



Current Economic Slowdown and Opportunities for Cost Effective Services and Products using Technological Inventions: An Empirical Study

Tripti Tiwari^{1*}, Mohit Tiwari²

¹Bharati Vidyapeeth (Deemed to be University) Institute of Management and Research, New Delhi, India, ²Bharati Vidyapeeth's College of Engineering, New Delhi, India. *Email: tripti.tiwari@bharativedyapeeth.edu

Received: 17 June 2020

Accepted: 28 August 2020

DOI: <https://doi.org/10.32479/ijefi.10460>

ABSTRACT

Technology has always played a great role in transforming economy. From computers to Internet of Things, the technology has not only supported the business and allied areas but also has revived the economy from time to time. The current economic slowdown has raised the eyebrows of all the industry experts and economics. There has been a major impact on GDP, export growth rate and many other aspects of the economy. The slowdown has come into phases, which may be considered as the result of GST (goods and services tax), Demonetization and/or the current pandemic situation. The experts have observed that there are many factors that indicate about the problem in the economy. Now consumption and demand has decreased because people want to keep more money with themselves (cash or bank) so that they can meet the sudden and urgent requirements and they are not interested much in spending the money. The decreased consumption has de-motivated the industry and as a result the production has also gone down. The study also finds that how technology can play a role in the helping the economy. It was found that technology can help in cheaper products, providing best services to the customers at affordable prices and provide economical business operations. The sample size of the present study is 244 (122 economists and 144 industry experts). The sampling method was judgment sampling and data analysis tools were weighted mean and multidimensional scaling.

Keywords: Economic Slowdown, Multidimensional Scaling, Technology, Cost Effectiveness

JEL Classifications: O3, O47

1. INTRODUCTION

In the 1st quarter of financial year (April-June 2020), the economy of India had seen the slowdown with the lowest GDP growth in the last 6 years. In Jan-March the growth had touched 5.8%, which in terms of GDP of India was nominal that grow by 7.99% and that was also very low from December 2002. The sectors that had seen the slowdown in this pandemic situation of COVID-19 are Agriculture, Automobile, Real Estate and FMCG (fast moving consumer goods) companies. All the four important sectors that had a great and major contribution in the growth of economy like “domestic consumption”, “foreign consumption or exports”, “private investment” and “government spending” are all knocked back by the slowdown. In

the 1st quarter of this financial year, domestic consumption had fallen up to 6.66% which was 8.41% in the same period of time year in the last year; as a share of the “Gross Domestic Product” the exports had fallen from 20% to 19%; and “fixed capital formation” has got a hit to slip from 31% to 29.8% of the GDP, and these all signals the slowdown in the industries as well. As per the experts, the reason behind this slowdown problem is “Supply Side Shocks”. Stressed banking sectors and Demonetisation, implementation of GST and difficulties in Agriculture sectors are the major contributors to this problem (SYBA-ART1-MACRO-SEM3-2019).

The economy of India is facing the prolonged slowdown because the financial sector and real sector are feeding each other. At the

same time the economists are agreeing to the fact that the current slowdown is expanding more than it was expected, most of them feels that the slowdown growth of India is nearly touching its bottom. Although the growth is seems to be there subdued in “Q3” 2019-2020, there are some lead indicators from where the data is flowing in that includes “sales of passenger” and commercial vehicles, sales of 2 wheelers, strong industrialized PMI, improvement in the movement of rail cargo, increase in the collection of GST etc that has the possibility to reverse the growth downtrend in the coming term (Economic Outlook Survey, FICCI, 2020).

The slowdown in the economy of India had knocked the doors on India by the end of 2015 (Upadhyay, 2015) but its approach was not noticed. Majority of economists, leaders of industries and even the Government, those are very positive some time before were all surprised by this slowdown (PTI, 2018). With the “consumer confidence index” score of 133, even the Indian “global Consumer Confidence” was on peak before this slowdown (Whye, 2019). According to the reporter and news, nearly two hundred companies were keen to return to India from China and set their companies in India again (ET, 2019). From the beginning of the year 2015, there were so many lead indicators like “Business cycle” and the “financial cycle” that are indicating towards the possibilities of the slowdown but their signal was very weak that nobody bothers to take any step and on the other hand the complete environment of economy was very much hopeful that everything will goes well. And now, at present the signs of the slowdown are stronger and can be easily seen. There are so many indicators such as “Consumption (demand),” “investment in the private sector,” “new projects” and growth rate of the GDP are all going down (Kaul, 2019). There are different institutions like “Moody’s and Economists” that are cutting the projected growth rate of GDP of India (Dhasmana, 2019) but it is expected that this slowdown and down turn is a phenomenon that will be there for only short period of time.

