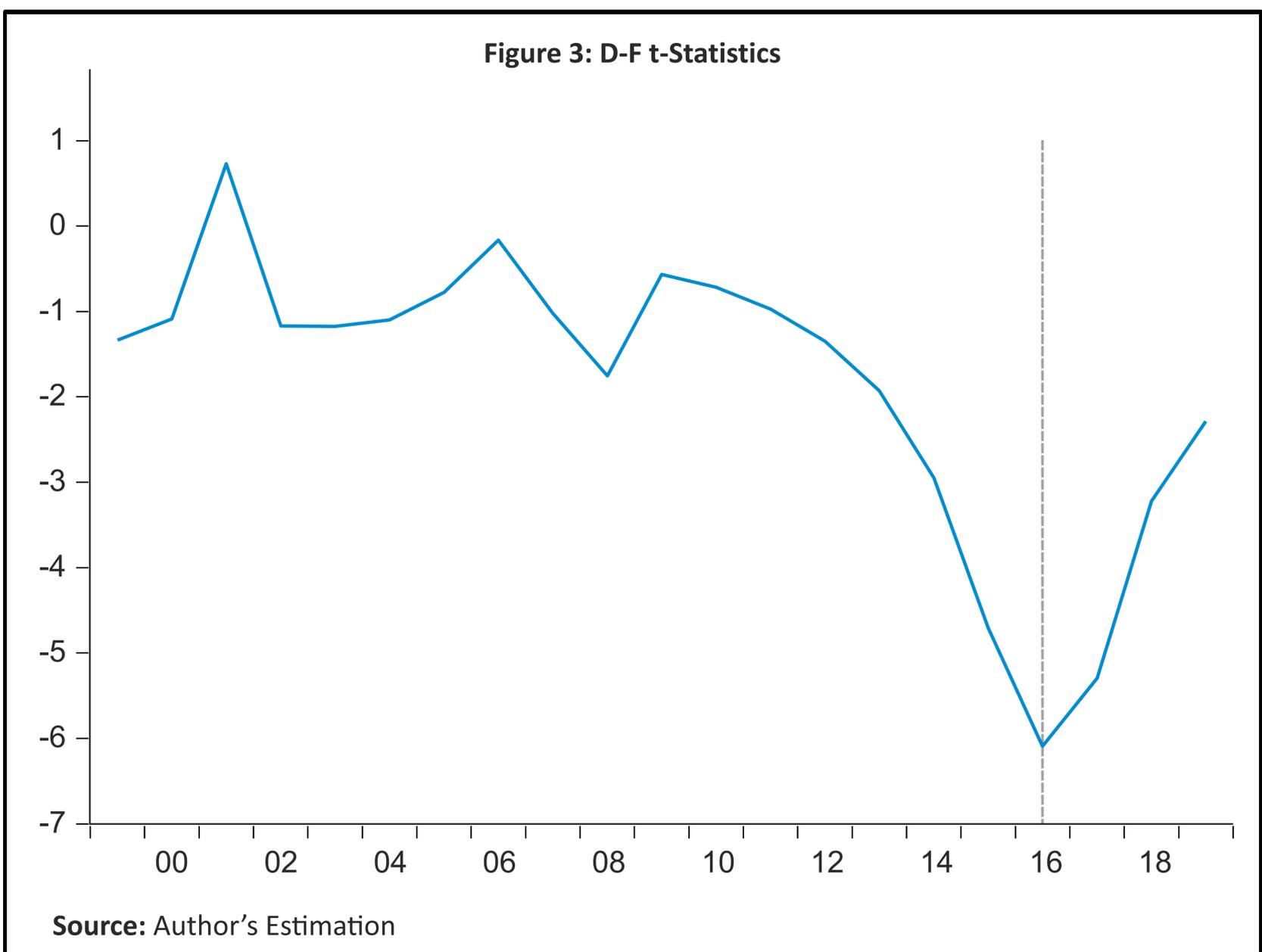
trend of the series. Therefore, structural break analysis becomes unnecessary. The second step is to determine if HHI has structural breaks, then HHI should be a non-stationary series. If HHI is non-stationary, then structural break analysis is required to understand whether the given structural breaks are caused by the policy interventions or not. The Augmented Dickey–Fuller test (ADF) is used to test the stationarity of HHI. One break analysis (Unit root with structural break) and multiple break analysis (Bai & Perron, 2003) are done to understand the structural breaks.

There is a wide discussion in literature regarding the break-point analysis (Perron,

1989, 1990; Zivot & Andrews, 2002; Gregory & Hansen, 1996; Hansen, 2003; Bai & Perron, 1998; Bai & Perron, 2003). The methodology proposed by Perron (1989, 1990) is criticised because break is treated as a constant (Christiano, 1992). Hansen's (2003) method also has limitation as break-date is assumed to be known. The break-date can be unknown as well as it can be more than one. A single break model in the presence of multiple breaks, the break fraction will converge to one of the true

dominant break-fraction. Bai and Perron (1998, 2003) provide the discussion for multiple breaks for unknown. Bai and Perron (1998) discuss the UDmax and WDmax test to test for one or more breaks<sup>1</sup>. This study first does one break analysis (Unit root with structural break) and then multiple break analysis using Bai and Perron (1998, 2003) framework.

#### 4. Result



<sup>1</sup>Refer to Bai and Perron (1998, 2003) for More Details on Computation.

Table 1 : ADF Test

Null Hypothesis: HHI has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic - based on AIC, maxlag=9)				
			t-Statistic	Prob.*
Augmented Dickey - Fuller test statistic			-0.828661	0.9521
Test critical values:	1% level		-4.273277	
	5% level		-3.557759	
	10% level		-3.212361	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(HHI)				
Method: Least Squares				
Date: 28/05/22 Time: 15:34				
Sample (adjusted): 1989 2020				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HHI(-1)	-0.104354	0.125931	-0.828661	0.4141
C	0.040624	0.065649	0.618809	0.5409
@TREND("1988")	-0.000659	0.001972	-0.334335	0.7405
R-squared	0.037349	Mean dependent var		0.000625
Adjusted R-squared	-0.029041	S.D. dependent var		0.055296
S. E. of regression	0.056093	Akaike info criterion		-2.834541
Sum squared resid	0.091247	Schwarz criterion		-2.697128
Log likelihood	48.35266	Hannan -Quinn criter.		-2.788993
F-statistic	0.562573	Durbin -Watson stat		1.110334
Prob(F -statistic)	0.575835			
<b>Source:</b> Author's Estimation				

Table1 shows ADF test result for HHI concentration index. HHI concentration index is non-stationary.

**Table 2 : One Break Analysis (Unit Root with Structural Break)**

Null Hypothesis: HHI has a unit root				
Trend Specification: Trend and intercept				
Break Specification: Intercept only				
Break Type: Innovational outlier				
Break Date: 2016				
Break Selection: Minimize Dickey-Fuller t-statistic				
Lag Length: 0 (Automatic-based on Akaike information criterion, maxlag=9)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-6.090360	< 0.01
Test critical values:	1% level		-5.347598	
	5% level		-4.859812	
	10% level		-4.607324	
*Vogelsang (1993) asymptotic one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: HHI				
Method: Least Squares				
Date: 28/05/22 Time: 15:36				
Sample (adjusted): 1989 2020				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
HHI(-1)	0.327961	0.110345	2.972147	0.0062
C	0.377430	0.061199	6.167268	0.0000
TREND	-0.013495	0.002101	-6.421479	0.0000
INCPTBREAK	0.238688	0.032515	7.340817	0.0000
BREAKDUM	-0.124664	0.043767	-2.848333	0.0083
R-squared	0.956850	Mean dependent var		0.279687
Adjusted R -squared	0.950458	S.D. dependent var		0.147155
S.E. of regression	0.032754	Akaike info criterion		-3.856984
Sum squared resid	0.028966	Schwarz criterion		-3.627962
Log likelihood	66.71174	Hannan-Quinn criter.		-3.781070
F-statistic	149.6823	Durbin-Watson stat		1.470630
Prob(F-statistic)	0.000000			

Source: Author's Estimation

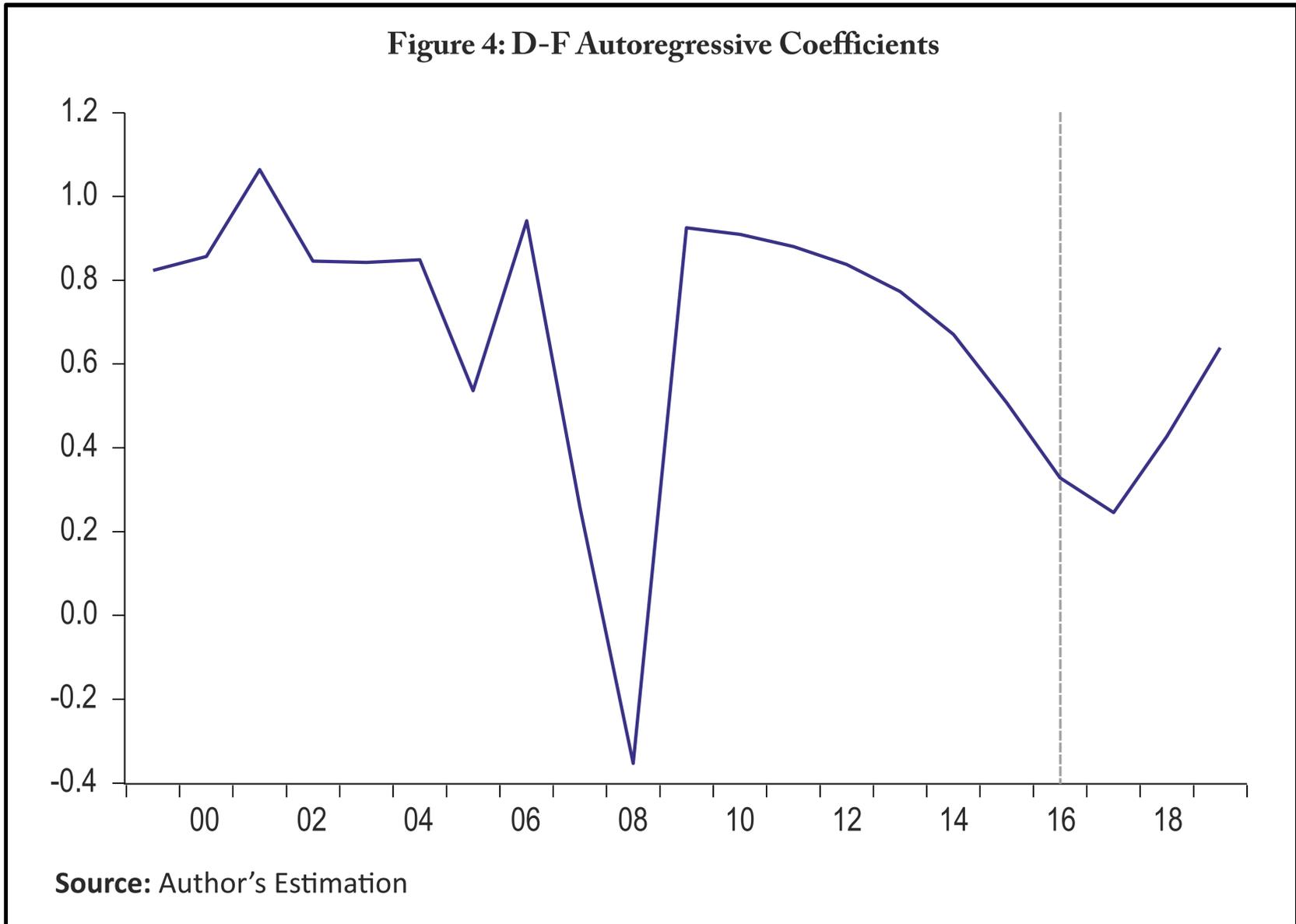


Table 2, figure 3 and figure 4 point out that the break year is 2016. In time series data, multiple structure breaks do exist. For minimum length in each regime, Bai and Perron (2003) recommend 10 per cent of total size. Therefore

10 per cent of total size i.e. 3 is used for maximum possible breaks. Table 3 shows the multi-break analysis. While it is significant, it suggests that HHI has 3 structural breaks: 1999, 2007 and 2017.

**Table 3 : Multiple Break Analysis**

Dependent Variable: HHI
Method: Least Squares with Breaks
Sample: 1988 2020
Included observations: 33
Break type: Bai-Perron tests of 1 to M globally determined breaks
Break selection: Sequential evaluation, Trimming 0.15, , Sig. level 0.05
Breaks: 1999, 2006, 2017

HAC standard errors & covariance (Prewhitening with lags = 3 from AIC  
maxlags = 3, Quadratic - Spectral kernel, Andrews bandwidth = 1.0943)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
1988 - 1998 -- 11 obs				
C	0.439091	0.020529	21.38841	0.0000
1999 - 2005 -- 7 obs				
C	0.305714	0.006161	49.61802	0.0000
2006 - 2016 -- 11 obs				
C	0.099091	0.029174	3.396492	0.0020
2017 - 2020 -- 4 obs				
C	0.170000	0.010986	15.47393	0.0000
R-squared	0.868050	Mean dependent var	0.264848	
Adjusted R-squared	0.854400	S.D. dependent var	0.156906	
S.E. of regression	0.059871	Akaike info criterion	-2.680020	
Sum squared resid	0.103953	Schwarz criterion	-2.498625	
Log likelihood	48.22033	Hannan -Quinn criter.	-2.618986	
F-statistic	63.59352	Durbin -Watson stat	1.311144	
Prob(F-statistic)	0.000000			

Source: Author's Estimation

Table 4 reports the UDMax and WDMMax test results. It confirms the 3 breaks that exist in

HHI. The breaks occur at 1999, 2006 and 2017.

Table 4 : UDMax and WDMax Test

Breakpoint Specification				
Description of the breakpoint specification used in estimation				
Summary				
Estimated number of breaks: 3				
Method: Bai - Perron tests of 1 to M globally determined breaks				
Maximum number of breaks: 3				
Breaks: 1999, 2006, 2017				
Current breakpoint calculations:				
Multiple breakpoint tests				
Bai -Perron tests of 1 to M globally determined breaks				
Date: 14/07/22 Time: 03:35				
Sample: 1988 2020				
Included observations: 33				
Breaking variables: C				
Break test options: Trimming 0.15, Max. breaks 3, Sig. level 0.05				
Test statistics employ HAC covariances (Prewhitening with lags = -1 from AIC maxlags = - 1, Quadratic - Spectral kernel, Andrews bandwidth) assuming common data distribution				
Sequential F - statistic determined breaks: 3				
Significant F - statistic largest breaks: 3				
UDmax determined breaks: 3				
WDmax determined breaks: 3				
Breaks	F-statistic	Scaled F-statistic	Weighted F-statistic	Critical Value
1 *	13.03692	13.03692	13.03692	8.58
2 *	44.71801	44.71801	53.14135	7.22
3 *	63.44340	63.44340	91.33295	5.96

UDMax statistic*	63.44340	UDMax critical value**	8.88
WDMax statistic*	91.33295	WDMax critical value**	9.91

\* Significant at the 0.05 level.  
 \*\* Bai -Perron (Econometric Journal, 2003) critical values.

