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FROM THE EDITOR'S DESK

This is the twelfth year of publication of our journal. This Volume 12 No. 2 of October 2020 includes five papers covering various subjects.

The first paper is titled "Real Estate Housing Prices and Microeconomic Theory: Case Study". This study explores the real estate sector of any country is dependent on the overall economic performance of the nation. Over the last few years, various economic issues have declined the overall demand, specifically in the residential sector. Absorption rates across major cities have weakened, resulting in a huge inventory in Mumbai, Chennai, Delhi and Kolkata, with Mumbai being the worst hit. Customers are waiting for a more profitable scenario, whereas developers largely remain in standby mode without decreasing the prices. Interestingly, this decrease in demand has not led to decrease in prices, which is otherwise suggested by the micro economic theory of price demand and supply.

The second paper is titled "Technological Innovation and Human Capital Development in Nigeria: A Study of Ogun State Technological Hub". The study examines the impact of technological innovation on human capital development with specific reference to Ogun State Technological Hub, Nigeria. The eclectic approach was utilised as the study is anchored on both the human capital and institutional theories. It adopts the survey research design and primary data was collected through the use of interviews and questionnaires. Data collected were analysed using both descriptive and inferential statistics. More specifically, the stated hypotheses were tested using Pearson Moment Correlation Coefficient with the aid of the Statistical Package for Social Sciences (SPSS). The findings of the study reveal that the Nigerian educational system has failed to address the challenges of technological innovation due to lack of funding and poor coordination of research and development and this has negatively impacted on employees effectiveness and the quality of human capital in the country. Therefore, the study recommends among others that the government should ensure that there is a functional educational system as well as regular training of employees to enhance the improvement of skills, knowledge and professional development. It concludes that technology is the cheapest and easiest way to improve human capital development through youth empowerment programs.

The third paper titled "Migration of Indian Professionals and Professionalism" the research paper was written as a part of Migration, a dynamic practice has been in vogue. This study focuses on Indian migration within and outside the country. Profession and professionalism are the axis of the research. The paper is based on extensive survey of local migrants and emigrant Indian professionals.

Migration enhances vertical development in any stream of profession. Monetary foundation undoubtedly becomes stronger and resolves manifold number of routine life problems. The migrants' family's financial security and social mobility attain newer heights. All these aspects make them adaptive, accommodative, flexible, and integrative with new culture.

The fourth paper titled "A Study on an extent of sensitivity between Indian GDP and IT Industry", the study is an attempt to study how each Industry reacts in a different way to the business cycle fluctuations. Some of the industries are very vulnerable to economic swings whereas some do not get affected at all. The degree of timing and fluctuation may vary for those industries which are cyclical in nature. The study is carried out to understand how sensitive Indian IT Industry is to Business Cycle Fluctuations in Indian Economy. The substantial growth in

IT Industry and analysis of its sensitivity towards Indian Business cycle has been carried with the help of data captured from Central Statistical Organization, Reserve Bank of India and Ministry of Information Technology and Communications. The cyclical trends have been identified by drawing inference from comparative growth charts. As per the study undertaken to understand the relatedness of IT Sector and Indian GDP the inference drawn reflects a positive relationship between the two.

The fifth paper titled "Has the outbreak of the Coronavirus pandemic impacted the online pharmacy in Serving the nation or capitalization of business opportunities in India?" is an attempt to understand how COVID-19 has affected the E Pharmacy. COVID-19 pandemic has reached a grime stage and has nervous the healthcare systems across the world. The global economy has suffered a great slow down resulted in falling stock markets, travel restrictions, shortage of supplies, quarantined human resources, etc. The deliveries of medicines through e-commerce were declared as essential services. This study aims to understand, does the COVID-19 pandemic brought boon or boost to the E Pharmacy or whether it has contributed to serving the nation in this pandemic crisis. The results indicate the Online Pharmacy is an attractive model in the development of the nation. E-pharmacy has palpable benefits to the consumers as well as the industry. Other than urban another part also have considered in the supply of medicine. It has proven the parallel supply chain Government supports the E-Pharmacy in the starting phase of COVID that made a favorable political environment to cater to the need of people with growth in the country. Traditional retail/chemist Pharmacy hast share a big pie of their market to e-Pharmacy.