Businesses all over the globe had very quickly felt the production declination in China, as it also shows that China is serving as the key role in the supply chain all around the world as the producers of “intermediate goods,” especially in the computers, electronics, medicines and equipments used in the transport and as the chief source of demand for number of merchandise. Inventories can be used on the temporary basis so as to met the temporary disruptions of supply, but due to just in time process of manufacturing the levels of inventory are bend and the another suppliers are not able to find for the special parts. In many countries, manufacturing sectors will be weakened in the affected regions if there will be a prolonged delay in the restoration of full production and it will take a long time to give their supplies all over the world. A preliminary scenario is considering the effects that lives for the short time, but had severe down turn in China, and has been using as a guide that updates the projections of the growth. The outbreak of CIVID-19 and its impact, and the methods that were used to stop its spread is working parallel by making the supply side shock more adverse with the forced shortening of working hours and at the same time the demand is also decreasing. Confidence is also declining, laid off workers are not getting job and payment and on the other hand the demand in the services of tour and travel is also declined by

hitting the consumer spending; the flow of cash is also reduced and there is a uncertain delay in the corporate investment; and due to the supply chain disruption the inventory level that is already there are also running down (OECD, 2020).

In recent quarters the Indian Economic growth has slowed down in significant manner. At the end of the year the growth of the GDP had decreased to 8.1% in the quarter of March of 2018 to 4.5% in the Sept. quarter of the year 2019. The slowdown is broadly based on the expenditure components of GDP such as “consumption,” “investment” and even the growth of “Export” had already been slowed down noticeably. The growth of the service sectors is comparatively remained stable but the growth in the sectors like agriculture and industrial sector are considerably weakened. Over the past 18 months a number of developments are reflected the slowdown in India. In the mid of 2018, there are so many factors that results the growth with slow speed in the consumption in private and public sectors. In order to raise the core inflation, the “Reserve Bank of India” had increased the rate of interest and nearly at the same time, different policies of reforms were implemented by the Government that includes the introduction of “Goods” and “Service Taxes” and for the car owners the insurance is made compulsory (Box A, Statement on Monetary Policy, 2020).

2. LITERATURE REVIEW

2.1. Economic Slowdown

From the time of the financial crisis all over the globe, the long term growth of India has also slowed down because of the sputtering of its two major engines of propelling rapidly growth- “investment” and “export” and along with these at present, “consumption” that is the another engine of India is also slowed down and in the last few quarters, this results in the decrease in the growth precipitously. Without any doubt, it can be said that downward spiral had locked the economy all over the globe. The shockingly high interest growth differential is the best way to capture this reality. Now the corporate cost of borrow is exceeding the growth rate of GDP by more than 4% points that means the interest on the loan is getting much higher as compared to the revenues that are generated by the companies. By now, this is the reason of the recovery of the amount of the debt that is in stress and this is the 2nd wave of the crisis of the “balance sheet”. If this process is not kept under monitoring, the economy will keep on going down because the growth goes down due to stress, by which the stress will be intensified (Subramanian and Felman, 2019).

Jorda et al. (2020) found that in the history of pandemics they were followed by low returns and less profits in all the sectors. When the natural rate of interest were measured by the economic statistics it is found that pandemics were always followed by “sustained periods”, and “depressed investment opportunities” and this is due to the reason of “excess capital per unit of surviving labour” and the heights of the desire to save money. If this trend goes on in the same way, these will also show the economic slowdown in COVID 19 pandemic and the trajectory of the global economy will come up in different way which will not be in the way as it was expected few weeks ago. It is expected that if “real interest

rate” sustained for some more decades, it will give financial space to the governing bodies to lessen the effects of the pandemic.

We can preliminary estimate the growth for the financial year that is coming ahead with the help of our 3 sectors that are also the phase framework of the analysis. The slowdown economy of India is expanding towards the bottom line much more it was expected and the in realty the growth of India will be there only between 0.2 and 3.9%. Just after this pandemic situation, there will be a need of reform packages that should be introduced by the union and state Governments so that the quick recovery of Indian economy from this crisis is ensured. An extraordinary opportunity is also provided by this tragic pandemic situation of crisis to transform the economy of India. In this current situation of pandemic crisis, the tax revenues and the economy both has slowed down at the same time, and any of the reduction in the taxes is costing less but it will be raised with the great buoyancy once the economy will recover. The perfect candidate for this target is the wide range of reforms of “GST,” taxes of “personal income” and “direct tax code.” It is important to start designing these reforms in the June 2020, so that by the end of the year the reform of GST can be introduced by the council of GST and new “Direct code” in the next “Union Budget” (Virmani and Bhasin, 2020).

On the other hand Guerrieri et al. (2020) had presented the theory of “Keynesian supply shocks” that had triggered the change in aggregated demand much larger than the “shocks” themselves. They were arguing on the fact that may be Covid-19 also had this characteristic. To contain the fallout of the economy after the lockdown period it is important to prevent the shutdown firms and prevent the jobs also i.e., demands needs to be swiftly revived with the combination of supply side bottlenecks along with the reforms that enhances the growth and it works as a key factor to limit the extent of the growth costs. With reference to India, the problems that were raised due to sudden growth of recession in 2019 should be remembered while sustaining the recovery to its full potential of growth. These facts become consistent by the study of Barro et al. (2020), in their study they found that in the wars the substantial destruction of capital stock is not like in the pandemic situation. Additionally, they had also found that after the pandemic the real wages will be elevated. Their findings are constants with the pandemic that results in the scarcity of the labour and shifts to more precautions for the savings. The forecasting is tough for long period of implications of this current crisis that includes the after effects of immediate huge financial deficit over the main economy together with the “monetization” of loans by the key central banks.