Estimated break dates:  
 1: 2006  
 2: 1999, 2006  
 3: 1999, 2006, 2017

Source: Author's Estimation

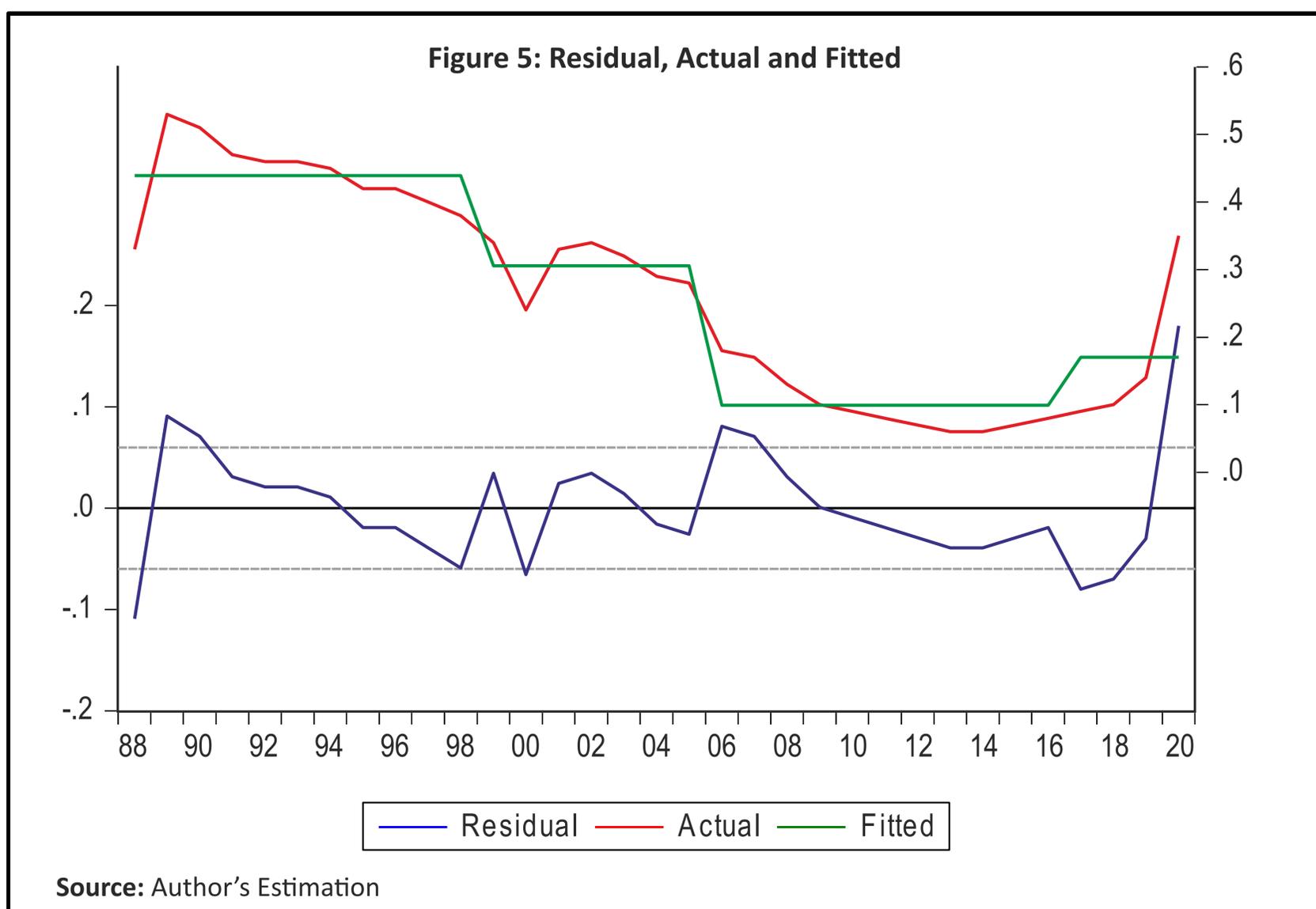


Figure 5 shows the residual, actual and fitted plots. Fitted values follow the actual values, where the residual plot shows that residuals are nearly random around the zero line. This

confirms the robustness of the multi-break analysis. It does show that there are three breaks: 1999, 2007 and 2017.

In 1997, TRAI was formed, while the Competition Commission of India was founded in 2003. On the other hand, in 2016, Reliance Jio launched 4-G services. It can be interpreted as these major policies' implementation and changes in the telecom sector are followed by the structural breaks with lag. In the post-structural break in 2017, the HHI trend is increasing, where as in previous structural breaks, HHI tends to decline further. This does suggest that TRAI and CCI do help to increase competition through policy mechanisms, but the new entry (i.e. Jio's entry) that happened in 2016 distorts the declining trend of HHI.

### 5. Concluding Remarks

Both the laws governing competition and the sectoral regulations played an extremely important part in the expansion of the telecommunication industry, which resulted in increased efficiency and accessibility. The level of competitiveness was pushed to its limits. The competition has been beneficial in a number of different ways, including accessibility as well as cost-effectiveness. But now the telecom industry is becoming more concentrated and the majority of its participants are losing money. This is evident as a single company has a stranglehold on the market. It doesn't mean that increasing concentration and a single large player are not

good for the telecom sector. If the efficient firm, because of its productivity, captures the market and the inefficient players struggle to survive, then it is the nature of the competitive market where only the efficient player is able to survive. So, as long as an efficient player is capturing the market and other players are unable to compete, the increase in concentration is not a problem because it is only temporary. If a current efficient player becomes inefficient, then in a competitive environment, a new entrant will enter and can overthrow that inefficient player. However, it is important to maintain a competitive atmosphere. If the competitive environment gets damaged, the telecom industry may continue to function with just two participants. Following Jio's entry into the market, the two most significant mergers in this sector happened between Bharti Airtel and Telenor and one between Vodafone India and Idea Cellular. The Indian telecom industry has come a long way from being monopolized to becoming the most competitive sector in India over the course of the last several decades. Because of the competition in the market, the telecom industry has been able to attain accessibility together with efficiency and innovation. As pointed out in the structural break analysis, the TRAI and CCI formation did result in an increase in the competition level. Therefore, in order to avoid further distortion in the competition that occurred due to Jio's entry and to protect competition, it is essential that

all institutions, such as the sectoral regulating body, TRAI, the Competition Commission of India (CCI) and the policies of the Indian government all work together cohesively to preserve competition. Without that, the tale of the successful liberalization of the market would end with just one or two competitors.

## References

- Almunia, J. (2010). Competition vs Regulation: Where Do the Roles of Sector Specific and Competition Regulators Begin and End, *Speech before the Center on Regulation in Europe (CERRE)*, 23.
- Bai, J., & Perron, P. (1998). Estimating and Testing Linear Models with Multiple Structural Changes. *Econometrica*, 47-78.
- Bai, J., & Perron, P. (2003). Computation and Analysis of Multiple Structural Change Models, *Journal of Applied Econometrics*, 18(1), 1-22.
- Christiano, L. J. (1992). Searching for a Break in GNP, *Journal of Business & Economic Statistics*, 10(3), 237-250.
- Department of Telecommunications (2022). Telecom Statistics India-2021 Report, *Statistics Division, Economic Research Unit, Department of Telecommunications, Ministry of Communications Government of India New Delhi*. Accessed from: <https://cutt.ly/5VR78J7>
- Gregory, A. W., & Hansen, B. E. (1996). Practitioners Corner: Tests for Cointegration in Models with Regime and Trend Shifts, *Oxford Bulletin of Economics and Statistics*, 58(3), 555-560.
- Gupta, S. (2012). Cellular Mobile in India: Competition and Policy, *Pacific Affairs*, 85(3), 483-510.
- Hansen, P. R. (2003). Structural Changes in the Cointegrated Vector Autoregressive Model, *Journal of Econometrics*, 114(2), 261-295.
- Katz, M. L. (2004). Antitrust or Regulation? US Public Policy in Telecommunications Markets, *The Economics of Antitrust and Regulation in Telecommunications: Perspectives for the New European Regulatory Framework*, 13, 243.
- Kumar, A. (2006). Relationship between Competition Authority and Sectoral Regulator, *Presentation for Competition Commission of India*, 25-26.
- North, D. C. (1991). Institutions. *Journal of Economic Perspectives*, 5(1), 97-112.
- Melody, W. H. (1999). Telecom Reform: Progress and Prospects, *Telecommunications Policy*, 23(1), 7-34.
- Nag, T. (2014). Compete Fairly and Let Compete! The Competition Regime in India, *IMI Konnect*, 3(6), 3.
- Parsheera, S. (2018). Challenges of Competition and Regulation in the Telecom Sector, *Economic and Political Weekly*, 53(38), 45-52.
- Perron, P. (1989). The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis. *Econometrica: Journal of the Econometric Society*, 1361-1401.
- Perron, P. (1990). Testing for a Unit Root in a Time Series with a Changing Mean, *Journal of Business & Economic Statistics*, 8(2), 153-162.
- Shanthi, N. M. (2005). Effectiveness of Predictive Churn Models for Sustaining Market Share in Telecom Industry—An Appraisal, *ICFAI Journal of Services Marketing*.
- Singh, R., & Tiwari, A. A. (2019). Churn Analysis of Indian Telecom Customers. *IMI Konnect*, 8(1), 35-41.
- Zivot, E., & Andrews, D. W. K. (2002). Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis, *Journal of Business & Economic Statistics*, 20(1), 25-44.

## Data Sources

Telecom Statistics India-2021 report by Statistics Division, Economic Research Unit, Department of Telecommunications, Ministry of Communications Government of India New Delhi. Accessed from: <https://cutt.ly/5VR5yr0>

Centre for Monitoring Indian Economy (CMIE) Prowess.

# Examining Quality Aspects in Indian Online Food Delivery Services during COVID-19 Pandemic: An NLP-based Qualitative Approach

Lan Ma\*, Arghya Ray\*\*, Varda Sharma\*\*\* and Pradip Kumar Bala\*\*\*\*

## Abstract

*During the COVID-19 pandemic, as people were forced to stay indoors due to lockdowns and government restrictions, accessing restaurants was mostly possible through online food delivery services (OFDs). With the increase in demand, it was also observed that the OFDs were charging higher prices. To examine quality aspects of Indian OFDs during the COVID-19 pandemic, we have used a multi-method approach utilizing qualitative data from 19 customers about two OFDs in India (C1 and C2) and online customer reviews from C1 (2,00,011) and C2 (86,931). Results show that during the pandemic although consumers were happy about the ease of use of the platforms, customers have expressed concerns related to delayed services, the behaviour of staff and limited options to choose from. We have also linked to different dimensions of SERVQUAL to understand the factors that people have mostly discussed about OFDs in the COVID-19 pandemic. The study concludes with various implications.*

**Keywords:** COVID-19 Pandemic; Delivery Time; Online Food Delivery Services; Service Quality; Staff Behaviour;

## 1. Introduction

The online food delivery services (OFDs) help in getting the food delivered to

customers' doorsteps based on the order placed through a web page or online application having the option to compare menus, prices and customer reviews of various nearby restaurants (Ray *et al.*, 2019). India is now one of the world's largest consumer markets, with a population of over 1.2 billion

\* Research Scholar, Taylor's Business School, Taylor's University, Malaysia

\*\* Assistant Professor, International Management Institute Kolkata, India

\*\*\* PGDM Student, FORE School of Management New Delhi, India

\*\*\*\* Professor, Indian Institute of Management Ranchi, India

and over 50 per cent of the population falling below 25 years, making India one of the countries in the world with youngest population (Chavan *et al.*, 2015). Over the years, OFDs have gained popularity because of the surge in demand for fast food among young Indians who are mainly between 20 and 35 years. The demand for OFDs grew multifold during the COVID-19 pandemic which led to lockdowns and several government restrictions to curb the spread of the highly contagious coronavirus (Candra *et al.*, 2021; Sengupta, 2020) and reduce the number of deaths happening because of the virus (Sarwar & Imran, 2021; Chattopadhyay, 2020). Since people were not allowed to roam outside, there was an increase in demand for OFDs to fetch food from their favourite restaurants (Candra *et al.*, 2021). With the increase in demand, it has also been noticed that the different OFDs have also increased the prices on their platforms (Niu *et al.*, 2021). However, although there has been an increase in prices, are the services provided to customers up to the mark? Even before the COVID-19 pandemic, Sethu and Saini (2016) noted an inability of restaurants to handle high demand. These concerns have motivated us to analyze the services provided by two OFD providers in India (named C1 and C2 to maintain confidentiality).

To address the research objective, a multi-method approach comprising of qualitative semi-structured interviews of 19 participants and qualitative Natural Language Processing

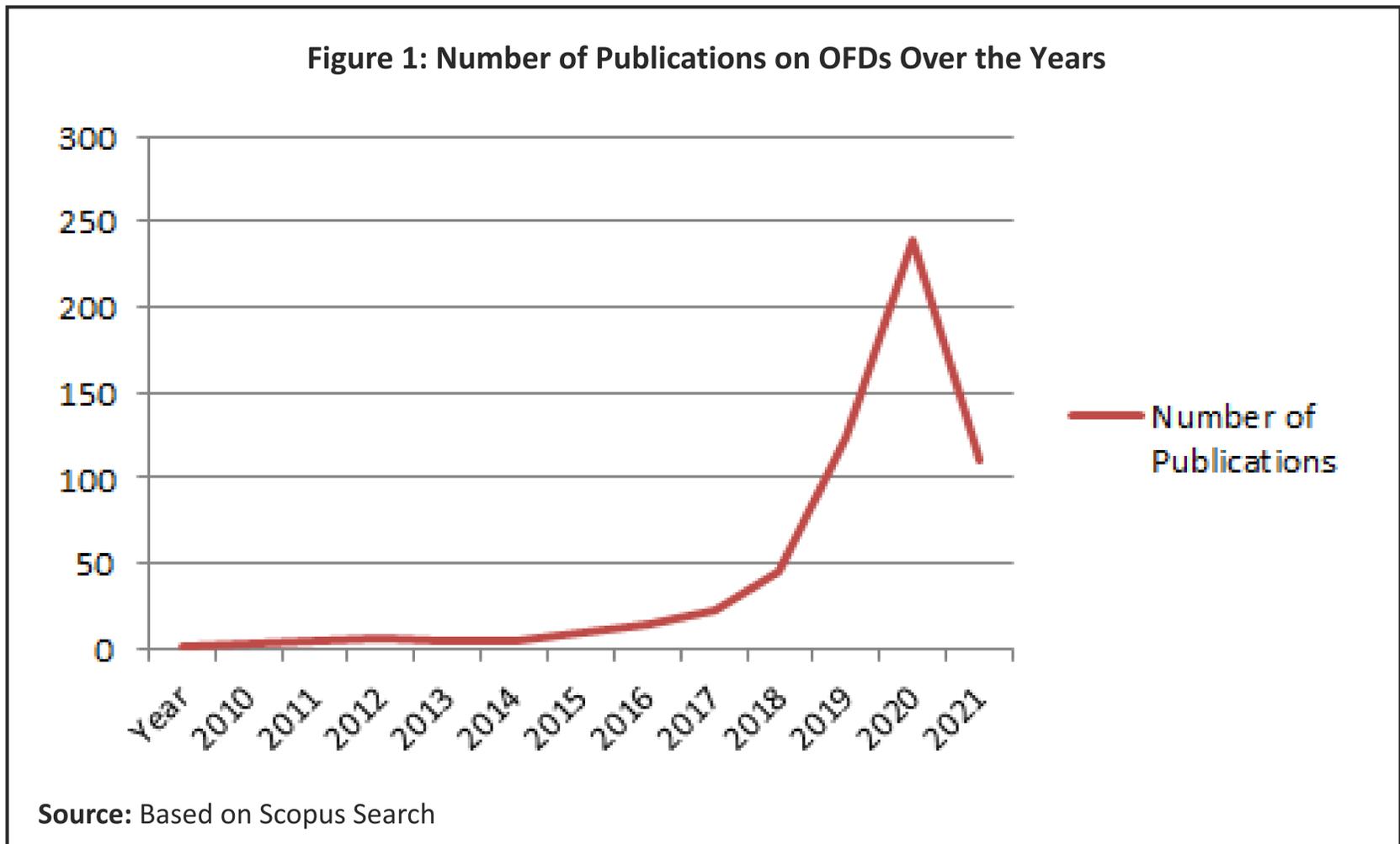
(NLP)-based analysis of 2,00,011 and 86,931 customer reviews posted after January 1, 2020, in the application pages of C1 and C2 in Google Playstore respectively, were utilized. Section 2 following the introduction contains the literature review followed by the methodology in Section 3. Section 4 contains the results and discussion followed by a conclusion in Section 5.