CONTENTS

Real Estate Housing Prices And Microeconomic Theory: Case Study Of Four Indian Metro Cities

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ABSTRACT : : *The real estate sector of any country is dependent on the overall economic performance of the nation. Over the last few years, various economic issues have declined the overall demand, specifically in the residential sector. Absorption rates across major cities haveweakened, resulting in a hugeinventory in Mumbai, Chennai, Delhi and Kolkata, with Mumbai being the worst hit. Customers are waiting for a more profitable scenario, whereas developers largely remain in standby mode without decreasingthe prices. Interestingly, this decrease in demand has not led to decrease in prices, which is otherwise suggested by the micro economic theory of price demand and supply.*

Keywords: Indian Real Estate, Demand-Supply Curve, Indian Metro Cities; Mumbai, Chennai, Delhi NCR, Kolkata, Micro economics, Prices.

1. Introduction

The Indian real estate market has jumped by leaps and bounds over the past decade, it has been successful in luring the foreign investors on the top of domestic investors, reasons connect to huge population, rapid urbanization and increasing levels of income. The transformation of real estate from being unorganized to a charismatic, industrious and systematic sector has occurred over these past years. The regulatory policies have been contributory in envisioning the need for better infrastructure in order to establish improved standards of living for the people (ASA and Associates, 2015).

The sector is envisaged to grow further in near future; huge number ofinvestments from non-resident Indian (NRI) will be encountered. According to an industrial survey conducted, there has been a 35% increase in enquiries related to NRI investments with property dealers. Attractive valuations have led to the advancement in Private Equity funding. The induction of new Government policies has led to growth in this sector (ASA and Associates, 2015).

To access what holds on to a promising future for this market, it is primitive to study the prevailing patterns of the market. Thus, we have examined a trend between the demand-supply and price of this market which deflects from the traditionally theory. This study includes the market pattern of only the four metro cities of India which are also the top cities of investment in real estate sector of India, namely Mumbai, Delhi-NCR, Chennai and Kolkata.

In past few years, across all major cities and specifically Gurgaon (NCR region) and Mumbai have witnessed a stagnation in demand, and an over-supply of number of units. The case study illustrates the deviation from the microeconomic theory and the responsible factors for it. This is done through various citations, demographics and other sources of data available as open information. In the paper, our scope is limited to the residential real estate of Mumbai, Delhi NCR, Chennai, and Kolkata.

The study of various cities show that the housing sector does not follow the demand-supply theory. According to this theory, the price of a commodity whose demand is decreasing should also decrease, but the case study depicts the opposite trend. The prices for residential

sector have escalated over the years, despite a slump in demand. Thus, the price of a housing unit cannot be determined using this Microeconomic theory. The price of a housing unit depends on multiple attributes such as geographic location of the city, local land prices, resources and differing local government policies. Every city based on its geographical location, has its own reasons to not follow the price corresponding to a shift in demand. Thus, the question arises as to whether huge investments such as in real estate can be comparable to common consumer commodities like sugar, salt that do not follow the microeconomic theory, or an exclusive unified theory should be proposed to understand the price demand and supply relationship for real estate. The study is limited to only four Indian metro cities and the factors identified for deviations are limited to these cities only. The findings may not be applicable to affordable housings, tier two cities, various income groups or even all the metros.

2. Literature Review

Amongst all the global sectors, real estate sector is one of themost accredited sectors. After agriculture, it is the second principal employer in India. It is subdivided into housing, commercial, retail and hospitality, housing real estate is the sector we are taking into consideration (Indian Brand Equity Foundation, 2017). The key drivers for demand in housing real estate include growthin nuclear families, fast paced urbanisation, increasing household incomes, government schemes, policy initiatives and regulatory reforms.

The Indian economy slowed down during 2012-2014 (Price Water Cooper journal, 2016). The GDP growth rate stagnated, and industrial production decelerated. This declineled to a huge inventory,whereinthe supply surpasses demand while the prices stay high (Bain and Company, 2016). However, post 2014,the economy recovered towards becoming one of the fastest growing economies in the world, having an estimated growth momentum of 7% along with GDP growth rates for thefollowing five years (Price Water Cooper journal, 2016). The real estate market was at 126 billion USD in the year 2014-2015 and is estimated to be about 180 billion USD by 2019-2020 (Price Water Cooper journal, 2016).The housing real estate sector accounts for 5-6% in India's GDP(Indian Brand Equity Foundation, 2017).

