

Work from Home during COVID-19: Impact on Labour Productivity and Economic Growth Rate of India

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ABSTRACT

The unprecedented situation COVID-19 has completely removed the boundaries between work and personal life of employees around the globe. Now it is just the beginning of unlocking phase-1 and Indian industries are still in confusion, that, either to continue work from home temporarily or to regularize normal option. These industries also fear of remote working, which may reduce the productivity. Till date, no concrete road map is provided from Government of India. Migration is neither a new phenomena nor a big deal, but after COVID-19 lock down imposition, the way they are desperately wanted to return back to their homes, will be an unforgettable moment for every Indian. This raised a huge migrant labour crisis across industries in India. No vaccine has produced till date. So India government is facing difficulty to controlling the virus spread in densely populated places Considering the aforesaid conditions, a conclusion oriented applied research has been done to pick up different problem areas of 'working from home' and its impact on labour productivity. This gives us an insight, how quick will economic activities return to pre COVID-19 levels.

During COVID-19 economic activities has become standstill. So, for analysis purpose pre covid and post covid results of various sectors are compared to suggest the projection indicator to achieve our desired growth rate. This is basically a conclusive research. Industrial ratings given by different agencies are collected for accurate projection and suggestions. Financial data of various industries pre covid19 and post covid 19 across sectors are collected and interpreted.

Work from home will increase employee productivity, save time and energy of employee. But at the same time, measures should be taken to ensure work force productivity while 'work from home' by Indian industries. It also able to achieve optimum use of human resource and their by reduces the overall cost of operations which increase profit hence growth. Employee can go to any extent if their privacy is hampered while working from home like there may be chance that their ID pass word, credit card details taken by the coordinator through spy camera during monitoring remote work. So strategy and policy should be made accordingly to achieve the goal.

Work from home can be taken as a strategy for new employment and technological up gradation of industry to face future disaster.

Keywords: COVID-19, Work from Home, Productivity, Economy, Growth, Resources Model.

Introduction

The COVID-19 is an unprecedented event and it has totally changed our personal as well as professional life. Work place globally had closed down their office and allowed their employee to work from home remotely. In India professionals across different sectors have mixed opinion about remote working except they all agree on time and energy saving of employee to reach office or work place in Indian traffic. Engineers, IT employee, HR roles, Knowledge worker, consultants, stock market traders are seems to be happy with work from home. But finance, insurance and proprietary applications will find it difficult. Some organizations actually had to transport desktops to their employees' homes during lock down. These things are creating challenges for policy maker of 'work from' home in a weak Indian economy and strained financial system.

Statement of problem

Now it is just the beginning of unlocking phase-1 and Indian industries are still confused, will they continue work from home temporarily on current format or to stop here? They also fear remote working may reduce the productivity. Till date no concrete road map has been given from government of India. PM N. Modi in his speech on 2nd June 2020 at CII said "we will bring back our GDP growth rate "and insisted industry experts, researcher to find out/suggests some innovative road map to achieve this goal. On April 16th the international monetary fund has slashed its projection for India GDP growth in 2020 from 5.8% to 1.9%. After COVID-19 lock down imposition, that images of the Indian labour's, the way they were desperately seeks to back to their home

will be an unforgettable moment for every Indian. This raised a huge migrant labor crisis across industries in India. No vaccine has produced till date. So India government is facing difficulty to controlling the virus spread in densely populated places.

Theoretical background

Industrial Engineering & Management has given the 5Ms of Money, Manpower, Methods, Materials, and Machinery as the key elements in Economy or a Sustainable Business. The present COVID has completely changed the industrial scenario. Previously Site Selection for any new setup for "remote working" or starting any new activity, these 5M were used, but later part about a decade Industry 3.0 tools are used for automation of industries. Due to the growth of telecom sector and digitalization of services, increase strength and demand of internet data connectivity, technological up gradation of Industries was felt and for that industries are willing to implement Industry 4.0 tools for flexibility their operations remotely as well as directly, before COVID-19, lock down. But in this phase of unlocking the issue of migrant labour has been raised. So to maintain the growth rate productivity of work force need to be enhanced. Again the productivity of India has two aspects, one is how to raise labour productivity to achieve desired growth rate and second is how to raise the labour productivity of lagging behind industrial sectors after COVID-19 impact.