## **2. Literature Review:**

### ***2.1 Online Food Delivery Services and the Services Involved***

Online food delivery (OFD) research has caught great attention among scholars after the COVID-19 pandemic (Meena & Kumar, 2022) as it significantly changed the food shopping behaviours of consumers (Tandon *et al.*, 2021). OFDs' impact on the food market manifested in its deals and promotions, customized services based on consumers' order and search history, and most importantly, it created a platform for consumers to provide feedback about the food services (Tandon *et al.*, 2021). It is evident from Figure 1 that the research on OFDs has increased over the years.

Prior studies conducted on OFDs after the COVID-19 pandemic have focused mainly on consumer experiences, such as the actual use of OFDs (Sharma *et al.*, 2021), satisfaction (Zhao & Bacao, 2020), and loyalty (Suhartanto *et al.*, 2019). However, limited studies have explored the quality antecedents that affect consumers' intention to use OFDs



(Tandon *et al.*, 2021). Particularly, few studies have examined the barriers that influence consumers' adoption of OFDs during the pandemic. Generally, it has been noticed that delayed delivery (Kaur *et al.*, 2021), glitched user interface (Kaur *et al.*, 2021), high prices (Belarmino *et al.*, 2021) or website safety (Talwar *et al.*, 2021) have become major challenges for many OFDs. Interestingly, Hong *et al.* (2021) did not observe a significant impact of food safety, vulnerability or severity on usage intention. Further, food quality or interface issues have been proven to be vital factors preventing consumers from adopting OFDs (Kaur *et al.*, 2021; Pal *et al.*, 2021). Specifically, the poor condition of the food after delivery or the poorly designed

interfaces of OFDs significantly affect consumers' experiences and prevent them from using OFDs (Kaur *et al.*, 2021). Nevertheless, some pandemic-related barriers have been left understudied. For instance, safety issues related to delivery services concerning the professionalism of delivery person during the pandemic affect health conscious customers (Wang *et al.*, 2021). Besides that, delivery speed has become more significant during the pandemic as consumers have fewer activities while waiting for their food. They often find 35-50 minutes of delivery time unbearable especially when they are under quarantine (Belarmino *et al.*, 2021). The delay often happens during peak time amidst the pandemic caused by high demand.

Poon and Tung (2022) noted that customer's perceived risk negatively influences intention to use OFDs. Lastly, online reviews (e.g., feedback) on the platform have been discovered to influence consumers' adoption behaviors during the pandemic (Ray & Ma, 2021). Consumers rely heavily on online reviews to infer the quality of experience, especially during the pandemic and lack of online feedback might create barriers for consumers to use OFDs. This might affect the anticipated emotions which influence user's intentions (Poon & Tung, 2022).

### **2.2 Online Food Delivery Services in India**

The Indian food supply market has been estimated to be \$15 billion and is expected to develop exponentially. In India, there is an emergence of OFDs such as Swiggy, Food Panda, Uber Eats and Zomato. A large chunk of the market is however occupied by Zomato and Swiggy (Chadda, 2020). Although this industry has great potential, several new players who went into the industry without appropriate groundwork were either downsized like Zomato or shut down completely like TinyOwl and FoodPanda (Chadda, 2020). Over time, to survive in the competitive market scenario, the OFDs are also looking for adopting new technology and business models to cater to the increasing customer demands, like, cloud kitchens, drone-based food delivery and home-cooked meal model. However, OFDs also need to understand that their service quality and customer service also play a very important

role (Ray *et al.*, 2019; Kaur *et al.*, 2021).

### **2.3 Quality Factors that Affect Consumers' Behaviours towards OFDs**

It is well accepted that the quality of OFDs have a significant impact on consumers' behaviour. It has been referred to as the extent to which a provider ensures effective experiences (Suhartanto *et al.*, 2019). From consumers' perspective, platform quality (e.g., information quality, system quality or deals and promotions) has been regarded as one of the vital factors in influencing consumers' behavioural intentions toward OFDs (Shankar *et al.*, 2022). Akram *et al.* (2020) suggested that platform quality as a multidimensional construct includes information, system and service quality. Specifically, Ray *et al.* (2019) confirmed how information (e.g., food content) displayed on the platform influences consumers' responses to OFDs. Furthermore, system reliability and responsiveness are parts of system quality that influence consumers' purchase experiences (Akram *et al.*, 2020). Specifically, a good navigation design (e.g., easy-to-use or user-friendly) improves consumers' experiences and affects their purchasing behaviours (Kapoor & Vij, 2018). Also, food price or promotions are major components affecting consumers' perceived service quality of platforms (Prasetyo *et al.*, 2021) and increase consumers' satisfaction and subsequently influence their further usage of the OFDs (Fakfare, 2021). In addition, delivery-man attributes affect consumers' behavioural

intentions in the OFDs context (Cheng *et al.*, 2021; Fakfare, 2021). Specifically, Saad (2021) discovered that delivery time, delivery tracking service and attitude of the delivery person influence consumers' usage of particular OFDs.

Apart from platform quality, food quality (Ghosh, 2020) such as food variety (Saad, 2021), food flavouring (Cheng *et al.*, 2021), cleanliness of food package (Fakfare, 2021) or condition of the food (Saad, 2021) have also been empirically investigated to understand its effect on consumers' behavioural intentions (Suhartanto *et al.*, 2019). In particular, food variety and safety are common characteristics that consumers use to determine food quality but they have not been extensively investigated in the OFDs context (Suhartanto *et al.*, 2019). Nevertheless, our study fills the knowledge gap by focusing on quality aspects affecting consumers' intention to use OFDs during COVID-19.

### 3. Methodology

We have adopted a multi-method qualitative approach to analyze the performance of two major OFDs in India (referred to as C1 and C2 here) during and post COVID-19 pandemic from a quality point of view. The qualitative based study helps to get an in-depth view of the customers' attitude or behaviour towards a certain product or service. In this study, we have not only utilized qualitative interviews of customers using services of both C1 and C2 but have also

utilized Natural Language Processing (NLP)-based approach to gain much deeper insights into what customers have expressed.

### 3.1 Sample Statistics

#### 3.1.1 Qualitative-based Study

We have performed a qualitative based study to capture customer perspectives based on the enablers and barriers that customers feel about the services of two OFDs in India, here referred to as C1 and C2. 19 customers of C1 and C2 were interviewed for this purpose. The sample statistics are shown in Table 1. The

**Table 1. Sample Statistics of 19 Customers Who Participated in the Interviews**

Criteria	Count (n=19)	Percentage (in Per Cent)
<b>Gender</b>		
Male	13	68.4
Female	6	31.6
<b>Age Group</b>		
Below 18	2	10.5
18-25	12	63.2
26-45	3	15.8
46-60	1	5.27
Above 60	1	5.27
<b>Occupation</b>		
Student	11	57.89
Corporate	5	26.31
Entrepreneur	2	10.52
Retired	1	5.27

Source: Authors' Compilation

participants were selected based on convenience sampling. Convenience sampling is preferred because of the easy accessibility of participants and also to generate more in-depth details about their viewpoints (Gravetter & Forzano, 2010).

### **3.1.2 Online Reviews**

We have utilized 2,00,011 reviews from C1 and 86,931 reviews from C2 captured after January 1, 2022 from the Google Playstore pages of the two providers.

### **3.2 Data Collection**

The data was collected through both primary and secondary means. For primary data collection, a semi-structured interview schedule was adopted with questions mainly focusing on what are the factors and barriers that the customers face while using the two biggest online food delivery services in India, hereby referred to as companies C1 and C2. Although there are several ways to capture qualitative data, we have adopted the semi-structured interview schedule because it helps to get a detailed view of the subject under study (Barrane *et al.*, 2021). The interview data was collected between May-June 2021.

The secondary data was collected from the customer reviews provided in the Google Playstore regarding the service provided by companies C1 and C2. The reviews after January 2020 were considered for this study since Coronavirus started spreading across several countries and affecting hundreds and hundreds of people.

### **3.3 Data Analysis**

For the qualitative based study, a thematic based analysis was carried out based on steps proposed by Ravi (2013). The thematic analysis was utilized because it helps to provide a more realistic view of the data captured through qualitative interviews and extract important patterns present in the data (Braun *et al.*, 2019). For the thematic based analysis, the sentences pertaining to each relevant subject were assigned a label or, code to convey the meaning of the sentence in brief. The unique codes (focused codes) were determined through discussion among the authors. Finally, the axial codes were extracted by arranging the focused codes in descending order. Priority was given to themes with higher frequencies during axial coding (Creswell, 2009).

We have applied different textual analysis techniques to the user generated content (UGC) to extract important insights from the data. The online reviews extracted from the Google Playstore page of the companies C1 (2,00,011) and C2 (86,931) using Python were filtered first to have reviews posted after January 1, 2020 (when COVID-19 became globally recognized). The raw data (online reviews) from the two different companies were then cleansed separately by removing unnecessary words, symbols, blank spaces and punctuations. Earlier studies have found that analyzing the most common words in review data can help to capture the aspects affecting consumers' perspectives about a certain firm

(Siering *et al.*, 2018). In this study, we have utilized word cloud to find the most common words. We have also used the frequency based filtering of important words to find words pertaining to each service aspect and understand the most discussed service

dimensions during COVID-19 period. We have also performed topic-modelling on the data from companies C1 and C2 separately using Latent Dirichlet Allocation (LDA) to capture the major service related aspects that consumers have actually talked about in this

**Table 2. Factors That Influence Customers' Intention to Use C1's OFD Services**

Sr. No.	Themes	Exemplar	References
1	Satisfactory Delivery	<i>“C1 delivers on time and has less delivery charges. They also launched C1 which is a great local courier service at par with the likes of Dunzo.”</i>	Ray <i>et al.</i> (2019)
2	User Friendly	<i>“The app is much user friendly. It gives true and complete knowledge of the item being bought. It has well-formed tracking system. It is better in terms of reach to the eateries. It has greater network.”</i>	Ray <i>et al.</i> (2019)
3	Reliable	<i>“C1 has always been reliable in food delivery services. It has always delivered food on time and also during the pandemic it has followed proper protocol”</i>	Parasuraman <i>et al.</i> , (1988)
4	Better User Interface	<i>“C1 is preferred because of better user interface. Intention to use the app is more or less similar to C2. Although, C1 has greater reach.”</i>	Davis, (1989); Ray <i>et al.</i> (2019)
5	Discounts and Cheaper Options	<i>“Gives maximum discounts in comparison to C2.”</i>	Sheth <i>et al.</i> (1991); Ray <i>et al.</i> (2019)

**Source:** Interview Data Collected by Authors

period because the LDA technique helps to reduce the ambiguities that might exist (Subathra & Kumar, 2019) and figure out facts effectively from the data (Shinde *et al.*, 2017).

**4. Results and Discussions:**

**4.1 Analysis of Qualitative Data**

The main factors and barriers that affect customers' intention to use C1's services are summarized in Table 2 and Table 3 respectively. It was found that although customers are happy with the delivery, reliability and technology related aspects like user friendliness, customers are not happy with the safety protocols adopted by the provider, specifically with respect to COVID-19 protocols. Additionally, customers also feel that proper feedback is missing on the pages of C1. However, customers are also happy with

the conditional benefits (discounts) offered by C1.

The main factors and barriers that affect customers' intention to use C2's services are summarized in Table 4 and Table 5 respectively. It was found that customers mainly use C2's OFD services because of the variety of options available which C1 lacks.

**4.2 Analysis of Online Reviews**

The results of the word-cloud-based analysis for the providers C1 and C2 are presented in Figure 2 and Figure 3 respectively. Results of the analysis for C1 (refer to Figure 2) show that while customers have mentioned positive words like, “good service“, “fast delivery“, “nice app“, etc., there are negative words as well, like, “worst service“. A similar type of analysis for C2 (refer to Figure 3), reveal that people have

**Table 3. Barriers That Customers Face While Using C1's OFD Services**

Sr. No.	Themes	Exemplar	References
1	Safety Measures	<i>“Not following proper Covid protocols in these pandemic times”</i>	Hong <i>et al.</i> , (2021); Naveen & Gurtoo, (2022)
2	Limited Variety	<i>“Most local restaurants that I want to order from are not available on C1.”</i>	Ray <i>et al.</i> (2019)
3	No Proper Feedback	<i>“First and foremost the listings in C1 could be more descriptive. There are no feedback about a particular dish which really makes it tough to make a choice.”</i>	New

Source: Interview Data Collected by Authors

**Table 4. Factors that Influence Customers' Intention to Use C2's OFD Services**

<b>Sr. No.</b>	<b>Themes</b>	<b>Exemplar</b>	<b>References</b>
1	Branding	<i>"Advertisements and Marketing strategies are catchy"</i>	Berry (2000, 2002)
2	Additional Services	<i>"Brand awareness, C2's Pro offers, Discounts like 1+1, not only for delivery but can book dine-in too"</i>	Sheth et al. (1991)
3	Customer Loyalty	<i>"Customer loyalty as C2 has been in the league for almost a decade now, knows what their customer wants and they keep innovating with new restaurants."</i>	Oliver (1997, 1999)
4	Variety of Options	<i>"Definitely the availability of more number of restaurants on C2."</i>	Ray et al. (2019)

Source: Interview Data Collected by Authors

**Table 5. Barriers that Customers Face while Using C2's OFD Services**

<b>Sr. No.</b>	<b>Themes</b>	<b>Exemplar</b>	<b>References</b>
1	User Interface	<i>"UI bit complex not as light and clean as C1"</i>	Ray et al. (2019)
2	Customer Support	<i>"C2 takes orders from customers first, but after sometime the restaurants contacts you and say that they can't fulfil the order and the customer needs to cancel it from their end."</i>	Parasuraman et al. (1988); Ray et al. (2019)
3	Inflated Prices/ Higher Delivery Charges	<i>"The prices are inflated at few times in the C2 app, as the same set of items is often relatively cheaper when ordered directly from the said restaurants or in the case of takeaway." "It's costly and takes time in delivery."</i>	Ray & Bala, (2021)

Source: Interview Data Collected by Authors

Figure 2: Word Cloud Demonstrating Commonly Used Words in Customer Reviews for C1



Source: Customer Reviews Data

Figure 3: Word Cloud Demonstrating Commonly Used Words in Customer Reviews for C2