The government of India introduced reforms in this sector that bought about transparency, stimulating foreign direct investments (FDI) and hence reducing the gap between supply and demand. The factors for an increase in demand for housing, is attributed to robust demand, increasing investments, policy supports and attractive opportunities. Some of the major issues prevailing the sector for a slump in demand are unsold inventory, higher interest rates and credit growth, weakening of Indian rupee, lack of credit, lack of transparency in the sector, land acquisition, lack of focus on enhanced transit systems and green construction practices etc.

The development in the sector has been encouraged by the government of India by introduction of schemes, policies and regulatory reforms. Some of the schemes are affordable housing, Smart city mission, Pradhan MantriAwasYojana, AMRUT (Atal Mission for Rejuvenation and Urban Transformation), HRIDAY (Heritage City Development and Augmentation Yojana). The various policies include REIT (Real Estate Investment Trust), its implementation drew more investments in the sector, relaxation of FDI policy. Implementation of such schemes and policies increased the demand in the sector due to better customer sentiment and perception towards the sector.

Real estate is a complex and an opaque market, which depends on several price factors like interest rates, rental yield and transaction volumes etc. Demand in general is one of the key factors in increase or decrease of the prices of any commodity. The property demand depends on positive low property prices, high economic growth, and better job and income prospects. The demand is high due to strong population growth, rise in nuclear families, continuing urbanization trends and improved regulatory framework. Over the years, economic growth has improved but remain unaffordable for the customers due to very high prices, hence postponing purchase decisions, reason being increase in cost and time incurred in land acquisition and increased construction cost. Hence there is a decrease in demand in this sector. A decreased demand for Real Estate will increase vacancies, will cause rents and prices to decline, move people into more spacious accommodations, cause market segments that cannot compete to abandon or demolish improvements, continues to be in the current state until demand once again increases (McKenzie, Betts, Jensen, 2011).

In housing sector, demand for anarea is inversely proportional to its supply. Limited supply in housing real estate causes the prices to increase. Conversely an oversupply leads to a decrease in the prices. A balanced market, i.e. at equilibrium would work well for both the buyers and the sellers. The supply in real estate market is dependent on, price of property, availability of land, efficient builders, easy accessibility of credit and skilled labourers (Singh, 2017). Changes in supply are caused by cost of production, new technology, new construction and demolition(McKenzie, Betts, Jensen, 2011).

In the year 2014, a highdecrease of 30% was observed in demand across seven major cities in India. The main reasons were the high prices, higher interest rates and cautious buyer sentiments. Due to the low demand, the developerssubsequently, reduced the supply, which led to a 25% decline on a YOY basis. This decline was mainly found in the luxury and high and mid end sections, throughout all the major cities, sharpest in the NCR (Thorton, 2015).

Mumbai and New Delhi fall in the top three cities in India for development and investment in India (Price Water Cooper journal). Mumbai is most expensive and the slowest growing city in India, as the geographical constraints has prevented the city's easy expansion. This has resulted in the local government committing itself to road and rail infrastructure program that would permit easy access to the city Centre from outlying areas. New Delhi, the capital of India has an ease in transit systems and development of satellite towns has caused an increase in demand in residential sector in real estate.

3. Methodology

3.1 Theortical Background

The three chief aspects of demand-supply analysis are demand curves, supply curves and the concept of market equilibrium. The demand-supply analysis is represented in graphical manner, X-axis depicting quantity of the commodity per unit time, Y-axis depicting price of the commodity with curves depicting supply and demand in the market. The demand curve represents the quantity of the commodity or the goods that the buyers are ready to buy at different prices whereas supply curve depicts the total quantity of the good that the sellers are willing to sell at different prices. The point where the demand and supply curves intersect each other is called the point of market equilibrium. At this point, the quantity demanded equals the quantity supplied, so the market clears. Given that the exogenous factors (e.g., national income, rainfall) are constant, there is no change in the tendency of the market price, which is represented in the equilibrium point (Besanko, Braeutigam, 2010).