Due to the COVID-19 pandemic situation, the economy all over the globe is contracted by 3% in the year 2020, which is much more than the condition that happened in the year 2008-2009. In this scenario, it is assumed that the effect of COVID-19 pandemic will start fading from the mid of 2020 and the efforts that are made all over the globe will give their results in growing the economy. However, more severe results of these risks are also substantial. To overcome these severe outcomes more effective policies will be needed and much more important measures need to be taken to decrease the contagion and make investments to protect the life of

the human being along with the economic health. Since there is the acute economic downfall in some specific sectors, policies should be implemented considering the targeted financial conditions and measures related to economic market that supports the household and the businesses that are affected at the domestic level. At the same time, strong and multilateral cooperation will be needed at the international level to defeat this pandemic, along with this financial help should be given to the countries that are facing huge financial and health problems and also providing aids to the countries that had weaker health care system (World Economic Outlook Report, 2020).

It is expected that there will be a global recession and it is possible in the emerging markets also and all in all the demands will be affected that will be much larger than the shock of the initial supply. Drop in demands will be majorly driven by the uncertain panics and the policies of the lockdown in this current pandemic situation. The investments in the number of small and young companies and the expenditure of households like renters and mortgagors, majorly depends on the flow of the cash and since there is a huge drop in the demand sector these firms are forced to shut down. These entire situations had increased the layoffs and consumption at the same time and the economy is entering in the loop of depression (Surico and Galeotti, 2020).

It is expected that there will be an actual growth of GDP of 0.6% in the starting of the year because the COVID-19 and its disruptions that are associated with it are migrating from abroad but this growth will not able to raise the rate of unemployment. The travel and tourism industry is already facing the “layoffs” and “furloughs.” It is forecasted that cloud of the uncertain surrounding of “COVID-19” will be lifted and calls for the rebound will be there after the mid of the year. The firms that are in high debt are threatened to solvency and the risks that blown away profits may lead to layoffs and decreased demand. It is expected that the “Federal Reserve” and “Congress” will help in stimulating the economy but this kind of tools are not designed to act in these kinds of unique disruptions that are triggered by an “epidemic.” The cuts in rates and taxes will not be sufficient for the factories to reopen themselves and get their business back. The designs of the policies should be in such a way that it can help these firms to keep on floating and regain their business (Swonk, 2020).

2.2. Role of Technology in Making Products Cheaper/ Services Cheaper

The development in technologies contributes a lot to the economic and socio cultural life. In an American study it is revealed that as compared to the past people are working more; “industriousness” and “self-discipline” virtues are value more; there is an increase in the entrepreneurship and people are increasing their technological abilities for their new career. But, instead of these positive developments, there are fluctuations and uncertain conditions in the business sector are created by the technological developments and this causes the uncertain conditions in the life of the employees. These developments in the field of technology are eliminating the jobs and area of work and also bring in the negative impact on the service sector but on the other hand it is also creating new job opportunities (Çalışkan, 2015). Re-shoring is referred as a

prescription in the United States very frequently that is helping to save the sector of manufacturing but this is not supported by any of the strong evidence that can serve as a solution to solve the problem of unemployment. On the other hand, to rely on the long practice of innovation in the United States related to troublesome technologies that focuses on the special trainings with the aim to train the work force the latest skills and regular investment in research and development are suggested to make the policies in order to take the benefits of the opportunities in the time ahead (Saki, 2016).

Cascio and Montealegre (2016) had presented a latest treatment of the role of the technology, especially “information and communication” technology that is playing to change the work and the organizations. It is noted that the important and significant matter for consideration is not “technology in” and “of itself”; to a certain extent, it is how the psychological theory can be created and used and how the studies can be done on it for better understanding of managing the impact and implement the emerging developments. The main goal is clear, that is, for the individual and the organizations positive consequences need to be maximised and at the same time negative effects need to be minimised. This will stimulate the challenge and also challenges that are already going for the field of “organizational psychology” and “organization behaviour.”

Maletič et al. (2014) found that if the effectiveness of the “vibration based maintenance” of the company is improved, the company can definitely avoid their profit losses to a great extent. A live working technique can be used when it comes to the electrical failures so as to improve the reliability and availability of the machine paper. The study shows that potential savings and the reduction of stoppages that are not planned shares a positive association with each other. It is also seen that there is the requirement of many systematic approaches to establish and run a policy that has cost effective maintenance and at the same time there is a need of more holistic view of the maintenance in the paper mill to consider.

In some previous years additive manufacturing has been used widely and significantly. There are so many subsectors of the industries that are using additive manufacturing that includes motor vehicles, “aerospace,” machinery, “electronics” and products used in medical field. At present, in United States almost 1% of all the products that are manufactured are represented by the products that are manufactured by the use of additive manufacturing. This manufacturing technique may change the interactive way of consumers and the producers as this is very cost effective technique and it also offers so many opportunities for the economy and the society as well. The production of strong and light weight products can be customized and facilitated by this technology and it can also allow those designs that were not possible with already existing techniques of manufacture (Thomas and Gilbert, 2014).