Source: Customer Reviews Data

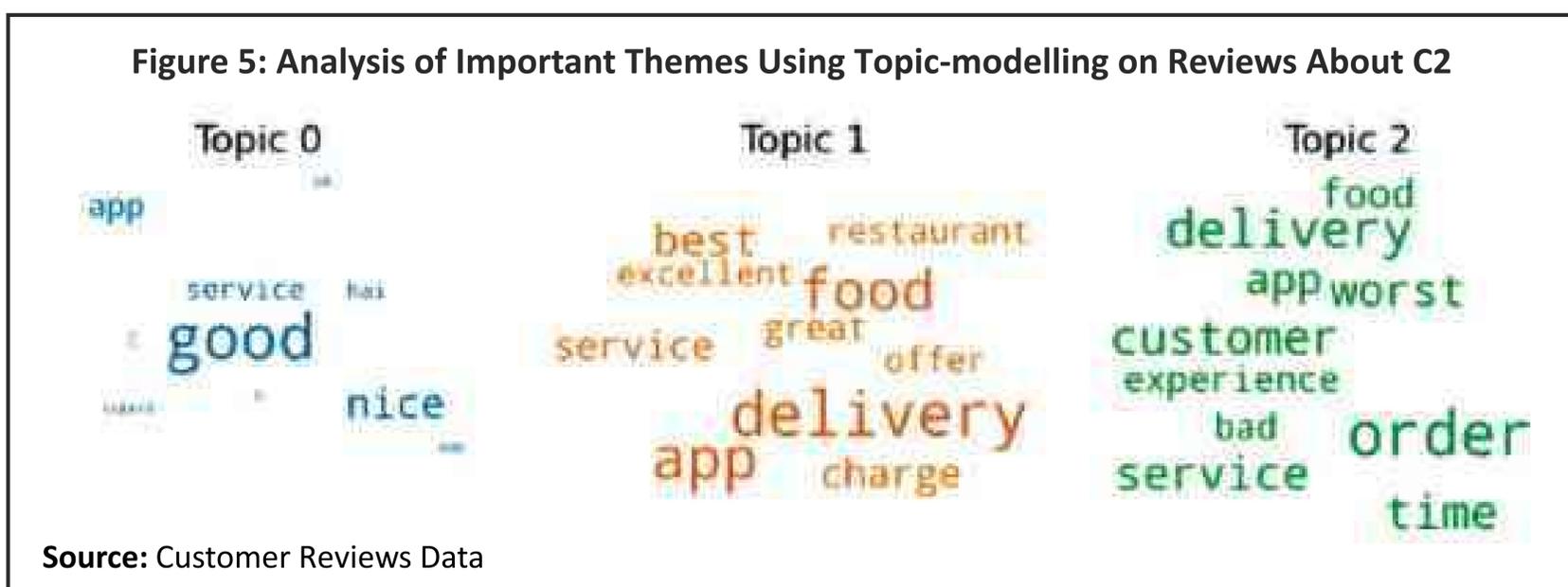
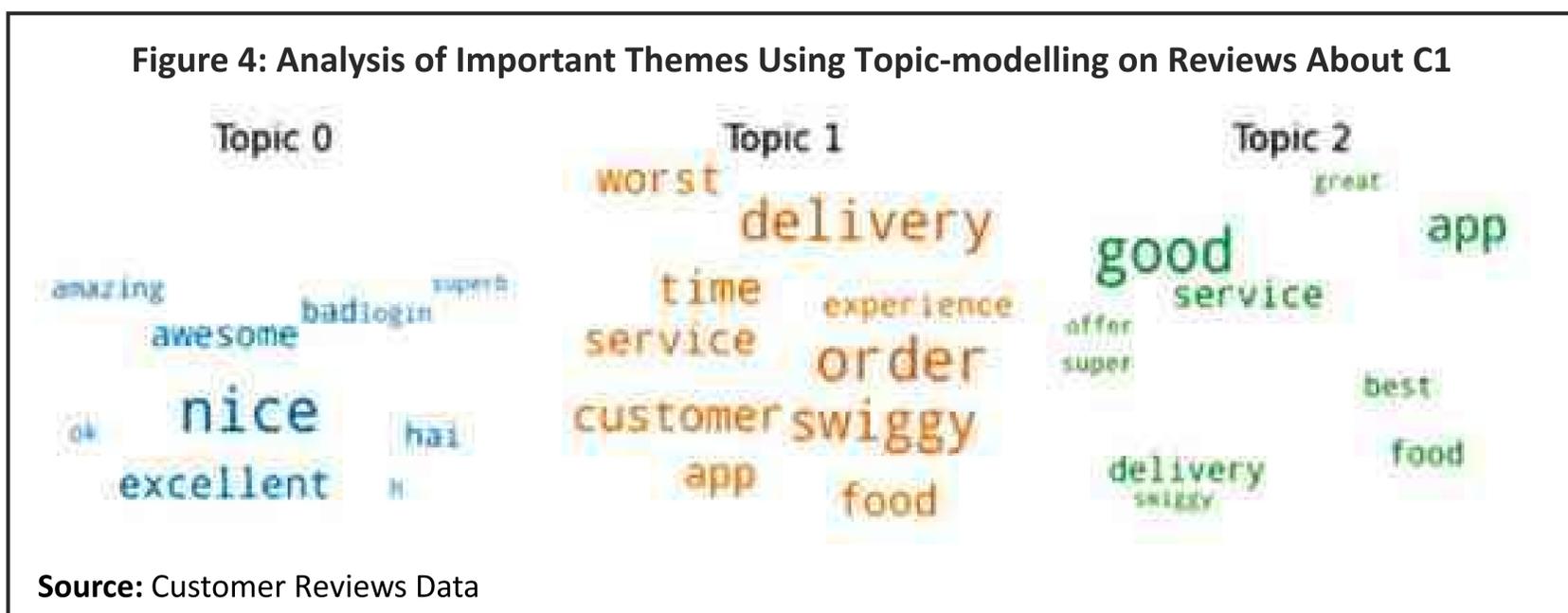
talked about “customer care”, “customer service”, “good service”, etc.

For a much deeper qualitative understanding, we have also performed a topic-modelling-based analysis on the reviews available for companies C1 (refer to Figure 4) and C2 (refer to Figure 5). For C1, when we group the bag of words based on similarity we observe that in the three clusters formed, cluster 1 (Topic 0) and cluster 3 (Topic 2) project the positive experiences of C1's services while cluster 2

(Topic 1) projects the negative experiences. Similarly, for C2, in cluster 1 (Topic 0) and cluster 2 (Topic 1) mostly words portraying a satisfied customer have emerged. Cluster 3 (Topic 2) mainly focuses on words related to bad customer experience.

### 4.3 Discussion

Based on the major themes that have emerged in this study both from qualitative interviews and online user generated content, we observe



different service related aspects have come to the forefront. Based on Service Quality (SERVQUAL) model (Parasuraman *et al.*, 1988), we observe the following details:

**Tangibles:** packaging, variety, delivery boy

**Assurance:** experience, user-friendly, customer support

**Empathy:** discounts, pathetic behaviour

**Responsiveness:** feedback, delivery time, delay

**Reliability:** reliable, loyalty.

The results of the study show that although people are satisfied with the services of both companies, they have also expressed concerns related to a limited variety of food, customer service, delay in services, delivery boy behaviour, pricing, bad quality, food packaging, etc. When comparing the two service providers, it has been observed that people have voiced the positives as well as negatives of both companies. The respondents have also said that they keep the OFD provider apps and depending on the discounts offered on a particular day, they select the provider. It is to be noted that during a health crisis when people were more worried about having contactless deliveries, tangibles, responsiveness and assurance were mostly deemed important. People worry about the safety measures taken by a provider and may get offended due to inflated prices. Hence, providers should understand that during a health crisis, it is important to provide good reliable and fast service.

The theoretical implication of this study is three-fold. First, this study extends the literature on OFDs by analyzing the different quality aspects that have affected customers' perceptions of OFDs during the COVID-19 pandemic. Drawing on the SERVQUAL model, it categorized the different quality factors on consumers' adoption intentions based on qualitative data. Second, we suggest that consumers may pay different attention to quality factors when deciding on their adoption of OFDs. Particularly, we found that pricing and service quality play significant roles in the OFDs context. Thus, companies can promote the OFDs through the improvement of their delivery services. Besides, offers on food prices should also be emphasized. The finding suggests that consumers are price-sensitive and service sensitive. Thirdly, regarding methodology, we focused on qualitative methods, interviews and texting mining. This contributes to the literature by providing a detailed view of OFD consumers' preferences and concerns. Future scholars can adopt such multi-method approaches to examine aspects affecting consumers' intention to adopt.

The findings of the study provide some useful insights for OFD platform managers. First, consumers on these platforms judge the platform quality based on the price, customer services and delivery services to make their purchase decisions. Therefore, to effectively motivate consumers to stay loyal, the platforms need to employ enough promotions and deals, 24x7 customer services and efficient

tracking delivery services on the platform. This will significantly grow the trust of consumers and increase consumer retention in the future. Secondly, consumers trust feedback from other consumers to make their decisions. Therefore, platforms should motivate existing consumers to leave their comments focusing on the service quality of the platform. As for food quality, many platforms are having similar restaurants selling similar foods. Therefore, to stay competitive in the market, inviting some local restaurants which have not been displayed on other platforms will increase their food variety and increase customer visits.

## 5. Conclusion

The study aims to examine the service-related aspects that customers face while using OFDs in India during COVID-19. This study has adopted a qualitative based approach by analyzing primary (semi-structured interviews) and secondary (online customer reviews) data to capture customer perspectives about the services of two Indian OFDs. Based on the thematic based analysis and textual analysis, we have found that although customers have expressed satisfaction related to delivery and user interface, they have expressed concerns related to service time, etc. It was also observed that both the providers have some positives and negatives and people mostly use them based on offers and discounts. The major contribution of this study is that it qualitatively explores the factors and barriers that affect users' intention

to use OFDs during a health crisis. Earlier studies have mostly examined factors or barriers through qualitative interviews or quantitative surveys. This study utilizes both qualitative interviews and customer reviews about two OFDs in India during COVID.

Although the study has been considered in the Indian context, the study may be limited by the use of only qualitative data. Future scholars can work on examining the different drivers of customers' intention to use food delivery applications from the SERVQUAL lens. Additionally, future scholars can also examine the drivers based on demographic aspects like gender, location and also culture.

## References

- Akram, U., Ansari, A.R., Fu, G., & Junaid, M. (2020). Feeling Hungry? Let's Order through Mobile! Examining the Fast Food Mobile Commerce in China. *Journal of Retailing and Consumer Services*, 56, 102142.
- Barrane, F.Z., Ndubisi, N.O., Kamble, S., Karuranga, G.E., & Poulin, D. (2021). Building Trust in Multi-Stakeholder Collaborations for New Product Development in the Digital Transformation Era. *Benchmarking: An International Journal*, 28(1), 205-228.
- Belarmino, A., Raab, C., Tang, J., & Han, W. (2021). Exploring the Motivations to Use Online Meal Delivery Platforms: Before and during Quarantine. *International Journal of Hospitality Management*, 96, 102983.
- Berry, L.L. (2000). Cultivating Service Brand Equity, *Journal of the Academy of Marketing Science*, 28(1), 128-37.
- Berry, L.L. (2002). Relationship Marketing of Services – Perspectives from 1983 and 2000, *Journal of Relationship Marketing*, 1(1), 57-77.
- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). *Thematic Analysis*. In Handbook of Research Methods

in Health Social Sciences, edited by P. Liamputtong. Singapore: Springer.

Candra, S., Ayudina, M., & Arashi, M.A., (2021). The Impact of Online Food Applications during the COVID-19 Pandemic. *International Journal of Technology*, 12(3), 472-484.

Chadda, R. (2020). *Swiggy vs Zomato: Battle of India's Biggest Food Aggregator*. Accessed from: <https://www.dnaindia.com/analysis/report-swiggy-vs-zomato-battle-of-india-s-biggest-food-aggregator-2820924>

Chavan, V., Jadhav, P., Korade, S., & Teli, P. (2015). Implementing Customizable Online Food Ordering System Using Web Based Application. *International Journal of Innovative Science, Engineering & Technology*, 2(4), 722-727.

Cheng, C.-C., Chang, Y.-Y., & Chen, C.-T. (2021). Construction of a Service Quality Scale for the Online Food Delivery Industry. *International Journal of Hospitality Management*, 95, 102938.

Chattopadhyay, R. (2020). Livelihood under COVID-19 Anxiety: Role of HR. *IMI Konnect*, 9(2), 40-47.

Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 3rd ed. Thousand Oaks, CA: Sage.

Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340.

Fakfare, P. (2021). Influence of Service Attributes of Food Delivery Application on Customers' Satisfaction and their Behavioural Responses: The IPMA Approach. *International Journal of Gastronomy and Food Science*, 25, 100392.

Ghosh, D. (2020). Customer Satisfaction towards Fast Food through Online Food Delivery (OFD) Services: An Exploratory Study. *International Journal of Management (IJM)*, 11(10), 645-658.

Gravetter, F., & Forzano, B.L. (2010). *Research Methods for Behavioral Sciences*. 4th Edition, Warworth Cengage Learning.

Hong, C., Choi, H. H., Choi, E.K.C., & Joung, H.W.D. (2021). Factors Affecting Customer Intention to Use Online Food Delivery Services before and during the COVID-19 Pandemic. *Journal of Hospitality and Tourism Management*, 48, 509-518.

Kaur, P., Dhir, A., Ray, A., Bala, P.K. and Khalil, A. (2021). Innovation Resistance Theory Perspective on the Use of Food Delivery Applications. *Journal of Enterprise Information Management*, 34(6), 1746-1768.

Kapoor, A.P., & Vij, M. (2018). Technology at the Dinner Table: Ordering Food Online through Mobile Apps. *Journal of Retailing and Consumer Services*, 43, 342-351.

Naveen, B. R., & Gurtoo, A. (2022). Public Transport Strategy and Epidemic Prevention Framework in the Context of COVID-19. *Transport Policy*, 116, 165-174.

Niu, B., Li, Q., Mu, Z., Chen, L., & Ji, P. (2021). Platform Logistics or Self-Logistics? Restaurants' Cooperation with Online Food-Delivery Platform Considering Profitability and Sustainability. *International Journal of Production Economics*, 234, 108064.

Oliver, R.L. (1997). *Satisfaction: A Behavioral Perspective on the Consumer*. New York: McGraw-Hill.

Oliver, R.L. (1999). Whence Consumer Loyalty? *Journal of Marketing*, 63, 33-34.

Pal, D., Funilkul, S., Eamsinvattana, W., & Siyal, S. (2021). Using Online Food Delivery Applications during the COVID-19 Lockdown Period: What Drives University Students' Satisfaction and Loyalty? *Journal of Foodservice Business Research*, 25(5), 1-45.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64, 12-40.

Poon, W.C., & Tung, S.E.H. (2022). The Rise of Online Food Delivery Culture during the COVID-19 Pandemic: An Analysis of Intention and its Associated Risk. *European Journal of Management and Business Economics*. (ahead of print)

- Poon, W.C., & Tung, S.E.H. (2022). Consumer Risk Perception of Online Food Delivery during the COVID-19 Movement Control Order (MCO) In Malaysia. *Journal of Foodservice Business Research*, 1-21.
- Prasetyo, Y.T., Tanto, H., Mariyanto, M., Hanjaya, C., Young, M.N., Persada, S.F. *et al.* (2021). Factors Affecting Customer Satisfaction and Loyalty in Online Food Delivery Service during the COVID-19 Pandemic: Its Relation with Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 76.
- Ravi, P.K. (2013). *The Encyclopedia of Cross-Cultural Psychology*. 1st ed. John Wiley & Sons, Inc.
- Ray, A., Dhir, A., Bala, P.K., & Kaur, P. (2019). Why Do People Use Food Delivery Apps (FDA)? A Uses and Gratification Theory Perspective. *Journal of Retailing and Consumer Services*, 51, 221-230.
- Ray, A., & Ma, L. (2021). Operational Changes and Performance Outcomes: Analysis on Hotels of Five Asia-Pacific Countries. *International Journal of Global Business and Competitiveness*. (ahead of print)
- Ray, A., & Bala, P.K. (2021). User Generated Content for Exploring Factors Affecting Intention to Use Travel and Food Delivery Services. *International Journal of Hospitality Management*, 92, 102730.
- Saad, A.T. (2021). Factors Affecting Online Food Delivery Service in Bangladesh: An Empirical Study. *British Food Journal*, 123(2), 535-550.
- Sarwar, A., & Imran, M. (2021). Prioritizing Infection Prevention and Control Activities for SARS-CoV-2 (COVID-19): A Multi-Criteria Decision-Analysis Method. *Journal of Healthcare Leadership*, 13, 77-84.
- Sengupta, P. (2020). COVID-19: Is Social Distancing an Effective Measure in India? An Exploration. *IMI Konnect*, 9(2), 19-40.
- Sethu, H. & Saini, B. (2016). *Customer Perception and Satisfaction on Ordering Food via Internet, a Case on Foodzoned.Com, in Manipal*. In: Seventh Asia-Pacific Conference on Global Business, Economics, Finance and Social Sciences. Kuala Lumpur, Malaysia.
- Shankar, A., Jebarajakirthy, C., Nayal, P., Maseeh, H.I., Kumar, A., & Sivapalan, A. (2022). Online Food Delivery: A Systematic Synthesis of Literature and a Framework Development. *International Journal of Hospitality Management*, 104, 103240.
- Sharma, R., Dhir, A., Talwar, S., & Kaur, P. (2021). Over-Ordering and Food Waste: The Use of Food Delivery Apps during a Pandemic. *International Journal of Hospitality Management*, 96, 102977.
- Sheth, J.N., Newman, B.I., & Gross, B.L. (1991). Why We Buy What We Buy: A Theory of Consumption Values. *Journal of Business Research*, 22(2), 159-170.
- Shinde, P.P., Oza, K.S., & Kamat, R.K. (2017). *Big Data Predictive Analysis: Using R Analytical Tool*. In 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC) (pp. 839-842). IEEE.
- Siering, M., Deokar, A.V., & Janze, C. (2018). Disentangling Consumer Recommendations: Explaining and Predicting Airline Recommendations based on Online Reviews. *Decision Support Systems*, 107, 52-63.
- Subathra, P., & Kumar, P.N. (2019). *Recommending Research Article Based on User Queries Using Latent Dirichlet Allocation*. In International Conference on Soft Computing and Signal Processing (pp.163-175). Springer, Singapore.
- Suhartanto, D., Helmi Ali, M., Tan, K.H., Sjahroeddin, F., & Kusdibyo, L. (2019). Loyalty toward Online Food Delivery Service: The Role of E-Service Quality and Food Quality. *Journal of Foodservice Business Research*, 22(1), 81-97.
- Talwar, S., Dhir, A., Scuotto, V., & Kaur, P. (2021). Barriers and Paradoxical Recommendation Behaviour in Online to Offline (O2O) Services. A Convergent Mixed-Method Study. *Journal of Business Research*, 131, 25-39.
- Tandon, A., Kaur, P., Bhatt, Y., Mäntymäki, M., & Dhir, A. (2021). Why Do People Purchase from Food Delivery Apps? A Consumer Value Perspective. *Journal*

*of Retailing and Consumer Services*, 63, 102667.