Literature review

For this study to find the objectives literature review had been done as mentioned in below table.

Year	Author's name	Prospective on 'work from home' and productivity.
2004	Crosbie and Moore[1]	Authors are rightly said that for modern working life style, 'work from home' is not a total panacea but consideration should given to them, who are willing for it. They also highlighted the fact that those workers who were habituated in to stay away from home long time, may found work from home bit difficult.
2007	Gagendra and Harrison[2]	Authors found that it is difficult to monitor the employees performance while remote working from home.
2009	Stevenson and Walfers[3]	Authors found that for overall life satisfaction 'work from home' could be seen as favorable choice. This needs proper interaction between work and personal life.
2013	Amabile & Kramer[4]	Authors found that work from home is helping employee to make proper balance between office and home work. This study reveals the fact that 'work from home' saves time and energy of worker and enhance its productivity to achieve it's task targets.
2013	Beauregard.A. et.al[5]	Authors highlighted that mobile worker and part time partial home workers performances are higher to some extent, and they are satisfied with their job and payments. But sometimes when they seeks emotional supports from their co worker's, they are not able to get it from them.
2016	Go.R[6]	Author found that a big communication gap was created in between the superior and subordinate staff, while doing remote working.
2017	Richardson & Writer [7]	Authors found that by upgraded modern technology, it will be possible to enhance the work from home productivity with the increase usage of net, mail, fax etc.

Now the question comes, can it be possible to revive the Indian economy from this level after COVID-19? For this following objectives are made to develop suggestions.

Objectives

- To find whether ‘work from home’ will be the new strategy for industries to hedge the disaster risk in future.
- To ensure work force productivity while ‘work from home’ by Indian industries.
- To find COVID-19 impact on Indian Economy growth rate.
- To find labour productivity contribution in GDP growth rate.

Conceptual model

This above mathematical model was conceptualized for formation of hypothesis, testing of hypothesis, and external as well as internal validity. Since this was a conclusion oriented applied research external validity was given more priority, but independent and dependent controlled variables were defined to attribute the internal validity of study. Here work from home, capital equipment, applied technical efficiency were taken as independent variables, labour productivity was the mid variable, labour crisis, COVID-19 impact were control variables, GDP growth rate was taken as dependent variable for this study.

Hypothesis

Following hypotheses were made from our objectives for testing.

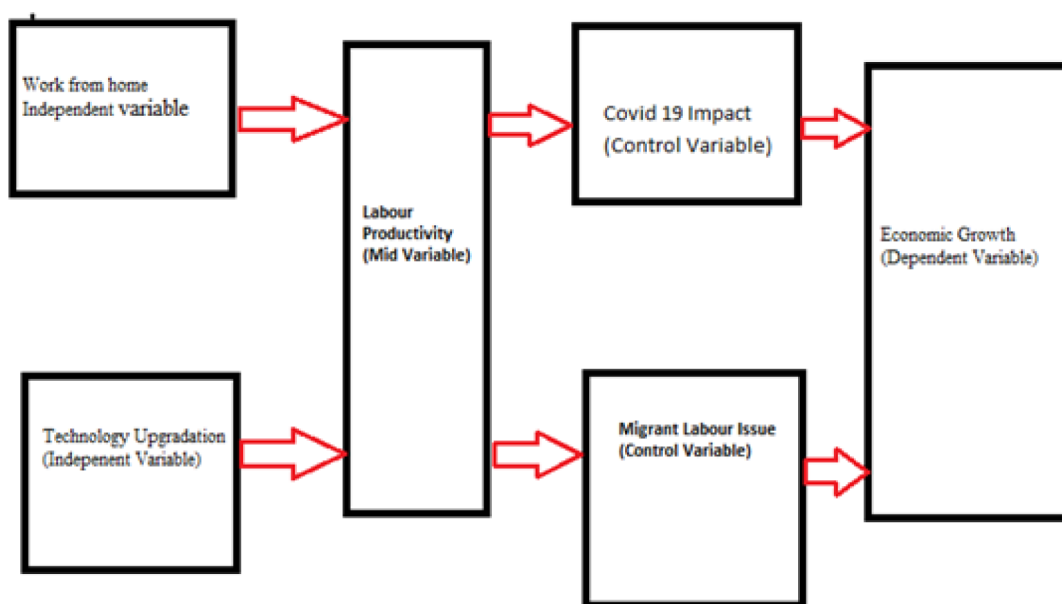
- Null hypothesis = Ho – There is no significant impact of COVID lock down and work from home on labour productivity.
- Alternate hypothesis = H’1 – There is a significant impact of COVID lock down and work from home on labour productivity.