Nagy et al. (2018) found that the spreading of the real time data all through the companies that offers the appropriate analytical tools and procedures may have a significant influence on the whole company. In case of “cyber physical system” and “bid data technologies,” the companies that use them are said to have high level of logistic service, their processes are done more efficiently with their partners, their cooperation amid logistic

functions are also improved and they show high performance in market, finance and competitions. They also show increased economic sustainability when they apply more processes of efficient production and achieve better production and economy of scale. Additionally it is also found that already there are so many companies that have started their way towards digital evolution.

At present, it is important for the leaders of business and the one who makes the policies to have an eye on the technologies and philosophies that make an impact on the production. The companies are obliged by these techniques and forced to rethink and retool their internal processes, and the also to the governing bodies to reassess their developmental strategies and the advantages of national competitions. The ones who embrace these technologies and quickly change their enterprise will definitely reach the success. The leaders of the governing bodies may implement their policies correctly, expand and spread these technologies and make their workforce, infrastructure and supply chain ready to power them, will definitely help them to grow their economy (Kearney, 2017).

2.3. How Technology can Help in Economic Slowdown in Cutting Costs and Attracting Customers etc

Oghojafor et al. (2011) found that since the companies had not completely integrated their management of relation with the consumers with the help of information technology, they are not able to make the provisions for their consumers to make all the important online transactions instead of having a comprehensive data base of their consumers. It is also found through the studies customer services can be improved and organization can make more profit with the help of effective combination of relation management with the help of information technology.

Grewal et al. (2019) studied that almost each and every phase of human’s life is revolutionized by new and latest technologies such as the methods used by the firms to market their products and offer their services to the customers. At present technologies such as “internet”, “greater capacity of computers”, “mobile devices and their applications”, and “social media” as well that is emerging the market to a great extent and are used in all the sectors to ease the work processes. It will not be a surprise that almost all the sector of the business world like “retailing,” “manufacturing”, “healthcare”, and “finance” are spending a lot to adapt the technology and the method that are driven by the technology to achieve their target. There are so many examples like companies in manufacturing section are looking forward to save their cost by “mechanized” and “robotic” processes of production in which the number of labours is less and the process is more efficient. Retailers and companies of the service sector are spending more on “online”, “mobile”, and “social media” platforms to stay connected with their clients and investors so that they can increase their revenues and decreasing their expenses.

It is observed by Şahin and Topal (2016) that cost and financial performance is positively affected by most of the systems of forecasting and demand management. Additionally, it is also seen that feature of “electronic data interchange” and “enterprise resource planning” systems had their positive contributions to rise the financial performance. The study also shows that the extent of the information technology usage, particularly the unit product cost shares

a significant relation with the unit material cost amid the indicators of cost performance. In order to survive in this condition of intensive competition the companies need to update themselves with all the possible technologies and they need to adapt all the latest technologies related to information and communication to stay connected with their customer and attracts them to their brand in any situation and condition. There are some tools of information technology that are used in the companies such as “computers,” “communication technologies,” “internet,” “robot,” “office automation system,” “management information system,” “expert systems,” “decision support systems,” “electronic data interchange system” etc. It is the known fact that significant contributors are provided when the information technologies were used on the business performance.

The utilization of transaction cost approach is the strong method to explain the potential of IT to improve the flow of organizational information and it also reduces the cost and therefore improves the capacity of the organization to manage the complex conditions. One of the examples of this technology is usage of “electronic data interchange” in the settings of the collaboration of suppliers and retailers. Though, it is not essential that it will involve the drop of number of transactions. On the other hand, the number of transactions is repeatedly increased while there is a reduction in the volume of the transaction done by an individual. However, the reduced cost of transaction is achievable, as the decreased cost of every transaction exceeds the cost that is related with the increased number of transactions. From the analysis it is observed that the evaluation of the effect of the IT in the light of “coordination cost” is necessary. The outcome of the study says that the use of informational technology in the companies in various ways is good and it increases the potential of the organization as well (Cordella and Simon, 2014).

When we study and understand the new era of marketing and its developments, we are able to know that marketers of this era had make their best of efforts to bring in this change of purchasing nearer to our daily life and they are making their efforts to fill all the gaps between the market and an individual. Technology serves as a bridge and a tool for the marketer that is helping them to reach the population and the audiences that are their targets. Beautiful fruits had been reaped that was not achieved before with the help of the technology that is incorporated with the marketing and industries. In the past decades nobody had ever thought that beside the print media there can be any other way that can help them for their marketing process to attract the customers. Without any doubt it can be said that the new concepts of marketing will keep on coming in the market to attract the customers and it is majorly done with the help of “emergence of technology” which is the latest branch of marketing and is known as Digital marketing. At last, the advertising world of today had seen a significant change in the form of technology (Jain and Yadav, 2017).

Over the past few years, the retail landscape is completely changed due to digital technology and it is indicated that this change will be continuous. In the consumer surveys number of evident are seen that shows the level up to which these digital tools are incorporated in the experience of shopping. At present, retail sector is completely depends on the technology and the influence of social media that includes transparency of price, alerts on mobile and sharing on

social media etc. A responsive retailer that looks forward can make their customer glad in this latest environment emphasizing on the flawless experience of digital world. There are some tool that are accessible to the retailers such as “responsive website design,” “custom alerts” and a convincing strategy of content. This flawless incorporation of digital tools in the experience of shopping will help the brand to attract new customers and this will also allows the existing customers to be loyal to their brand (Yasav, 2015).