Wang, X., Kim, W., Holguín-Veras, J., & Schmid, J. (2021). Adoption of Delivery Services in Light of the COVID Pandemic: Who and How Long? *Transportation Research Part A: Policy and Practice*, 154, 270-286.

Zhao, Y., & Bacao, F. (2020). What Factors Determining Customer Continuingly Using Food Delivery Apps during 2019 Novel Coronavirus Pandemic Period? *International Journal of Hospitality Management*, 91, 102683.

# We Need to be Gender Inclusive, Not Gender Neutral

*Locating Empathy Gap in Organizational Practices during Pandemic*

Priya Kataria\* and Shelly Pandey\*\*

## Abstract

*The present paper is based on an empirical study on women employees of the Information Technology Enabled Services (ITES) sector in India, who have joined back their organizations physically after 2 years of working from home. The paper argues that organizational practices for work from home (WFH) during the pandemic had deep gendered implications. ITES sector in India was quick to produce WFH policies to ensure the safety of employees without hampering productivity. The findings of the study indicate that although organizations tried to take care of the logistic of WFH and the emotional well-being of the employees by engaging them in work and activities, these practices remained gender neutral. These gender-neutral policies had a negative implication on the productivity of women employees as they felt an empathy gap from their organizations towards them. The findings further highlighted that given the fact that almost 40 to 50 per cent of the employee base of the ITES sector is women, the work from home was designed in such a gender-neutral manner that it became extremely challenging for women. There was no specific support provided by the organization that was focused on the women employees and hence there is a need to address this empathy gap.*

**Keywords:** Human Resource Management, HRM, Inclusion, Gender, Empathy Gap

## 1. Introduction

The COVID-19 pandemic affected peoples' lives and health across the world in various ways. It also broke many binaries as the binaries of workplace and home; being an employee and being a family member got blurred. Various roles and identities along

with various spaces online/offline had to be managed at the same time. In this backdrop of integration of work and home life, it remained important to explore how organizations managed, incentivized and supported their employees when they were required to work from home. Numerous studies came forward during the pandemic indicating the harder impact of the pandemic on women workers due to the fact that along with their

---

\*FPM Scholar, Goa Institute of Management, Goa, India

\*\*Assistant Professor, Goa Institute of Management, Goa, India

professional work, the domestic and care work remained their responsibility (Alon *et al.*, 2020; Coban, 2022; Dubey & Tripathi, 2020; Kossek *et al.*, 2021;). The present paper aims to analyze organizational practices during the pandemic from a gender lens. The Information Technology Enabled Services (ITES) involves the delegation of one or more Information Technology (IT) intensive business processes to an external provider that in turn owns, administers and manages the selected process based on defined and measurable performance criteria. ITES sector in India continues to be one of the largest employers in the country directly employing 2.8 million professionals; out of these, nearly 45 per cent are women (Sengupta, 2011). There are different types of services offered by the ITES sector in India such as customer support services, technical support services, telemarketing services, employee IT help-desk services, insurance processing, data entry services, data conversion services and others on similar lines. Some of these services like customer support services, technical support services, and telemarketing services require having a telephonic or online conversation with customers sitting across the globe. In India, the clients or owners of the organizations under Business Process Outsourcing (BPO) are from the United States of America (USA) and European countries (Singh & Dillon, 2007). Due to the involvement of technology, it was easier for ITES sector to shift the work from the office

desk to the home desk.

## 2. A Review of Responses during COVID-19 Pandemic

The extant literature on the organizational response to employees' well-being during the pandemic has been largely characterized by difficulties, challenges, or disruptions during the COVID-19 crisis (Manroop & Petrovski, 2021). Studies have also located the HRM practices to cross the conventional boundaries of organizations and enter the personal lives of the employees to enhance their performances (Caligiuri *et al.*, 2020). Connecting with employees while working online has been discussed to analyse inclusion, copresence and vitality (Gibson, 2020). Studies in the Indian context also discuss that the well-being of the employees was located through social and psychological resources (Agarwal, 2021). Scholars who discussed motivating practices by organizations during the pandemic shared that flexible work practices and communication competency of leaders appeared to have a strong influence on the work performance of the employees (Sadhna *et al.*, 2020). All these practices have been argued to be getting more crucial in the challenge of handling employees from a distance (Caligiuri *et al.*, 2020). The literature also talks about various engagement practices and activities for family engagements, virtual learnings, and online team building to make employees feel committed to organizations and stay motivated (Chanana, 2021).

### ***2.1 Comparative Analysis of Indian Working Women to Their Counterparts in Other Countries***

A comparative review of scholarly studies conducted across the globe during the pandemic has brought about distinct narratives of working women during the pandemic. The narratives dictate the reality of COVID-19 and work which affected the scope of sustainable employment for women in India and abroad. Working women who could have benefited from a sustainable inclusive practice rather struggled and felt being subject to injustice at work (CohenMiller & Izenkova, 2022). From a developed country based working women's lens, COVID-19 and work only decreased their productivity and increased their work-life conflict (Collins, 2019; Friedman *et al.*, 2021). A large amount of literature published in the USA from 2020 to 2022 highlighted that, across sectors, working women faced distress managing care, domestic and work-from-home schedules all by themselves (Whiley *et al.*, 2021; Cummins & Brannon, 2022; Guatimosim, 2020). Like in India, a few global studies done in 2021 and 2022 also observed that with children in families, especially the young ones, the care work drastically interfered the work-life balance of working women in a heterosexual relationship (Schieman, 2021). In the context of Mexico and the United States of America, the new structure of work-from-home (WFH) during the pandemic acted as a penalty for the working mother (Miller, 2021; Fairlie *et al.*,

2021; Martínez & Ortíz, 2021). In India and abroad, working women felt penalized, whereas fathers on another end had eased as they were encouraged to only focus on full-time work. This resulted in an increase in gender inequality for working mothers both at work as well as home (Dias, 2020).

Studies have also been focusing on how organizational resilience was developed through HR practices to manage the financial constraints experienced by some sectors like travel and tourism (Ngoc *et al.*, 2021; Agarwal, 2021). Flexible work culture, stress management of the employees and communication have been the major findings of the studies focusing on the well-being of the employees during work from home (Teng-Calleja *et al.*, 2020; Zito *et al.*, 2021; Sadhna *et al.*, 2020). However, the review of the literature found some gaps in the organizational responses to deal with the work from home and employees' well-being during the pandemic, as these organizational responses have not been analysed from the perspective of a diverse workforce, where gender is an important factor. In the context of the countries like India, where the pandemic was experienced severely in the first and second wave with a nationwide lockdown implemented, there was a complete cutdown of part-time domestic help in middle-class homes. The present study attempts to fill this gap by bringing the women employee's experiences during the pandemic to their organizations' responses in uncertain times of crisis.

### 3. Methodology

The study is qualitative and uses a digital ethnography approach to examine the viewpoints of women employees of ITES sector on WFH policies and initiatives. Data was collected using online in-depth interviews on Zoom or, Teams' meetings with a purposive sample of women employees in ITES sector. The interviews were of a dialogical nature to understand the authentic standpoints of the participants. The ongoing study includes interviews with 50 women working in the Indian ITES Sector. All were married with 1 or 2 children and in nuclear families.

A purposive sample of women working in ITES Sector was best suited for the study because ITES sector has encouraged more women's participation in the workforce by providing flexibility in the workspace. ITES sector organizations are encouraged to enhance the diversity quotient by making more inclusive policies to attract women employees (Mattis, 1995; McCarty *et al.*, 2005; NASSCOM-Mercer, 2009). Hence, exploring the initiatives taken by ITES sector during the pandemic and its impact on the lives of working middle-class women in India proved to be an important objective of the study.

The interview guide used the probes to build a dialogue with women working in ITES Sector such as WFH life during pandemic or,

lockdown, gender differences and WFH, the organization's consideration of workload (both professional and domestic) and policies and initiatives executed by organizations and expected by women employees. The data collected from different digital platforms contributed to a thick description of the questions of the study and enabled the study to follow both observational and interactive approaches to understand employee organization relations during the pandemic.

The data analysis was done through thematic analysis by marking the data collected through different mediums on various themes that emerged during the analysis. The findings of the study are largely based on those themes on which the data analysis was marked.

### 4. Respondents Demographics

For this study 59 working women were contacted, out of which in total 50 agreed to the interviews. The age of the participants ranged from 25 to 43. All the participating women were from Indian urban cities including Mumbai, Bangalore, and Hyderabad, belonging to middle-class families. Out of the 50 participants, 39 lived in a joint family unit comprising their husband, child or, children, and paternal grandparents of the child or, children. The remaining 11 lived in a nuclear family set up comprising of their husband and child or, children. At the time of conducting this study, all the women interviewed were working from home.

## 5. Findings: The Gendered Dimension of Organizational Practices during the Pandemic

### 5.1 Organizational Practices

The physical health of the employees during the pandemic was significantly dependent on social distancing but the psychological health of the employees depended on the stress and anxiety they were exposed to during work from home. This made women's psychological health more vulnerable than their male counterparts due to the responsibilities of childcare, house care, elderly care and professional work. The study attempted to find out whether organizations recognized this fact and tried to cater to their women employees in a more concerned manner during work-from-home during the pandemic.

The data of the study highlighted that no significant measures were taken by the organizations to recognize the gendered division of labour inside the homes of the employees. There has been a vast literature about the fact that work from home has remained harder for women than their male counterparts during the pandemic, due to the fact that household work is considered to be primarily women's responsibility (BBC, 2020). Taking care of the home, children, health and professional work brought forward the gendered reality of working from home. Against this backdrop, the women respondents mentioned that there were no

special measures taken to recognize this gendered dimension of work from home.

Some organizations realized that work from home could not have been done effectively unless the division of labour inside the home is handled. Therefore, flexibility was permitted by the organizations to handle the demands of work from home during the pandemic when other support system got unavailable due to the risk of infection. The Indian middle-class household work is done by full-time and part-time domestic helps for kitchen and cleaning-related work. During the pandemic this support system was interrupted, especially the part-time domestic worker's support vanished completely.

### 5.2 Gender Neutral Approach

The face of immediate leadership or managers became very relevant in this regard, especially the empathetic approach by the managers to provide flexibility towards work to take care of household work and children. The login time became highly flexible and choosing a convenient shift slot became a new norm. However, the respondents pointed out that flexibility was offered equally to men and women, without taking note of the fact that conditions of work from home could be different for men and women in the Indian middle-class families, which functions primarily on the labour of women family members. Women respondents also felt that due to flexibility, the binary of worktime and home time also got blurred as there were work

calls and meetings beyond the working hours. Many women indicated that flexibility should have been provided without encroaching on the home time and space.

*“The organization offered flexibility to us, but this was the common thing for both men and women. They should have come up with some measure of childcare, to engage the children for some time so that we could focus on work in a better way to make it less stressful for us. That would have contributed to our psychological well-being more than any music and podcast. If we could have asked for suggestions from our organization on how to take care of our emotional well-being then they could certainly have come up with the suggestion to take care or manage our children, elderly and household work at the same time that would have added to resolve our struggle of work from home in a better manner”* (respondent from Mumbai, India).

From the organizational perspective, the respondents in the managerial positions mentioned that the organizations tried to put up a gender-neutral face by not giving any special treatment or measures to any gender category. However, the women respondents pointed out that the gender-neutral policy and expectations should work in normal times but the policymakers should have recognized that during work from home women and men do not work in the same set-up anymore, and the organizational set-up could be the same for men and women to work but the home set up is certainly not experienced equally by men and women to work.

### **5.3 Empathetic Leadership**

For women employees, it remained an important aspect to have an empathetic concern from their immediate manager about their household responsibilities. Secondly, it was articulated by women employees with children that working while having children around them was the biggest challenge. However, 2 organizations in the study did conduct some dialogues between the women leaders of the organizations and women employees to know the concerns faced by them during work from home as women. This empathetic dialogue made women feel to have some empathetic response to their concerns, which worked as an important avenue for their emotional well-being.

*“We would have town hall meetings once a week, where our director would speak to us. He would share how difficult it is to manage household chores along with work and acknowledge that he was just helping his wife and can't imagine the stress his women employees would be going through. His gesture was good enough to make us feel part of the organization. Our leaders have to show that they care for us and that they understand how we feel. It does have an impact on our productivity”* (respondent from Bangalore, India).

The gendered dimension of the data pointed out the lacuna of having no recognition of the gendered division of labour inside middle-class households in India and women respondents of the study suggested that work

from home makes it imperative that the leadership should be sensitized about the gender politics inside homes in the social set up of their employees. The Indian middle-class household is dependent upon the labour of women family members and the leadership sitting in the western countries should be sensitized about this aspect of the Indian society. Secondly, it was proposed that work lives during work from home could not be possible without the voices of children. Children have to be part of the work lives at home and should not be considered as a question mark on the idea of professionalism. The women respondents indicated that without this awareness and changes, work from home and related stress will continue to be more for women than their male counterparts.

*“There was no school or daycare functioning. My kids would keep asking for me. It was very sad to lock my door for team meetings. I wish I had an understanding manager who would allow my child to walk around. Maybe a women manager could have understood that better”* (respondent from Hyderabad, India).

The gender dimension of the study also highlighted that most of the recreation activities, employee engagement practices and creative expression were more favourable to male employees than the women employees as they were informed to have lesser leisure time for creativity and recreation activities than their male counterparts.

## 6. Discussion- The Gender Empathy Gap

The ITES sector has invested in gender-friendly policies so that they attract more women to the workforce. But the gendered organizational structure is leading organizations to produce more gender-neutral than gender-inclusive policies. ITES sector and the corporate have been considerate of the burden of women, but the implementation of their policies has not lessened the burden of working middle-class Indian women (Roy, 2021).

The current study explores the assumption that there is an existence of a gender empathy gap within ITES sector affecting the decision-making process. Empathy is understood as the ability to understand others' emotional and mental states (Guthridge & Giummarra, 2021). Humans often face an empathy gap when they are unable to completely understand each other. The lack of understanding is attributed to environmental, physiological and psychological differences. These differences are most prominently experienced between different genders (Nordgren *et al.*, 2011). The study argues that the gender empathy gap is existing as policymakers, leaders and human resource managers in the organization are unable to empathize with a working woman's difficulties during the pandemic (Flynn & Lide, 2021). The decision-making process is largely affected due to the cognitive bias emerging from organizational culture and leadership (Heathfield, 2019). Respondents

also indicated that a woman in leadership position would have been more considerate of the unpaid work burden compared to a male leader. The expectation was of a more sensitive and empathetic leader.