The demand and supply curves are plotted with the assumption that all factors, apart from the price, which effect the quantity demanded and quantity supplied are fixed. However, these other factors are not fixed, and the position of the demand, supply curves and the market equilibrium depend on their values. For a representation of shift in demand and the supply curve, or in both, we should determine how an exogenous factor affects the demand and supply or both, which is to be analyzed in a market equilibrium state. For instance, if the higher consumer incomes increase the demand of a particular good. The result of higher disposable income on the market equilibrium is represented by a rightward shift in the demand curve (i.e., a shift away from the vertical axis), as shown in Figure 3.1. Also, an increase in labour costs would shift the supply curve leftward (i.e., toward the vertical axis). The increase in the price of labour increases the equilibrium price and decreases the equilibrium quantity (Besanko, Braeutigam, 2010).

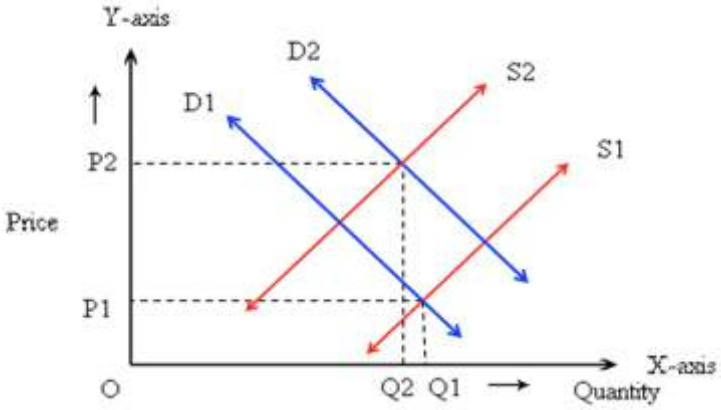

Figure 3.1: Demand Supply Analysis

Source: Microeconomics 4th Edition 2010' by David A. Besanko and Roland R. Braeutigam; published by John Wiley and Sons.

Ideally, there should be an equilibrium in the market, but in real situations it is not so. There is always a gap or difference between the number of commodities demanded and number of commodities supplied at a particular price. This difference in quantity demanded vs. quantity supplied is known as the demand-supply gap. This gap helps in determining the market prices of the commodity supplied and demanded. It is a key factor that determines the rise or fall that will occur in the prices. There is surplus demand or shortage when, at a particular given price, the quantity demanded exceeds the quantity supplied. A shortage (excess demand) results in upward pressure on price (Figure 3.2). A surplus (excess supply) results in downward pressure on price. When the quantity demanded equals the quantity supplied, demand and supply forces will be in balance so that there will be no tendency for price to change (www.albany.edu).

3.2 Data and Hypothesis

The study is carried out by formulating data of price, demand and supply from year 2012 to 2016 for four major Indian metro cities namely, Mumbai, Delhi NCR, Kolkata and Chennai. These are the top Indian cities for residential investments according to IBEF report, 2017 and thus chosen for the study. Two prominent regions of each city are chosen for the study.The demand and supply quantities are obtained from Knight Frank report 2012-16 which specifies year wise launches and absorption in the market. The prices of these demands are obtained from trends observed by 99acres.com. This when plotted with the respective demand and supply leads to the depicted plots. All the data obtained is secondary in nature i.e. from reports, cases, articles by various consultants and institutions.

The study is to test and identify if the price, demand and supply patterns observed in the metro cities follows the microeconomic theory. The test is done by plotting the price demand and supply figures over the years and observing the trend in conjunction with the microeconomic theory. Furthermore, if the trend doesn't confirm to the theory, it formulates the reasons for non-conformance and states any corrective measures if required.