The way of the business can be completely changed with the help of information technology. The changes that are related with the information and communication technology are the part of the procedure of search and experiments, in which some of the companies get the success and grow ahead but some them face the failure and vanish from the market. Countries that have the environment of business and go ahead with this process of “creative destruction” as compared to the ones that faces difficulty in making changes are able to grab the advantageous from the information and communication technologies. At the end it is seen that small business that invest in ICT to enlarge their system of information and their applications which in turn supports their strategy of business and by this means a competitive benefit that is based on the special ability is created in their market. Therefore, association amid the business strategy of an organization and its strategy of information system shows a positive effect on the performance of the business (Nikolosk, 2014).

Cavalcante (2013) analyses the influence of a latest technology on the business model of any organization in the time ahead. The techniques those are already present for the foreseeing technological influence most often focuses on the environment of the company that is external, while here the focus is internal, particularly on the business models of the firms. Additionally, the association amid innovative activities of the companies and the influence of those activities on the business models is highlighted in this study. The theoretical framework of this study shows that a view of business models that is based on the processes was used to understand the vibrant nature of the business model of the firm and the significance of the individuals to take actions that can move their firm to the new directions when they develop new business related products and services. Even though, the companies that are established do not easily change their basic ways but this is important and essential when they create new business models. It is also found that the companies agree to use these latest technologies so as to expand their business models and these technologies had the potential to represent the new business model that is created for the other companies in association.

3. RESEARCH METHODOLOGY

This study is a descriptive in nature which shows the relationships among the variables of Economic Indicators and Production and Investment. Further the study also measures that which variables of technology contribute to support the economy in the slowdown phase. The sample size of the present study is 244 (122 economists and 144 industry experts). The sampling method was judgment sampling and data analysis tools were weighted mean and multidimensional scaling.

3.1. Objectives of the Study

To determine the various variables explaining the current economic slowdown:

- To map the various variables determining the current economic slowdown situation
- To find the role of technology in assisting the economy towards better product, services and offerings.

4. DATA ANALYSIS AND INTERPRETATION

Table 1 shows the demographic profile of the experts. 50% of them are Industry experts and 50% of them are economists including professors and writers etc. The respondents from these categories have been deliberately selected. There are 18.44% who are below the age of 30 and 45.90 are between the age group of 30-45 and lastly 35.66 are above the age of 45. With respect to the experience it was found that 27.46 have an experience of below 5 years, 41.80 have the experience of 5-10 years and lastly 30.74 have experience of above 10 years.

4.1. Mapping of Factors Affecting the Economic Slowdown

Perceptual mapping is one of the most popular techniques of mapping the choices, priorities, and mindsets of people in a diagrammatic form. The figure so obtained shows the proximity and distance of different variables regarding which the perceptual mapping is to be done. In the present study there some determinants of current economic slowdown, have been taken into consideration for this purpose. The mapping of determinants of economic slowdown has been done with the help of “multidimensional scaling.”

4.2. Mapping of Motivations for Women to become Entrepreneurs

Table 2 shows the codes given to the various motivations for women to become entrepreneurs. The codes have been used to represent the motivations in the perceptual mapping figure which has been created with the help “multidimensional scaling.” The map has been given in the Figure 1. And results and discussion have been summerset in the Tables 3 and 4.

Figure 1: “Euclidean distance model”

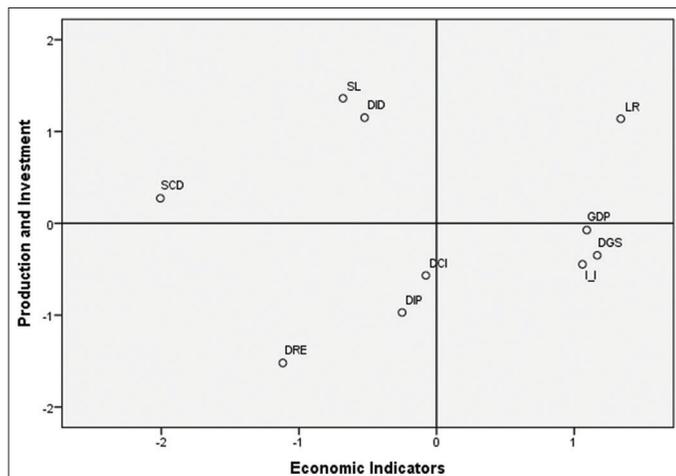


Table 1: Experts profile

Demographic factors	No. of respondents	% age of respondents
Category of experts		
Industry experts	122	50%
economists	122	50%
Total	244	100%
Age group		
Below 30	45	18.44
30-45	112	45.90
Above 45	87	35.66
Total	244	100%
No. of years experience		
Below 5 years	67	27.46
5-10 years	102	41.80
Above 10 years	75	30.74
Total	244	100%