The current data also identifies the lack of a reciprocal relationship between employees and management. Hence there was no opportunity for women to place their opinions about their specific difficulties. It is very evident that organizations are making efforts to design more women-friendly policies to sustain their diversity quotient, but they have been passive in terms of genuinely understanding the increase in working women's burden and work during the pandemic. The findings further suggest that a leader's empathetic attitude, complied feedback mechanism and regular check-in meetings contributed the most to work productivity while working from home.

## **7. Conclusion**

The present paper questions the viability of gender-neutral initiatives during the pandemic by the ITES organizations and argues that the gender-neutral approach led to a gender empathy gap for middle-class women employees. The findings of the study also indicate the need to have a gender-inclusive leadership policy by locating the gender empathy gap felt by women in organizational practices.

Organizations worldwide assumed that technological solutions would make WFH

smoother. That would have been true had technology worked in a vacuum devoid of social practices. Cultural nuances intersecting with technology have not let the WFH policies deliver their maximum benefit to Indian women working in the ITES sector. The ongoing study informs the need for more gender-inclusive policies and empathetic leadership by locating the gender empathy gap in organizational practices. This ethnographic study also suggests that the organizations identify the existing gender roles and allow women to contribute to designing policies that are more inclusive and sustainable.

The study also found a gap in the organizational responses toward the gendered aspect of working from home. Given the fact that almost 40 to 50 per cent of the employee base of the ITES sector is comprised of women and the work from home put great pressure on women to manage their work-life balance, there was not any support provided by the organization that was focused specifically on the women employees. In this manner, the study opens a new avenue for future research to locate women's experiences during work from home in the pandemic and how organizations responded to the same in an empathetic manner.

## **8. The Implication of the Study**

The study highlights that organizations in the ITES sector are focusing more on gender-neutral policies. However, a gender-neutral mindset does not look sustainable in the work

life of women employees and rather it is leading to attrition. The responses from the industry indicate that women desire inclusive policies instead of neutral policies. This will provide ways for women to manage childcare and other unpaid work and also make men be a part of household work by putting childcare for parents and not for mothers.

Another implication of the study is from the human resource perspective that during a time of crisis such as a pandemic how organizations must make policies while keeping a diversified employee base in mind and not only by keeping the male worker's perspective of work and life as the basis of policy making.

## References

- Agarwal, P. (2021). Shattered but Smiling: Human Resource Management and the Wellbeing of Hotel Employees during COVID-19. *International Journal of Hospitality Management*, 93, 102765.
- Alon, T., Doepke, M., Olmstead-Rumsey, J., & Tertilt, M. (2020). The Impact of COVID-19 on Gender Equality (No. w26947), *National Bureau of Economic Research*.
- BBC (2020). Coronavirus: Domestic Abuse Calls Up 25 Per Cent Since Lockdown, Charity Says. Accessed from: <https://www.bbc.co.uk/news/uk-52157620>
- Caligiuri, P., De Cieri, H., Minbaeva, D., Verbeke, A., & Zimmermann, A. (2020). International HRM Insights for Navigating the COVID-19 Pandemic: Implications for Future Research and Practice. *Journal of International Business Studies*, 51(5), 697-713.
- Chanana, N. (2021). Employee Engagement Practices during COVID-19 Lockdown. *Journal of Public Affairs*, 21(4), e2508.
- Çoban, S. (2022). Gender and Telework: Work and Family Experiences of Teleworking Professional, Middle-class, Married Women with Children during the Covid-19 Pandemic in Turkey. *Gender, Work & Organization*, 29(1), 241-255.
- CohenMiller, A., & Izekenova, Z. (2022). Motherhood in Academia during the COVID-19 Pandemic: An International Online Photovoice Study Addressing Issues of Equity and Inclusion in Higher Education. *Innovative Higher Education*, 1-23.
- Collins, C. (2019). Making Motherhood Work - How Women Manage Careers and Caregiving. *Princeton University Press*.
- Dubey, A. D., & Tripathi, S. (2020). Analysing the Sentiments towards Work-from-home Experience during Covid-19 Pandemic. *Journal of Innovation Management*, 8(1), 13-19.
- Fairlie, R. W., Couch, K., & Xu, H. (2021). The Evolving Impacts of the Covid-19 Pandemic on Gender Inequality in the US Labor Market: The Covid Motherhood Penalty. *National Bureau of Economic Research*, (No. w29426).
- Flynn, F., & Lide, C. (2021). Under-communication and the Empathy Gap: The Price Leaders Pay for Not Sharing Enough. In *Academy of Management Proceedings* (Vol. 2021, No. 1, p. 13595). Briarcliff Manor, NY 10510: Academy of Management.
- Friedman, M. M., Kostka Lichtfuss, K., Martignetti, L., & Gingras, J. (2021). "It Feels a Bit Like Drowning": Expectations and Experiences of Motherhood during COVID-19. *Atlantis: Critical Studies in Gender, Culture & Social Justice/Atlantis: Études Critiques Sur Le Genre, La Culture, Et La Justice*, 42(1), 47-57.
- Gibson, C. (2020). From "Social Distancing" to "Care in Connecting": An Emerging Organizational Research Agenda for Turbulent Times. *Academy of Management Discoveries*, 6(2), 165-169.
- Guatimosim, C. (2020). Reflections on Motherhood and the Impact of COVID 19 Pandemic on Women's Scientific Careers. *Journal of Neurochemistry*, 155, 469-470.

- Guthridge, M., & Giummarra, M. J. (2021). The Taxonomy of Empathy: A Meta- definition and the Nine Dimensions of the Empathic System. *Journal of Humanistic Psychology*, 00221678211018015.
- Heathfield, S. M. (2019). Human Resources. *The Balance Careers*.
- Kossek, E. E., Dumas, T. L., Piszczek, M. M., & Allen, T. D. (2021). Pushing the Boundaries: A Qualitative Study of How Stem Women Adapted to Disrupted Work–nonwork Boundaries during the COVID-19 Pandemic. *Journal of Applied Psychology*, 106(11), 1615.
- Manroop, L., & Petrovski, D. (2021). Exploring Layers of Context-Related Work-at-Home Demands during Covid-19 Pandemic. In *Academy of Management Proceedings* (Vol. 2021, No. 1, p. 10470). Briarcliff Manor, NY 10510: Academy of Management.
- Martínez, L. B., & Ortíz, L. M. (2021). Motherhood and Academia in Mexican Universities: Juggling Our Way through COVID-19. *Mothers, Mothering, and COVID-19; Dispatches from the Pandemic; Green, FJ, O'Rilley, A., Eds.*
- Mattis, M. C. (1995). Corporate Initiatives for Advancing Women. *Women in Management Review*, 10(7), 5–14.
- McCarty, C., Dawn, K. H. C., & McCarty, E. (2005). Building Diversity in the Pipeline to Corporate Leadership. *Journal of Management Development*, 24(2), 155–168.
- Miller, K. E. (2021). The Ethics of Care and Academic Motherhood amid COVID-19. *Gender, Work & Organization*, 28, 260–265.
- NASSCOM-Mercer. (2009). Gender-Inclusivity in India: Building Empowered Organisations. Retrieved from: <https://cutt.ly/RVR5K0n>
- Ngoc Su, D., Luc Tra, D., Thi Huynh, H. M., Nguyen, H. H. T., & O'Mahony, B. (2021). Enhancing Resilience in the Covid-19 Crisis: Lessons from Human Resource Management Practices in Vietnam. *Current Issues in Tourism*, 24(22), 3189–3205.
- Nordgren, L. F., Banas, K., & MacDonald, G. (2011). Empathy Gaps for Social Pain: Why People Underestimate the Pain of Social Suffering. *Journal of Personality and Social Psychology*, 100(1), 120.
- Roy, R. (2021). Working from Home: Women in the Indian Tech-industry through the Pandemic. *Journal of Comparative Literature and Aesthetics*, 44, 56–67.
- Sadhna, P., Gupta, S., & Rastogi, S. (2020). Key Motivators for Driving Work Performance amid COVID-19 in Developing Nations. *International Journal of Work Organisation and Emotion*, 11(2), 105–119.
- Schieman, S. B. (2021). Work-Life Conflict during the COVID-19 Pandemic. *Socius*, 7, 2378023120982856.
- Sengupta, S. (2011). An Exploratory Study on Job and Demographic Attributes Affecting Employee Satisfaction in the Indian BPO Industry. *Strategic Outsourcing: An International Journal*, 4(3), 248–73.
- Singh, R., & Dhillon, S. 2007. Growth and Opportunities in Business by Outsourcing: A Case Study of Business Process Outsourcing (BPO)/Call Centers Industry. *Strategic Outsourcing: Concept, IT Outsourcing, IT Enabled Services Outsourcing, Sectoral Applications of Outsourcing, the India Advantage*, New Delhi: Deep & Deep.
- Teng-Calleja, M., Caringal-Go, J. F., Manaois, J. O., Isidro, M., Queenie, Y., & Zantua, R. M. S. (2020). Examining Organizational Response and Employee Coping Behaviors amid The COVID-19 Pandemic.
- Whiley, L. A., Sayer, H., & Juanchich, M. (2021). Motherhood and Guilt in A Pandemic: Negotiating the “New” Normal with a Feminist Identity. *Gender, Work & Organization*, 28, 612–619.
- Zito, M., Ingusci, E., Cortese, C. G., Giancaspro, M. L., Manuti, A., Molino, M., Signore, F., & Russo, V. (2021). Does the End Justify the Means? The Role of Organizational Communication among Work-From-Home Employees during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 18(8), 3933.

# Privacy and Security Concerns with Electronic Health Records- Shreds of Evidence from India

Vinaytosh Mishra\* and Monu Mishra\*\*

## Abstract

*Digitalization of health has many benefits in providing superlative care. The recent pandemic has increased the rate of digitalization in many countries and India is no exception. This study uses a narrative review to establish the importance of privacy and security issues in the implementation of Electronic Health Records (EHR). The study identifies six major privacy and security concerns related to personal health information (PHI). The study then uses a multi-criteria-decision-making (MCDM) method of Best-Worst Method (BWM) to rank the identified ones. The study concludes price is the most important concern followed by government policy. The study suggests that government should provide subsidies for implementing privacy and security infrastructure. Government can also think about sandboxing new technologies before implementing them on a large scale. The study provides a descriptive and prescriptive framework for the implementation of privacy and security in EHR. The findings of this study are useful for healthcare managers and health policymakers. There is a lack of an Indian study on this pertinent topic and this study attempts to fill this research gap.*

**Keywords:** Electronic Health Records, EHR, Security Issues, Privacy Issues, Best Worst Method

## 1. Introduction

Digitalization of healthcare is not a point of differentiation, it is a point of parity for a winning healthcare provider. The recent outbreak of the pandemic has been a blessing in disguise for the healthcare industry as it has

given impetus to the adoption of digital technologies. One of the arenas where we have witnessed digitalization in the recent past is health records. Electronic Medical Records (EMR) and Electronic Health Records (EHR) are used by physicians to improve the quality of care and contain costs (Heart *et al.*, 2017). The major difference between these two systems is their scope. While the scope of the former is intra-organizational, the latter

---

\*Associate Professor, College of Healthcare Management and Economics, Gulf Medical University, Ajman, UAE

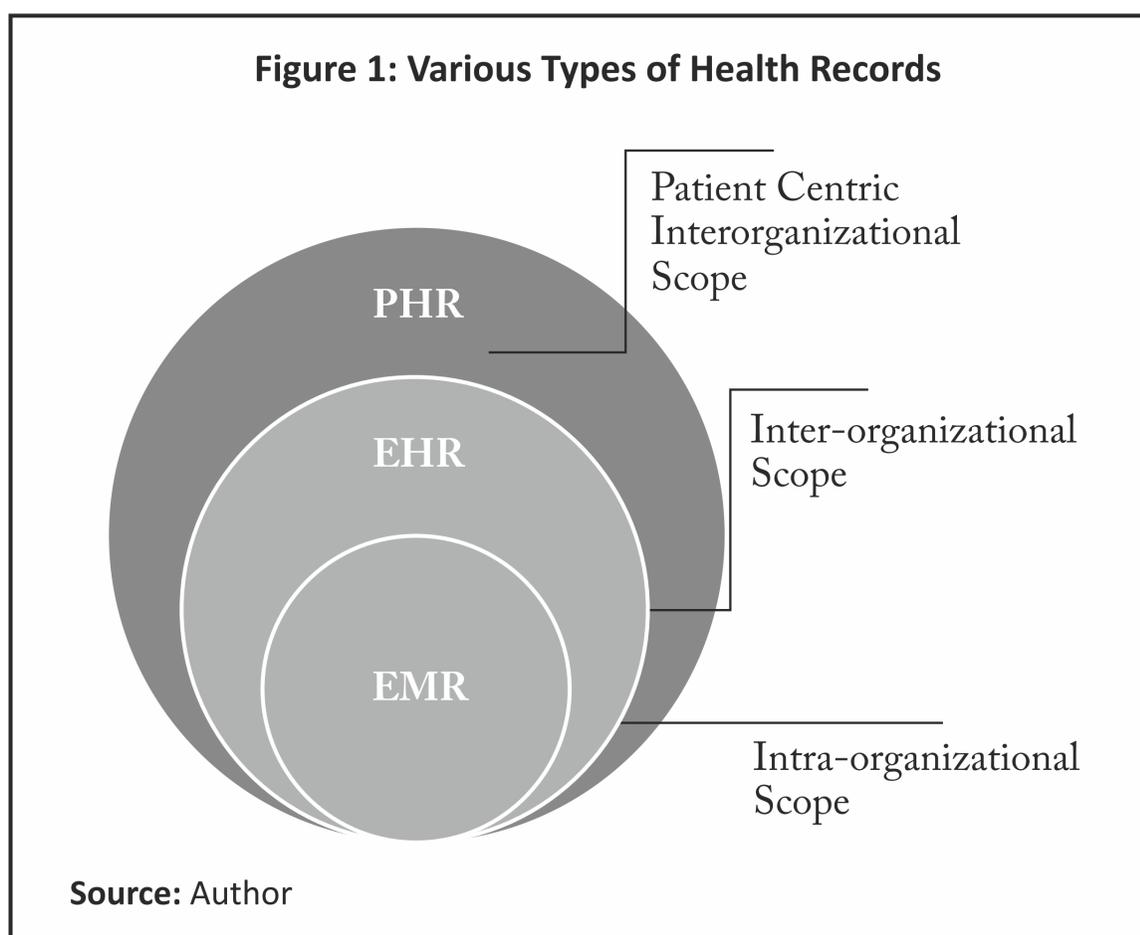
\*\*HR Manager, Aaroha Healthcare (P) Ltd., Varanasi, India