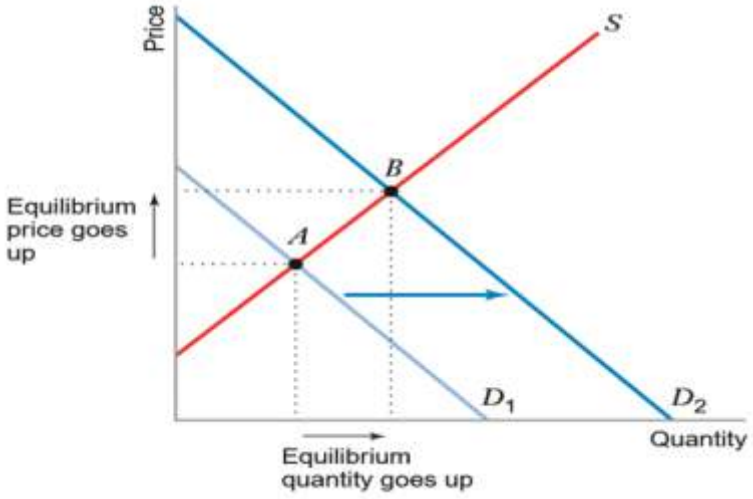

Figure 3.2: Decrease in Price due to corresponding downward shift in demand

Source: Microeconomics 4th Edition 2010' by David A. Besanko and Roland R. Braeutigam; published by John Wiley and Sons.

4. CASE STUDY

4.1 MUMBAI

Mumbai being India's financial hub has a population of 12 million that is growing exponentially by +1.13% since 2011 (India Census, 2011). It is one of the top ranked cities in the world for residential investments (Urban Land Institute, 2017). In 2012, India went through a phase of anemic economic growth, in which growth drastically went down to 5.6%, and this eventually affected the demand supply relations of the residential property market (Government of India, 2013).

The unsold inventory increased to 31% for 2015-16 wherein around 85,000 flats remain unsold. The prices increased by 27% between 2012 and 2015, with a

decrease in demand from 85,978 units to 62,581 units (Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017). This downward shift of demand from the equilibrium, has incidentally observed an increase in prices. This affected the Developers which were situated in the surrounding markets. The worst hit areas were Peripheral Central Suburbs and Navi Mumbai with launches moving down to 44% and 59% respectively (Knight Frank, 2015; Knight Frank, 2014; India Brand Equity Foundation, 2017).

South Mumbai and Central Mumbai are famous for the luxury lifestyle with comparatively higher market prices in the industry. The unsold inventory in these areas are just 3% but in terms of value they contribute to a whopping 29%. The unsold inventory of Mumbai is worth Rs. 2020 billion, of which Rs. 595 billion is in the Central and South Mumbai markets (Knight Frank, 2015; Knight Frank, 2014; India Brand Equity Foundation, 2017). A huge gap in demand and supply gap is observed specially in 2012 in the Central Suburb and South Mumbai region, which led to a 20%-30% decrease in number of new launches (Figure 4.1.1 and Figure 4.1.2). Although there is a steady decrease in demand, the prices increased by over 30% in the span of5 years from 2012 to 2016. Towards the end of 2016, we observe a contraction of demand supply gap, especially in the South Mumbai region, as the huge inventory overhang was fulfilling the demand in the market.

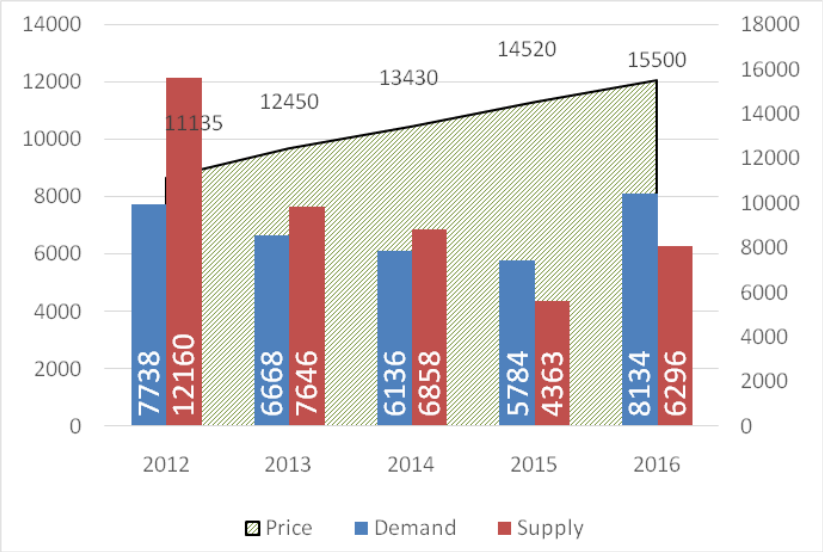

Figure 4.1.1: Central Suburb Region Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