Research methodology

For this study secondary data collection methods are used. Various industrial consultant opinions published, online survey report and media interview are incorporate to facilitate the analysis and conclusion. Industrial ratings given by different agencies are collected for accurate projection and suggestions. Financial data of various industries pre COVID-19 and post COVID-19 across sectors are collected and interpreted. GDP and economical data for 2014-2020 are collected from central government budget, RBI and CSO websites.

Size of research

An online survey was conducted after lock down period to collect the view point of CHROs, and HR heads of different organization in India. 100 organization across



Mathematical Model: Developed by Author

Table 1: Economical Data Financial Year 2014 to 2020

	2014	2015	2016	2017	2018	2019	2020
Gross value added GVA at year 2012	6.1	7.2	8.0	7.9	6.9	6.6	5.3
Agri sector	5.6	-0.2	0.6	6.3	5.0	2.9	2.0
Industrial sector	3.8	7.0	9.6	7.7	5.9	6.9	3.1
Service sector	7.7	9.8	9.4	8.4	8.1	7.5	7.5
GDP (Real)	6.4	7.4	8.0	8.2	7.2	6.8	5.6
Private final consumption expenditure (PFCE)	7.3	6.4	7.9	8.2	7.4	8.1	4.9
Government final consumption expenditure (GFCE)	0.6	7.6	7.5	5.8	15.0	9.2	10.3
Gross fixed capital formation (GFCF)	1.6	2.6	6.5	8.3	9.3	10.0	6.0
GDP Nominal	13.0	11.0	10.5	11.5	11.4	11.2	9.2
Wholesale inflation average	5.2	1.3	-3.7	1.7	2.9	4.3	1.5
Retail inflation average	9.4	5.9	4.9	4.5	3.6	3.4	3.9
Current account deficit (% of GDP)	1.7	1.3	1.1	0.6	1.8	2.1	1.8

Source: Central budget, RBI and CSO

Table 2: Labour productivity growth of India (1992-2020)

Last year	Previous year	Min	Max	Unit	Frequency	Range
2019	2018	3.64	5.28	Percentage	Yearly	1992-2020
2002	2010	1.32	8.00			

Data source from CEIC DATA updated on 01 July 2020

sectors were selected for our study. Among them 72% respondent agree on the point that, COVID-19 lock down and migrant labour issue force them to operate remotely from home, which leads to fall in productivity sharply. While 28% organizations were disagree on this point.

Data Interpretation

Hypothesis testing

Survey results are used to test the null hypothesis.

Since sample size taken for survey was 100, Z test was chosen for hypothesis testing.

72% respondents agree on the point that COVID-19 and work from home have reduced the productivity and 28% were disagreeing. So our hypothesis becomes

$$H_0: \mu = .72$$

$$H_1: \mu \neq .72$$

Here $n = 100$, $p = .72$, $q = .28$

- Mean = $.72 \times 100 = 72$
- Standard deviation = $\sqrt{npq} = \sqrt{100 \times .72 \times .28} = 4.489$

Since $n > 30$, Z test was chosen with 95% of confidence for $\alpha = 0.05$ two tailed test.