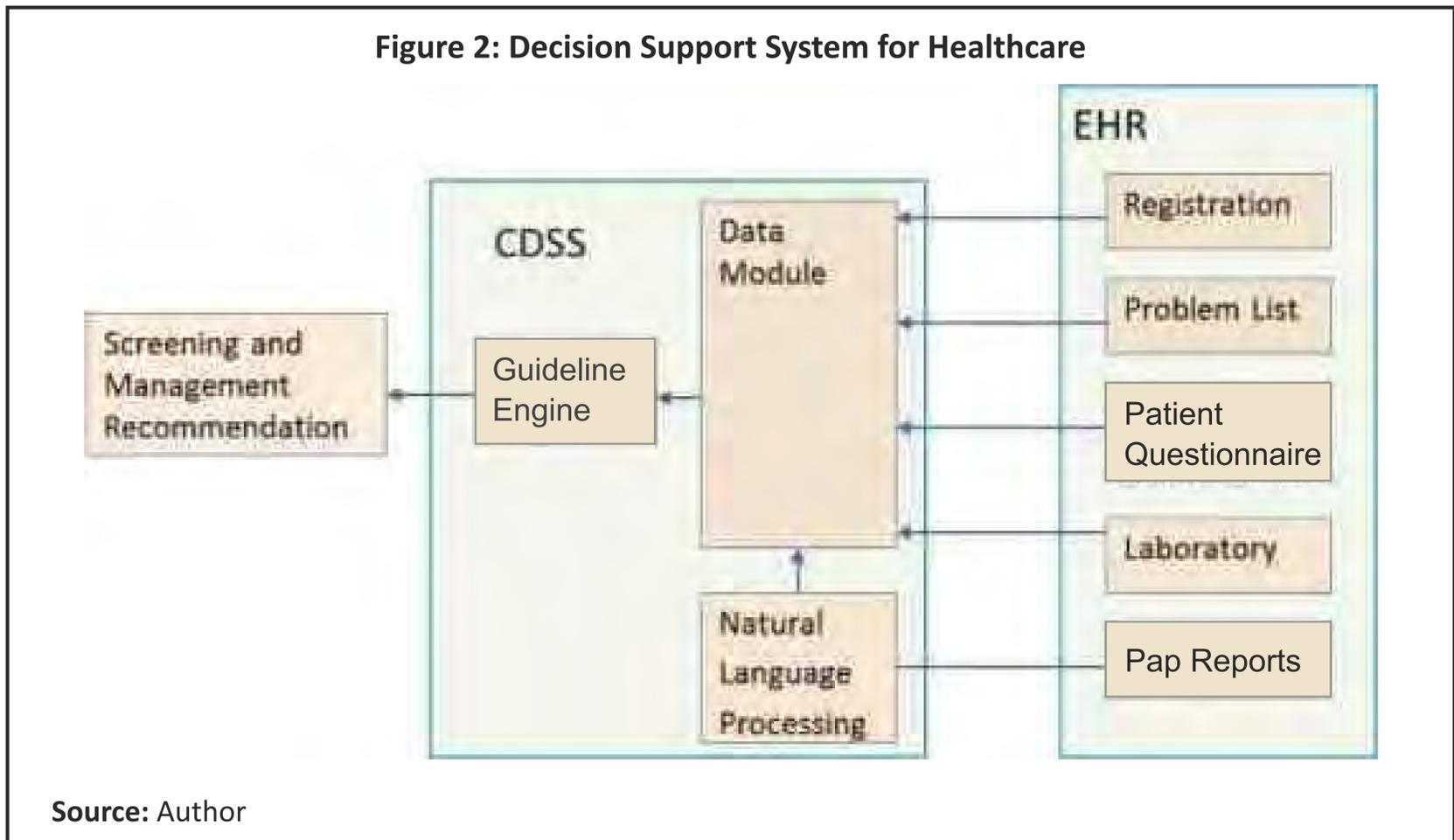
has inter-organizational scope. Of late patients have become increasingly empowered and they actively participate in the achievement of their healthcare goals (Segal, 2009). These patients like to take control of their data and be more informed about their rights. Keeping this in view, a new generation of user-centric information systems is emerging in health care as patient health record (PHR) systems (Bouayad *et al.*, 2017). The scope of the three types of health records is summarized through a Venn Diagram in Figure 1. It is observed that PHR is still a distant dream in India as most organizations are still at the EMR level and striving to move to the EHR level. In many countries, government regulations and compliances have made it inevitable.

Electronic Health Records (EHR) are a

longitudinal collection of health information about individual patients or population which has many clinical as well as administrative utilities (Florence, 2016). It is a digital version of a patient's record in the form of a traditional paper format. The availability of patient-centric data to authorized stakeholders in a secure and synchronous mode makes EHR superior to traditional methods of storing patients' records (Seymour *et al.*, 2012). But it has its limitation and will be discussed in the coming sections of the article. EHR is deployed in a healthcare organization with a plan for the long-term preservation and storage of healthcare information records. It not only contains the medical and treatment histories of patients, but its utility is also in allied healthcare professional areas. It is also useful in other domains such as scheduling,

forecasting, quality management, insurance and communication. Campanella *et al.* (2016) in their review paper highlight the positive impact of electronic health records on healthcare quality. A survey on medical records and EHR in the Asia-Pacific region accounts that role of EHR will become significant in medical claim processing in near future. Another study discusses the role of EHR in data-driven scheduling for improving





patient efficiency in ophthalmology clinics (Hribar *et al.*, 2019). Chen *et al.* (2019) model the care team structures in the neonatal intensive care unit through network analysis of EHR audit logs. There has been a lot of discussion in the academic circle regarding the potential of EHR in improving the coordination among various service providers involved in healthcare (Heart *et al.*, 2017). EHR acts as input for clinical and managerial decision support systems as seen in Figure 2.

### 1.1. Concept of Privacy

Before moving to the means to protect privacy and barriers to achieving it this paper defines the concept of privacy, confidentiality and security in brief. The terms privacy and

confidentiality are generally used interchangeably while security has more to do with the technical aspects of keeping healthcare information protected. Table 1 below has listed the definitions of these key concepts.

### 1.2. Protected Health Information

Privacy is a right of a patient visiting a healthcare provider. Consent to treatment is rooted in the case of law while consent to research has its basis in ethical codes, statutes, and administrative regulations (Del Carmen & Joffe, 2005). Let's understand what protected health information is and what is expected from a healthcare provider. Protected health information commonly

**Table 1: Definitions of Key Concepts**

Concept	Definition	References
Privacy	Addresses the Question of Who Has Access to Personal Information and under What Conditions.	(Westin, 1967)
Confidentiality	Safeguards Information that Is Gathered in the Context of an Intimate Relationship.	(Westin, 1967), (Gostin & Hodge, 2001)
Security	Security Helps Keep Health Records Safe from Unauthorized Use.	(Turn & Ware, 1976), (Gostin, 1995)

**Source:** Author

known as PHI encompasses all individually identifiable health information, including demographic data, medical histories, test results, insurance information and other information used to identify a patient or provide healthcare services or healthcare coverage. When PHI is found in an electronic form, like a computer or a digital file, it is called electronically Protected Health Information or ePHI. PHI *relates to the past, present, or future physical or mental health or condition of an individual; the provision of health care to an individual; or the past, present, or future payment for the provision of health care to an individual that is transmitted and maintained by electronic or another form of media* (HIPAA Journal, 2022). American society places a high value on individual rights, personal choice and a private sphere protected from intrusion (Gostin & Hodge, 2001). Privacy and Security related to EHR are a

matter of concern in developing countries such as India. Healthcare provider uses the hybrid mode for recording healthcare information in the country. Table 2 has summarized the information about the type of information and storage type in the Indian context (Pai *et al.*, 2021).

The information contained in Table 2 depicts that none of the health information is fully digitalized. The protected health information in paper form can be compromised easily through photocopy or digital scanning of the record. The security of the information stored in digital format is debatable if appropriate security and policy practices are not implemented. The next section discusses the Health Insurance Portability and Accountability Act (HIPAA) and the state of PHI privacy and security laws in India.

### **1.3. Health Insurance Portability and**

**Table 2: Health Information and Mode of Storage in India**

Health Information	Paper	Hybrid	Digital
Demographic Details	√	×	×
Physician and Nurse Notes	√	×	×
Patient's History	√	×	×
Clinical Exam Observations	√	×	×
Diagnosis Details	√	×	×
Treatment Procedures	√	×	×
Lab Test Details	√	√	×
Medication Details	√	×	×
Medical Images	√	√	×

**Source:** Author's Compilation based on Pai *et al.* (2021).

### ***Accountability Act (HIPAA)***

Health Insurance Portability and Accountability Act of 1996 (HIPAA) was the first serious step in the direction of achieving healthcare information privacy. HIPAA was enacted by the United States Congress and signed by President Bill Clinton in 1996. It has been able to achieve its primary objective of making patients feel safe giving their physicians and other treating clinicians sensitive information while permitting reasonable information flows for treatment, operations, research and public health purposes. This confidence is instrumental in elevating the level of care provided by the

healthcare provider using evidence-based practices (Ilic, 2009). Everything is not rosy with HIPAA and right from its enactment, HIPAA has been criticized for its focus being narrow and non-inclusive. It applies only to covered entities such as clinicians, health care facilities, pharmacies, health plans and healthcare clearinghouses and is too tedious in its requirements for patient authorization for release of PHI (Cohen & Mello, 2018). Over time HIPAA has also evolved to meet the challenges faced by EHR implementation. The

three tenets of HIPAA are (1) Consumer control over PHI (2) Restrictions on Medical Record Data (MRD) use and release and (3) Ensuring the security of PHI. For the sake of brevity, the authors have summarized the hierarchy of implementation of HIPAA in Figure 3.

HIPAA has been useful for regulating the flow of PHI for research, but the big data era poses new challenges. At the time of proposing the HIPAA framework, it was envisioned that most of the clinical research would be conducted by universities, medical colleges and government bodies. But in the present era, most of the demand originates from the private institution where

Figure 3: Hierarchy of HIPAA Implementation

Level 1	Level 2	Level 3
<b>Health Insurance Portability and Accountability (HIPAA) Implementation</b>	Consumer control on PHI	<ul style="list-style-type: none"> <li>• Patient education on privacy protections.</li> <li>• Ensuring patient access to their medical records.</li> <li>• Receiving patient consent before information is released.</li> <li>• Ensuring that consent is not coerced.</li> <li>• Providing recourse if privacy protections are violated.</li> </ul>
	Restriction on use and release of PHI	<ul style="list-style-type: none"> <li>• Ensuring that health information is not used for non-health purposes.</li> <li>• Providing the minimum amount of information necessary.</li> <li>• Ensuring informed and voluntary consent.</li> </ul>
	Ensuring Security of PHI	<ul style="list-style-type: none"> <li>• Adopt written privacy procedures.</li> <li>• Train employees and designate a privacy officer.</li> <li>• Establish grievance processes.</li> </ul>

**Source:** Author's compilation

institutional review board (IRB) may be absent or present only nominally. One of the proposed solutions to overcome the privacy issue is masking or de-identification but the value of the data reduces after the application of these methods. Moreover, data becomes useless if additional data is required to be collected from the same participants. HIPAA is mandatory for healthcare service providers in the US and companies doing business with these providers. For example, a Knowledge Process Outsourcing (KPO) or Business Process Outsourcing (BPO) company doing business with American healthcare providers requires to be HIPAA compliant. More than 80 countries and territories worldwide consisting of most of the European Union countries, many in Latin America and the Caribbean, Asia and Africa, have now

implemented a HIPAA-type framework for privacy and security of PHI. For example, Personal Information Protection and Electronic Documents Act (PIPEDA) is the federal privacy law for private-sector healthcare organizations in Canada. Indian Government is bringing Personal Data Protection Bill, along with the proposed Digital Information Security in Healthcare Act (DISHA). DISHA, being India's HIPAA equivalent, could enforce the implementation of enhanced data security solutions. The objectives of DISHA are (1) the establishment of a digital health authority (DHA) at the state and central levels (2) enforcing privacy and security measures for EHR in India and (3) regulating the storage and exchange of EHR in India. The literature cites HIPAA compatibility as a competitive

advantage for medical tourism destinations (Gan & Frederick, 2011). This may be one of the foremost motivations of the government to enforce strict privacy and security framework in the country. There is a lack of research explaining the privacy security issues, identifying the most important ones and providing a framework to implement them. This study attempts to fill this gap. The objective of this research work is twofold. Firstly, it reviews the extant literature to find out the important privacy and security concerns related to health information. Secondly, it ranks this concern so that efforts can be prioritized. Technologies are global but regulations are local. Hence privacy and security laws should be created keeping local context in mind. This research provides a prescriptive framework for addressing security concerns related to EHR in India. The next section lists a narrative review to identify major privacy and security concerns. Subsequent sections discuss the research methodology, results and discussion, and conclusion. The study also lists the limitations of the present study and suggests future directions for the study.

## **2. Literature Review**

This section reviews the extant literature to identify the issue related to privacy and security. These issues are one of the most cited reasons behind the failure of the implementation of EHR (Ming & Zhang, 2018). The privacy and security issues fall under three categories (1) User Related

Concerns (2) Application Related Concerns (3) Communication Related Concerns and (4) Device Related Concerns (Anwar *et al.*, 2015).

### **2.1. User Related Concerns**

User concerns related to privacy and security issue of PHI varies from person to person. It depends on the perception, preferences and competencies of the user. Some patients are privacy fundamentalists and are more concerned about the idea of sharing their data. While others are marginally concerned and open to sharing their data. Different patients perceive privacy differently. The other important concern related to EHR implementation is the security issue. Patients search for healthcare information and they are not aware of phishing attacks (Berendt *et al.*, 2005).

### **2.2. Application Related Concerns**

The use of mobile apps in smart healthcare is of paramount importance. But these benefits are coupled with privacy and security risk. Most of these applications are not capable to differentiate between the right and wrong person to share the information (Cheng, 2007). These weaknesses often imply that these smart devices can be compromised and PHI may be stolen.

### **2.3. Communication Related Concerns**

Communication between different healthcare providers and patients plays a key role in providing superlative care. The devices

communicate with each other to share the PHI among various stakeholders. Most of the time the Wi-Fi networks used for these communications are public and not secured. Outdated Bluetooth-based communication is susceptible to eavesdropping or intersection. This scenario results in privacy breaches and security attacks (Omre & Keeping, 2010).

#### **2.4. Device Related Concerns**

These concerns are different from the two-concern discussed above. We emphatically talk about the usefulness of the application of the Internet of Things (IoT) in smart healthcare (Mishra & Madakam, 2022). The use of wearable and portable devices is rising in healthcare. The information about a person's health is available on go. This situation results in the third type of concern called device-related concerns (Cilliers, 2020).

#### **2.5. Policy Related Concerns**

To enforce best practices to guarantee the privacy and security of PHI role of government becomes very important. Government policies make sure that processes and practices are followed so that healthcare information is not shared with an unauthorized person. HIPAA was one of the positive steps in this direction and many countries followed the suit. There have been incidences of violations of HIPAA and it needs to be modified to make it updated (Cannon & Caldwell, 2016). The proposed DISHA framework of India is still to see the

light of the day.

#### **2.6. Cost Related Concerns**

Implementation of the privacy and security processes need resources. To enforce the rules, healthcare providers need to invest in hardware and software for the same. Employees need to be trained about procedures and requirements beforehand. Thus, the implementation of privacy and security procedure in a resource-constrained developing country like India is a major concern (Kasthuri, 2018).