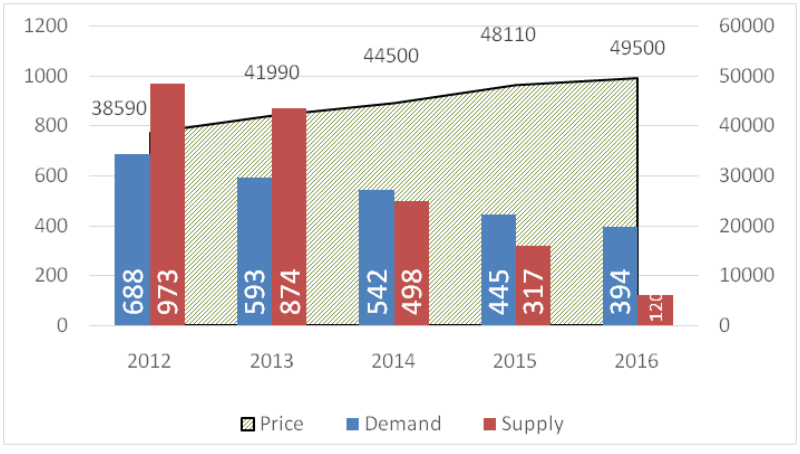

Figure 4.1.2: South Mumbai Region Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

4.2 DELHI NCR

The overcrowding in the capital city Delhi lead to emergence of new satellite towns such as Gurgaon, Noida, Ghaziabad, Faridabad and Meerut. Gurgaon alone in the National Capital Region (NCR), contributes for 23% under construction units. In Gurgaon, areas such as Neemrana, Bhiwadi and Dharuhera, are witnessing a continual industrial development, which has led to development of residences in the affordable housing category. Even though Gurgaon is seen as a prime market for mid to high segment projects the unaffordable land prices in many areas has forced developers to consider new locations such as Sohna.The high demand seen in 2012, created a positive sentiment for the developers to launch new projects and thus the supply increased gradually from 2012, with a sharp increase between 2014-15 and a decline thereafter (Figure 4.2.1).The prices increased by about 15% over the years from 2012 to 2016 and is closely driven by the overall demand in the market which reduced by 50% over the same time period.

Noida is considered a hub for IT/ITeS companies as well as many other automobile ancillary industries. In NCR region, Nodia is the sole micro-market that has a wholesome combination of products across all price ranges, providing it an upper edge over other regions. Quite like Gurgaon, Noida showed a huge demand in 2012, with a sharp 45% increase in supply in the year 2014 (Figure 4.2.2).Over the years the demand reduced to an increase in price and a decline in new launches as the unsold inventory levels grew.The stagnation in the new launches maybe accounted for the reasons such as the unavailability of land for cluster housing projects, the increase in allotment rates of cluster housing by 15% or the litigation between developers and buyers, consumer agitations and regulatory bottlenecks.

Due to the weak sentiment and uncertainty of the election outcome, the housing sales reduced across all micro-markets. The 10 quarter aged inventory will take about 8 more quarters to be sold completely.

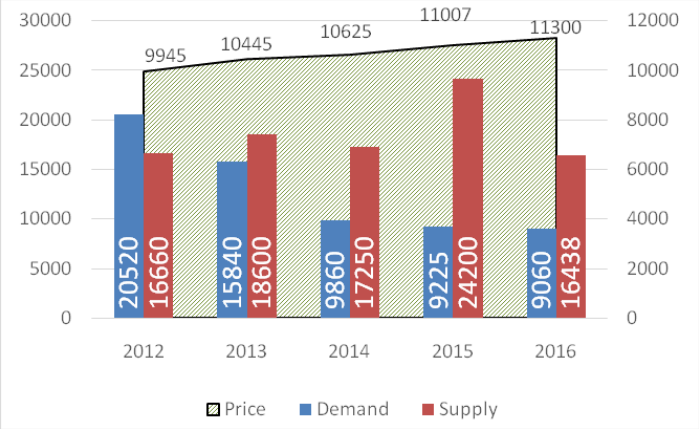

Figure 4.2.1: Gurgaon, NCR : Demand Supply Curve 2012-2016
(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