Table 2: Variables of economic slowdown and its indicators

S. No.	Indicator	Variable code
1	Downfall in the projected growth rate of GDP	GDP
2	Decrease in government spending	DGS
3	Increase in inflation (more demand/less supply)	I_I
4	Downfall in consumption and demand	DI
5	Layoff and retrenchments	L&R
6	Salary cuts/deductions etc.	SCD
7	Declination in production	DIP
8	Downfall in investment	DCI
9	Decline in growth rate of exports	DRE
10	Intention of public towards saving and liquidity	S&L

Table 3: Iteration history for the 2 dimensional solutions (in squared distances)

Young’s S-stress formula 1 is used		
Improvement	Iteration	S-stress
1	0.18760	
2	0.15993	0.02768
3	0.15987	0.00006
RSQ		0.91113

Iterations stopped because S-stress improvement is < 0.001000

Table 4: Role of technology in coping up with current economic slowdown

S. No.	Areas where technology can play role	Variable code
1	Cheaper production of products and making affordable products available	4.32
2	Downsizing cost of services distribution through online and alternative modes	4.22
3	Making the business operations more efficient by using latest technology such as artificial intelligence, data analytics and machine learning	4.41
4	Finding alternative and cheaper means of distribution	3.88
5	Applying technology for better customer relationship management	4.55
6	Increase in work from to reduce cost of human resources	4.54
7	Using “electronic data interchange” and “enterprise resource planning” for cost-effective operations	4.35
8	Using ICT for synergy benefits	4.44

Figure 2: Areas where technology can play role during economic slowdown

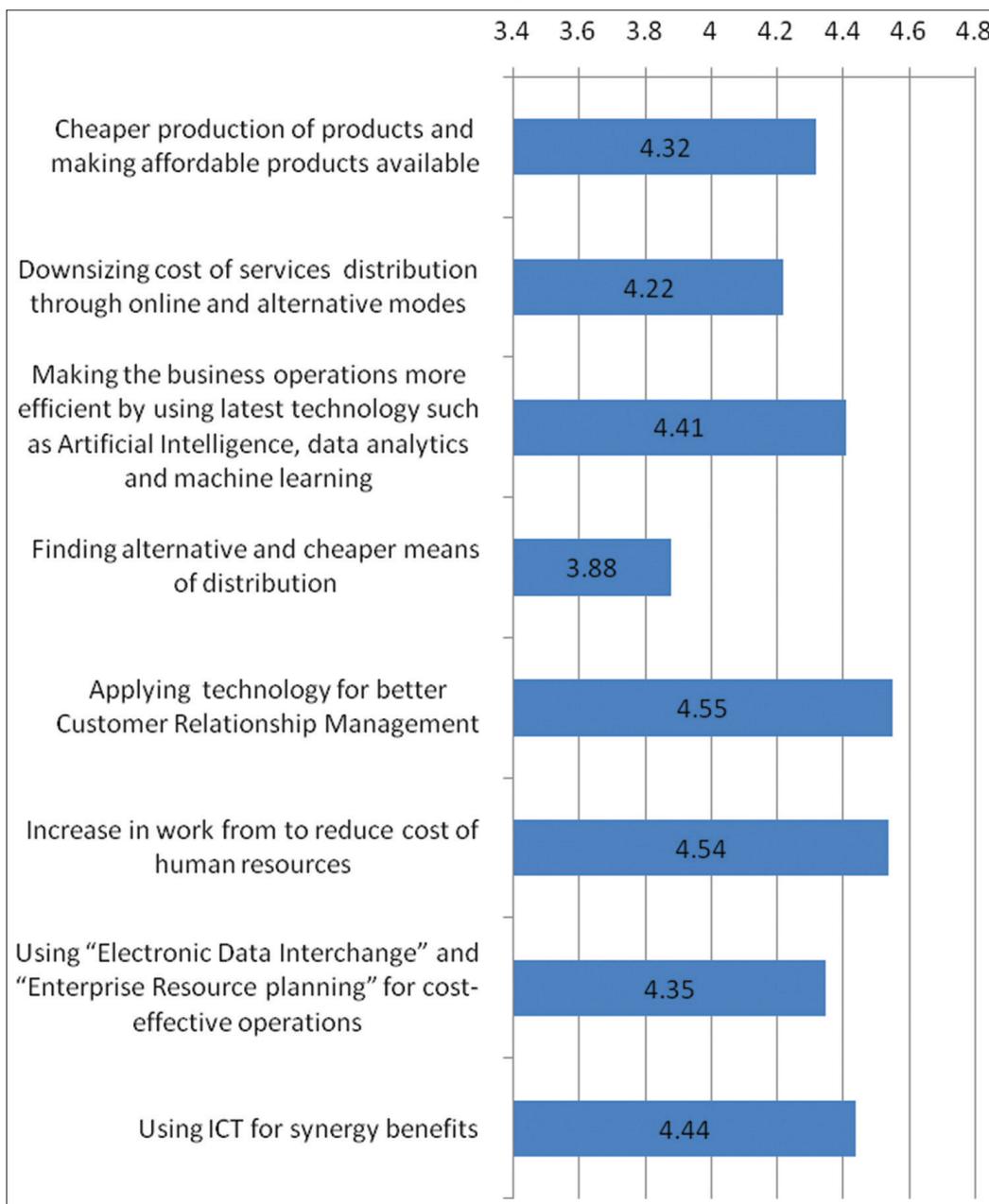


Table 5: Stimulus coordinates

Stimulus name	Stimulus code	1	2
1	GDP	1.3381	1.1385
2	DGS	-0.5230	1.1514
3	I_I	1.0910	-0.0728
4	DID	1.0598	-0.4462
5	L&R	1.1671	-0.3483
6	SCD	-0.6798	1.3622
7	DIP	-2.0074	0.2729
8	DCI	-0.0782	-0.5670
9	DRE	-0.2506	-0.9705
10	S&L	-1.1171	-1.5202