### **3. Research Methodology**

The study uses a review of secondary literature to identify the major privacy and security concerns related to personal health information and hence EHR. The study used a narrative literature review for identifying these concerns. The study uses the best worst method (BWM) to prioritize these concerns. Best-Worst Method (BWM) is a multi-criteria decision-making (MCDM) method developed by Jafar Rezaei of Delft University of Technology in 2015 (Rezaei, 2020). Researchers have used BWM in decision-making in various fields related to engineering and management (Singh *et al.*, 2022). BWM uses a non-linear optimization model for the calculation of the criteria weight. The decision-makers are clear beforehand about the most important and least important (best and worst) criteria. The method has a distinct advantage over another widely used analytical hierarchy process (AHP) as it needs a smaller

number of pairwise comparisons (Ahmad *et al.*, 2021). For the sake of brevity, we have not included the details of the BWM in this article and readers can find the details on the official website of BWM. The study uses a panel of six experts working in healthcare professions and two researchers. The method

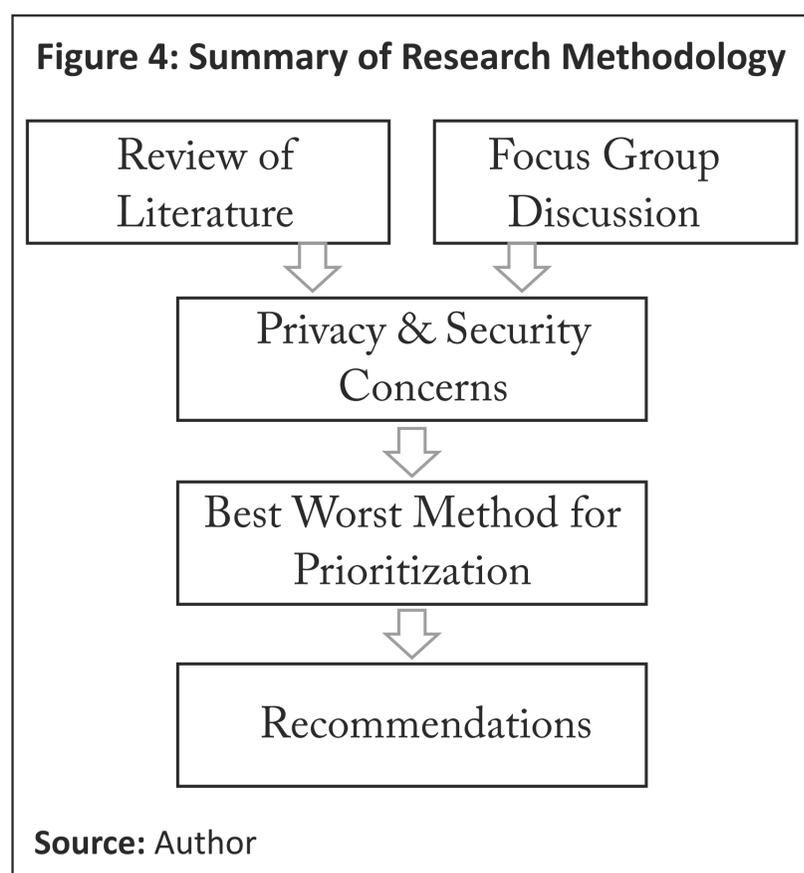
of selection of the experts is based on expertise in the healthcare information technology field. Figure 4 summarized the approach used in this study.

#### 4. Results and Discussion

The focus group identified cost as the best criteria-related concern as the most important concern while device-related concerns as the least important one. The experts were asked to pairwise compare these concerns with other concerns on a scale of 1 to 8, where a score of 1 is considered equal while 8 is considered maximum preference over the compared item. The summary of the pairwise comparison using the BWM is summarized in Table 3.

The weight calculated using the BWM method is listed in Table 4.

The weight of the concerns show their importance for the concerns related to EHR implementation in India. As the results suggest, Indians think that price is the biggest



**Table 3: Pairwise Comparisons Table for BWM**

Best to Others	User	Application	Communication	Device	Policy	Cost
Price	5	4	3	6	2	1
Others to the Worst	User	Application	Communication	Device	Policy	Price
Device	2	3	1	1	4	5

Source: Author's Compilation

**Table 4: Weight of the Privacy Security Concerns**

Weights	User	Application	Communication	Device	Policy	Cost
	0.098	0.123	0.082	0.082	0.246	0.369

Source: Author's Compilation

concern in the implementation of EHR. Indian healthcare is marred with capacity constraints. There is a lack of human resources and healthcare infrastructure in the country. More than two-thirds of ambulatory care is provided by private care. The main objective of these players is profit maximization and not welfare maximization. Healthcare providers do not voluntarily deploy privacy and security practices unless government guidelines and licensing authorities release some directives for the same. This makes government policy an important impediment to the implementation of privacy and security in EHR. Unfortunately, these concerns don't figure prominently in the research done in other countries, which justifies the need for a country-specific study of privacy and security concerns related to PHI. The third important concern is application concern followed by user-related concerns, communication and device-related concerns. The result of the study suggests that user concern is not prominent in the country as patients are less concerned about privacy and security issues and their rights.

India's success in the implementation of the Unified Payment Interface (UPI) and Unified Identity Number (Aadhar) has been phenomenal (Sen & Ghosh, 2022). There has also been a rise in online healthcare services such as e-pharmacy and telemedicine in the new normal (Brahma, 2019). India has recently launched Arogya Bharat Digital Mission (ABDM) with much fanfare. The

idea is not only to use digital devices to solve perennial problems of healthcare but also to utilize the data generated from ubiquitous devices to provide superlative care. The application of big data-based decision support systems is widely discussed in the recent literature (Weintraub *et al.*, 2018; Maragatham & Devi, 2019; Liang *et al.*, 2021). That makes the landscape of patient data attractive and technology companies, from startups to giants, are eager to access electronic health record (EHR) data to build the next generation of health-focused products (Mishra & Madakam, 2022). One of the greatest deterrents to realizing these dreams is legal and ethical uncertainties (Cohen & Mello, 2019). With the increased use of PHR, these concerns are magnified. Cohen and Mello (2018) in their seminal paper reflect that, "what enables individuals to live full lives is the knowledge that certain personal information is not on view unless that person decides to share it, but that supposition is becoming illusory". A survey of big data issues concluded that data, EHR should be considered as one of the most complex data objects in the information processing industry and have various challenges associated with successful implementation (Cyganek *et al.*, 2016). Another study concludes that successful implementation of EHR project need understanding and utilizing a good change management process (Adler, 2007). Thus, the perception of all stakeholders and their active

involvement is important in the implementation of a successful EHR. Extant healthcare research often emphasizes physicians' perceptions of EHR, while overlooking other providers' perceptions (McGinn *et al.*, 2011). Healthcare has been traditionally digitalization deficient (Mishra & Islam, 2021). A study done in Germany observed that healthcare professionals especially the clinical staff are technology averse (Safi *et al.*, 2018). The condition is not different in a country like India which is known for its information technology prowess.

Before investing in big data capabilities, a healthcare provider needs to implement basic EHR effectively. To fulfill this objective there is a need to understand the barriers in the pathway to the successful implementation of EHR. Data privacy and security concerns are key impediments to achieving EHR implementation. This research provides an approach to implementing privacy and security laws in healthcare.

## 5. Conclusion

The study documents the various levels of health record implementation as EMR, EHR, and PHR. Although we have entered the era of PHR the successful implementation of basic EHR is still debatable in India. The study further reviews the literature to identify the three-level approach for the implementation of privacy and security-related framework such as HIPAA. There is a need for a similar framework in India as well.

There are various motivations for a healthcare provider being HIPAA compliant. It includes getting outsourced work from western countries as well as facilitation of international medical insurance for medical tourists. India is in the process of bringing a comprehensive bill for data privacy and security named DISHA. It is the closest thing to Indian HIPAA compliance and will certainly help to set a standardized benchmark.

The theoretical contribution of this research is two pronged. The study uses a narrative review to identify privacy and security concerns. The six identified concerns are (1) User related concerns (2) Application related concerns (3) Communication related concerns (4) Device related concerns (5) Policy related concerns and (6) Cost related concerns. The study identifies that cost is the most important hindrance in the implementation of privacy and security PHI practices in India. The study further concludes that government policy plays an important role in enforcing the policy framework in the country.

There are three policy implications of this research. Firstly, implementation of privacy and security practices in healthcare needs to be incentivized by providing subsidies to healthcare organizations. Secondly, sandboxing of new technologies before making them available to the public so that privacy and security concerns can be addressed if any. Another notable observation of this study is that users are less aware of their rights to privacy and security and that is the reason

behind the concern being given less importance. The Indian government should come up with strict security and privacy guidelines for the management of PHI. Adhering to HIPAA-compliant practices may increase the export competitiveness of the Indian healthcare sector.

Thus, it is of paramount importance that barriers related to the implementation of privacy and security practices should be researched and this knowledge is translated into evidence-based management practices. The findings of this study are useful for healthcare managers and policymakers. Although the study uses Indian experts, the insights are useful for other developing and less developed countries having resource constraints.

### 6. Limitations and Future Scope

The study uses a panel of six experts working in healthcare professions and two researchers. Thus, the study provides the perspective of healthcare providers only. Patients' perspective on healthcare data privacy and security issue needs to be investigated also. Since the government acts as custodian of healthcare data in many cases its role as the facilitator should be further investigated. Future studies can take a holistic view of the role of all stakeholders including patients, hospitals, platforms, technology companies and governments in the implementation of privacy and security practices in healthcare. The study uses Best Worst Method for

prioritization of the identified different concerns. A future study can use methods such as total interpretive structural modeling to investigate how these concerns are interlinked.

### References

- Adler, K. G. (2007). How to Successfully Navigate Your EHR Implementation. *Family Practice Management*, 14(2), 33.
- Ahmad, N., Hasan, M. G., & Barbhuiya, R. K. (2021). Identification and Prioritization of Strategies to Tackle COVID-19 Outbreak: A Group-BWM based MCDM Approach. *Applied Soft Computing*, 111, 107642.
- Anwar, M., Joshi, J., & Tan, J. (2015). Anytime, Anywhere Access to Secure, Privacy-Aware Healthcare Services: Issues, Approaches, and Challenges. *Health Policy and Technology*, 4(4), 299-311.
- Berendt, B., Günther, O., & Spiekermann, S. (2005). Privacy in E-Commerce: Stated Preferences Vs. Actual Behavior. *Communications of the ACM*, 48(4), 101-106.
- Brahma, M, (2019), Digital Versus Traditional Marketing: Success Comes with the Right Mix, *IMI Konnect*, 8(1), 22-27
- Bouayad, L., Ialynytchev, A., & Padmanabhan, B. (2017). Patient Health Record Systems Scope and Functionalities: Literature Review and Future Directions. *Journal of Medical Internet Research*, 19(11), E8073.
- Campanella, P., Lovato, E., Marone, C., Fallacara, L., Mancuso, A., Ricciardi, W., & Specchia, M. L. (2016). The Impact of Electronic Health Records on Healthcare Quality: A Systematic Review and Meta-Analysis. *The European Journal of Public Health*, 26(1), 60-64.
- Cannon, A. A., & Caldwell, H. (2016). HIPAA Violations among Nursing Students: Teachable Moment or Terminal Mistake—A Case Study. *J Nurs Educ Pract*, 6(12), 41-48.
- Chen, Y., Lehmann, C. U., Hatch, L. D. (2019).

Modeling Care Team Structures in the Neonatal Intensive Care Unit through Network Analysis of EHR Audit Logs. *Methods of Information in Medicine*, 58(04/05), 109-123.

Cheng, Z. (2007). Mobile Malware: Threats and Prevention. *Mcafee Avert*.

Cilliers, L. (2020). Wearable Devices in Healthcare: Privacy and Information Security Issues. *Health Information Management Journal*, 49(2-3), 150-156.

Cohen, I. G., & Mello, M. M. (2018). HIPAA and Protecting Health Information in the 21st Century. *Jama*, 320(3), 231-232.

Cohen, I. G., & Mello, M. M. (2019). Big Data, Big Tech, and Protecting Patient Privacy. *Jama*, 322(12), 1141-1142.

Cyganek, B., Graña, M., Krawczyk, B. (2016). A Survey of Big Data Issues in Electronic Health Record Analysis. *Applied Artificial Intelligence*, 30(6), 497-520.

Del Carmen, M. G., & Joffe, S. (2005). Informed Consent for Medical Treatment and Research: A Review. *The Oncologist*, 10(8), 636-641.

Florence, F. O. (2016). Current Roles and Applications of Electronic Health Records in the Healthcare System. *International Journal of Medical Research & Health Sciences*, 5(12), 48-51.

Gan, L. L., & Frederick, J. R. (2011). Medical Tourism Facilitators: Patterns of Service Differentiation. *Journal of Vacation Marketing*, 17(3), 165-183.

Gostin L. O. (1995). Health Information Privacy. *Cornell Law Review*, 80, 101-184

Gostin, L. O., & Hodge Jr, J. G. (2001). Personal Privacy and Common Goods: A Framework for Balancing under the National Health Information Privacy Rule. *Minn. L. Rev.*, 86, 1439.

Heart, T., Ben-Assuli, O., & Shabtai, I. (2017). A Review of PHR, EMR and EHR Integration: A More Personalized Healthcare and Public Health Policy. *Health Policy and Technology*, 6(1), 20-25.

HIPAA Journal. What is Protected Health-

Information? Accessed from: <https://www.hipaajournal.com/what-is-protected-health-information/>, July 28, 2022

Hribar, M. R., Huang, A. E., Goldstein, I. H. et al. (2019). Data-Driven Scheduling for Improving Patient Efficiency in Ophthalmology Clinics. *Ophthalmology*, 126(3), 347-354.

Ilic, D. (2009). Assessing Competency in Evidence-Based Practice: Strengths and Limitations of Current Tools in Practice. *BMC Medical Education*, 9(1), 1-5.

Kasthuri, A. (2018). Challenges to Healthcare in India-The Five A's. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, 43(3), 141.

Liang, C., Qiao, S., Olatosi, B., Lyu, T., & Li, X. (2021). Emergence and Evolution of Big Data Science in HIV Research: Bibliometric Analysis of Federally Sponsored Studies 2000-2019. *International Journal of Medical Informatics*, 154, 104558.

Maragatham, G., & Devi, S. (2019). LSTM Model for Prediction of Heart Failure in Big Data. *Journal of Medical Systems*, 43(5), 1-13.

McGinn, C. A., Grenier, S., Duplantie, J., Et Al. (2011). Comparison of User Groups' Perspectives of Barriers and Facilitators to Implementing Electronic Health Records: A Systematic Review. *BMC Medicine*, 9, 46-55.

Ming, Y., & Zhang, T. (2018). Efficient Privacy-Preserving Access Control Scheme in Electronic Health Records System. *Sensors*, 18(10), 3520.

Mishra, V., & Islam, S. M. S. (2021). Framework for the Adoption of Healthcare 4.0-An ISM Approach. In *Disruptive Technologies for Society*, 5, 235-247.

Mishra, V., & Madakam, S. (2022). Smart Healthcare and IoT Technologies: Academic and Service Provider Review. In *Internet of Things and Data Mining for Modern Engineering and Healthcare Applications*, 15-28.

Omre, A. H., & Keeping, S. (2010). Bluetooth Low Energy: Wireless Connectivity for Medical Monitoring. *Journal of Diabetes Science and Technology*, 4(2), 457-463.

Pai, M. M., Ganiga, R., Pai, R. M., & Sinha, R. K. (2021).

Standard Electronic Health Record (EHR) Framework for Indian Healthcare System. *Health Services and Outcomes Research Methodology*, 21(3), 339-362.

Rezaei, J. (2020). A Concentration Ratio for Non-Linear Best Worst Method. *International Journal of Information Technology & Decision Making*, 19(3), 891-907.

Safi, S., Thiessen, T., & Schmailzl, K. J. (2018). Acceptance and Resistance of New Digital Technologies in Medicine: Qualitative Study. *JMIR Research Protocols*, 7(12), E11072.

Segal, J. Z. (2009). Internet Health and the 21st-Century Patient: A Rhetorical View. *Written Communication*, 26(4), 351-369.

Sen S & Ghosh S (2022), Digital India - Augmenting Digital Payments in the Indian Economy. *IMI Konnect*, 11(2), 10-20

Seymour, T., Frantsvog, D., & Graeber, T. (2012). Electronic Health Records (EHR). *American Journal of Health Sciences (AJHS)*, 3(3), 201-210.

Singh, J., Rana, S., Abdul Hamid, A.B. And Gupta, P. (2022), Who Should Hold the Baton of Aviation Sustainability?, *Social Responsibility Journal*, Vol. ahead-of-print.

Turn, R., & Ware, W. H. (1976). Privacy and Security Issues in Information Systems. *IEEE Transactions on Computers*, 25(12), 1353-1361.

Weintraub, W. S., Fahed, A. C., & Rumsfeld, J. S. (2018). Translational Medicine in the Era of Big Data and Machine Learning. *Circulation Research*, 123(11), 1202-1204.

Westin, A. F. (1967). Special Report: Legal Safeguards to Insure Privacy in a Computer Society. *Communications of the ACM*, 10(9), 533-537.



**International Management Institute Kolkata**

2/4C, Judges Court Road

Alipore, Kolkata 700027

Telephone: +91 33 6652 9664

website: [www.imi-k.edu.in](http://www.imi-k.edu.in)