Since this an industrial survey 50% is usually taken as favorable outcomes, \hat{p} is taken as .5 for this study. From all these values, 'Z' equation becomes

$$Z = \frac{(\hat{p} - p) / \sqrt{pq}}{n} = -5$$

$$Z = -5$$

Since z value for 95% confidence and $\alpha=0.05$ is equal to 1.960

Decisions

$Z = -5 < -1.960$, hence null hypothesis is rejected and alternate hypothesis is accepted. From this it is apparent that 'work from home during COVID lock down has a seriously impacted the labour productivity across sectors in India.

The projection indicator for desired growth rate

From the table-1 and table 2 data it was found that Indian labour productivity data available from December 1992 to December 2019, with productivity averaging at 5.3%.

But productivity and GDP growth rate after COVID-19 lock down, dropped drastically due to job losses. The International Monetary Fund has slashed its projection for India GDP growth in 2020 from 5.8% to 1.9%. India's population as on march 2020 reached nearly 1,431.00 million with an unemployment rate of 5.36 and labour participation rate of 49.29 as in December 2019 [8].

As, **Productivity = Output/unit Input = GDP output / worker's input**

As desired by PM of India Mr. N. Modi, in order to achieve 8% GDP, labour productivity should rise to 6.3%. The productivity of India has two aspects, one is how to raise labour productivity to achieve desired growth rate and second is how to raise the labour productivity of lagging behind industrial sectors after COVID-19 impact.

Finding and Suggestions

As per CSO, data lagging behind productivity sectors are mentioned as below

Sectors	Productivity rate
Construction	0.4%
Agriculture	3.2%
Mining	4.8%

Leading sectors are as mentioned below

Sectors	Productivity rate
Manufacturing	7.2%
Electric gas and water supply	7.7%
Transport, storage, and communication	7.4%
Community, social, personal services	6.2%

In order to achieve a high GDP growth rate government should formulate some strategy to increase the lagging sector productivity level during short run after COVID-19 unlocking to make a balance in overall productivity. To meet the impact of this unprecedented event all leading sectors should take strategically steps to contribute in GDP growth rate of India. Work from home will increase employee productivity, save time and energy of employee. But at the same time measures should be taken to ensure work force productivity while 'work from home' by Indian industries. It also able to achieve optimum use of human resource and their by reduces the overall cost of operations which increase profit hence growth. Employee can go to any extent if their privacy is hampered while working from home like there may be chance that their ID pass word, credit card details taken

by the coordinator through spy camera during monitoring remote work. So strategy and policy should be made accordingly to achieve the goal.

Value

According to Hudson Maxim "All progress is born of inquiry". This study has been done during first unlocking phase of COVID-19 to find whether 'work from home' will be the new strategy for industries to hedge the disaster risk in future Since many researcher are predicting the effect of COVID-19 will remain up to 2022, this study can be helpful for future researcher to unfold the risk.

Conclusion

Engineers, IT employees, HR roles, Knowledge workers, consultants, stock market traders can work from home. But finance, insurance and proprietary applications will find it difficult. Some organizations actually had to transport desktops to their employees' homes during lock down. These things are creating challenges for policy maker of 'work from home' in a weak Indian economy and strained financial system. So in present scenario social distancing with limited resources and working guide line advisable by NCDC will be definitely helpful in this unlocking situation to give momentum to economy towards growth. Work from home can be taken as a strategy for new employment and technological up gradation of industry to face future disaster.

Competing Interest Statement

All authors have read and approved the manuscript and take full responsibility for its contents. No potential conflict of interest was reported by the author(s).

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Snehalata Das is a research scholar at GIET University. She received two bachelor's degrees in science, and electronics and telecommunication engineering both. She also received her master's degree from BPUT Odisha. She is having more than 10 years' experience in research and teaching, and published several research papers in various reputed journals.



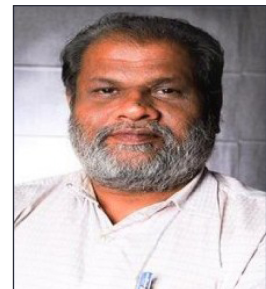
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