Table 5 shows the stimulus coordinates for the two dimensions. The dimensions have been decided based on the positioning of various motivational factors given in the Figure 1.

The Table 3 shows the S-stress 0.00051, which is acceptable because it is below 0.001000. Hence, the model is optimized. The RSQ of the model is 0.91113 which roughly explains 90% of the variance of model. In multidimensional scaling, if the variance explained is more than 80%, the model is considered robust.

The Euclidean distance model shows the two dimensional model that explains the various factors that determine the current economic slowdown. All the variables have been defined under the two dimensions – Economic Indicators and Production and Investment. The clustering of the variables show that Downfall in the Projected Growth Rate of GDP, Decrease in Government Spending and Increase in inflation (More demand/Less Supply) have been shown in a close cluster which reflects that the response

of the industry and economic experts towards these factors. These come under the dimensions of economic indicators. The second cluster is found towards “production and investment” as it includes downfall in consumption and demand and intention of public towards saving and liquidity.

The next cluster includes the three aspects as declination in production, downfall in investment and decline in growth rate of exports. These have been found in the quadrant which is titled as “production and investment.” Overall, there are two dimensions which have been rated opposite to each other salary cuts/deductions etc. and layoff and retrenchments, as the first one comes under “production and investment” and the later one would come under the “economic indicators.”

4.3. Role of Disruptive Technology in Economic Slowdown

Table 4 and Figure 2 show the areas where technology can play role. The most important and promising aspects found by the industry experts and economists are applying technology for better customer relationship management and increase in work from to reduce cost of human resources with the mean values of 4.55 and 4.54. These aspects are followed closely by Using ICT for synergy benefits and Making the business operations more efficient by using latest technology such as Artificial Intelligence, data analytics and machine learning (Mean Values – 4.44 and 4.41). Overall, the experts have found the role of technology very important in term of cheaper production of products and making affordable products available and Using “electronic data interchange” and “enterprise resource planning” for cost-effective operations.

5. CONCLUSION

The current economic slowdown has shaken the whole economy very badly. There are continuous evidences of job cuts, changing and declining investment patterns and so on. The economic indicators are almost all time low such as GDP and export growth. In India the economic slowdown is an outcome of the bad consumer spending. In a situation of slowdown the consumers try to retain more money with them so that they can use it during the time of crisis.

It has been found from the study that the variables of economic slowdown are downfall in the projected growth rate of GDP, decrease in government spending, increase in inflation (more demand/less supply), downfall in consumption and demand, layoff and retrenchments, salary cuts/deductions etc., declination in production, downfall in investment, decline in growth rate of exports and intention of public towards saving and liquidity.

Technology has always played a great role to cut down the costs of production and provide cheaper alternatives of the products to the customers. During slowdown the customers need economic products and it is only possible when technology is wisely and efficiently used by the business houses. This has been recommended by the industry experts and economists that technology can play a great role in the process of economizing

the products and services and make them available to customer at affordable prices.

REFERENCES

- Barro, R.J., Ursua, J.F., Weng, J. (2020), The Coronavirus and the Great Influenza Pandemic: Lessons from the “Spanish Flu” for the Coronavirus’s Potential Effects on Mortality and Economic Activity (No. w26866). Cambridge, Massachusetts: National Bureau of Economic Research.
- Box A, The Recent Economic Slowdown in India. (2020), Statement on Monetary Policy. Australia: Reserve Bank of Australia.
- Çalışkan, H.K. (2015), Technological change and economic growth. *Procedia Social and Behavioral Sciences*, 195, 649-654.
- Cascio, W.F., Montealegre, R. (2016), How technology is changing work and organizations. *The Annual Review of Organizational Psychology and Organizational Behaviour*, 1, 349-375.
- Cavalcante, S.A. (2013), Understanding the impact of technology on firms’ business models. *European Journal of Innovation Management*, 16(3), 285-300.
- Cordella, A., Simon, K.A. (2014), *The Impact of Information Technology on Transaction and Coordination Cost*. Sweden: Viktoria Institute Göteborg.
- Dhasmana, I. (2019), Moody’s Cuts India’s GDP Growth to 6.2% for 2019 Amid Economic Slowdown. *Business Standard*. Available from: https://www.business-standard.com/article/economy-policy/moody-s-cuts-india-s-gdp-growth-to-6-2-for-2019-amid-economic-slowdown-119082400027_1.html.
- Economic Outlook Survey. (2020), Federation of Indian Chambers of Commerce and Industry. *Economic Outlook Survey*.
- ET. (2019), About 200 US Companies Seeking to Move Manufacturing Base from China to India: USISPF. Available from: <https://www.economicstimes.indiatimes.com/news/economy/foreign-trade/about-200-us-companies-seeking-to-move-manufacturing-base-from-china-to-india-usispf/articleshow/69068781.cms>.
- Grewal, D., Hulland, J., Kopalle, P.K., Karahanna, E. (2019), The future of technology and marketing: A multidisciplinary perspective. *Journal of the Academy of Marketing Science*, 48, 1-8.
- Guerrieri, V., Lorenzoni, Straub, L., Werning, I. (2020), Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortage? (No. w26918), Cambridge, Massachusetts: National Bureau of Economic Research.
- Jain, E., Yadav, A. (2017), Marketing and technology: Role of technology in modern marketing. *IOSR Journal of Business and Management*, 19(5), 49-53.
- Jorda, O., Singh, S.R., Taylor, A.M. (2020), Longer-run Economic Consequences of Pandemic (No. w 26934). Cambridge, Massachusetts: National Bureau of Economic Research.
- Kaul, V. (2019), 15 Ways to Define India’s Slowdown. Available from: <https://www.livemint.com/news/india/15-ways-to-define-india-s-slowdown-1565715613762.html>.
- Kearney, A.T. (2017), *Technology and Innovation for the Future of Production: Accelerating Value Creation*, White Paper. Cologne, Switzerland: World Economic Forum. p1-36.
- Maletič, D., Lovrenčić, V., Maletič, M., Al-Najjar, B., Gomišček, B. (2014), Maintenance solutions for cost-effective production: A case study in a paper mill. In: *Engineering Asset Management Systems, Professional Practices and Certification*. New York: Springer. p375-385.
- Nagy, J., Oláh, J., Erdei, E., Máté, D., Popp, J. (2018), The role and impact of industry 4.0 and the internet of things on the business strategy of the value chain the case of Hungary. *Sustainability*, 10(10), 3491.
- Nikoloski, K. (2014), The role of information technology in the

- business sector. *International Journal of Science and Research*, 3(12), 303-309.
- OECD Interim Economic Outlook. (2020), OECD Interim Economic Assessment Corona Virus: The World Economy at Risk. OECD Interim Economic Outlook.
- Oghojafor, B.E.A., Aduloju, S.A., Olowokudejo, F.F. (2011), Information technology and customer relationship management (CRM) in some selected insurance firms in Nigeria. *Journal of Economics and International Finance*, 3(7), 452-461.
- PTI. (2018), More CEOs in India Confident of Global Economy than Home Turf: Survey. *Business Standard*. Available from: https://www.business-standard.com/article/companies/more-ceos-in-india-confident-of-global-economy-than-home-turf-survey-118073000738_1.html.
- Şahin, H., Topal, B. (2016), The effect of the use of information technologies in businesses on cost and financial performance. *International Journal of Engineering Innovation and Research*, 5(6), 394-402.
- Saki, Z. (2016), Disruptive innovations in manufacturing an alternative for re-shoring strategy. *Journal of Textile and Apparel, Technology and Management*, 10(2), 1-7.
- Subramanian, A., Felman, J. (2019), India's Great Slowdown: What Happened? What's the Way Out? CID Faculty Working Paper No. 370, Working Papers, Centre for International Development at Harvard University. p1-38.
- Surico, P., Galeotti, A. (2020), The Economics of a Pandemic: The Case of Covid-19. London: European Research Council, London Business School.
- Swonk, D. (2020), An Economic Pandemic: COVID-19 Recession 2020, Economic Insights and Analysis Blog. Available from: <https://www.granthornton.com/library/articles/advisory/2020/economic-analysis/economic-outlook/economic-outlook-march-2020.aspx>.
- Thomas, D., Gilbert, S.W. (2014), Costs and Cost Effectiveness of Additive Manufacturing. A Literature Review and Discussion. Gaithersburg, Maryland: NIST Special Publication, No. 1176.
- Upadhyay, R.K. (2015), Another Economic Crisis in Few Years may not Be a Surprise. Available from: <https://www.deliberation.in/2015/07/another-economic-crisis-in-few-years.html>.
- Virmani, A., Bhasin, K. (2020), Growth Implications of Pandemic: Indian Economy Egrow Working Paper Jel No. I00, I18, E01, O40 1 36. Available from: <https://www.egrowfoundation.org/research/growth-recession-j-curve-of-institutional-reform>.
- Whye, L.K. (2019), India Tops Global Consumer Confidence Survey. *The Economic Times*. Available from: <https://www.retail.economictimes.indiatimes.com/news/industry/india-tops-global-consumer-confidence-survey/68254668>.
- World Economic Outlook Report. (2020), World Economic Outlook, April 2020: The Great Lockdown. Available from: <https://www.imf.org/en/Publications/WEO/Issues/2020/04/14/weo-april-2020>.
- Yasav, S. (2015), The impact of digital technology on consumer purchase behaviour. *The Journal of Financial Perspectives: FinTech*, 3(3), 3-10.