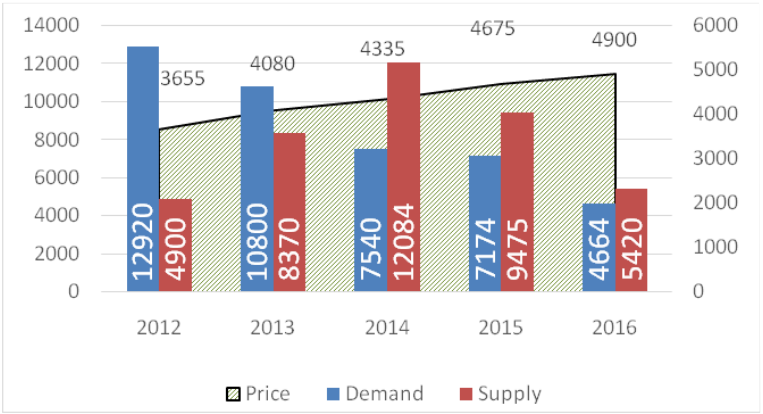

Figure 4.2.2: Noida, NCR: Demand Supply Curve 2012-2016
(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

4.3. CHENNAI

The concentration of IT/ITeS companies, the establishment of Mahindra World city along with the promotion by the state government to develop the Old Mahabalipuram Road (OMR) as the IT hub lead to increase in the residential housing in South Chennai. This region also accounts for larger share i.e. 69% of the whole Chennai residential market but observed a decline in launches by 37% during 2014.

The banal economy decreased the absorption rate in the southern region, that lead to huge pile up of unsold inventory. This unsold inventory which has an average age of 9 quarters will take more than 2 years to be sold.There is a sharp decline in new launches from 2012 to 2016 due to the huge inventory overhang (Figure 4.3.1).Demand decreased slowly than the supply and from 2015-16 we observe the demand to be higher than the supply in the market. The prices however have gradually increased by about 25% over these years.

The Western part of Chennai grew as a better alternative due to reasonable market value, easy accessibility to the city center, the existence of employment opportunities (IT/ITeS offices) and comparatively developed social infrastructure. Many projects were launched during 2012-13 that led to a situation of oversupply. This oversupply situation also affected the prices in the area, which observed an increase in prices by 2% in 2014, as against 2013(Figure 4.3.2).The unsold inventory in this region is of 18 months, with an average age of 24 months.

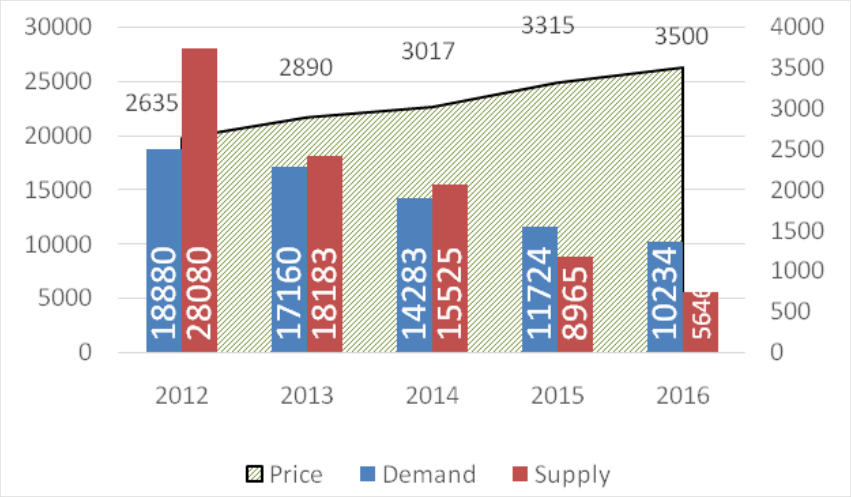

Figure 4.3.1: South Chennai Region: Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

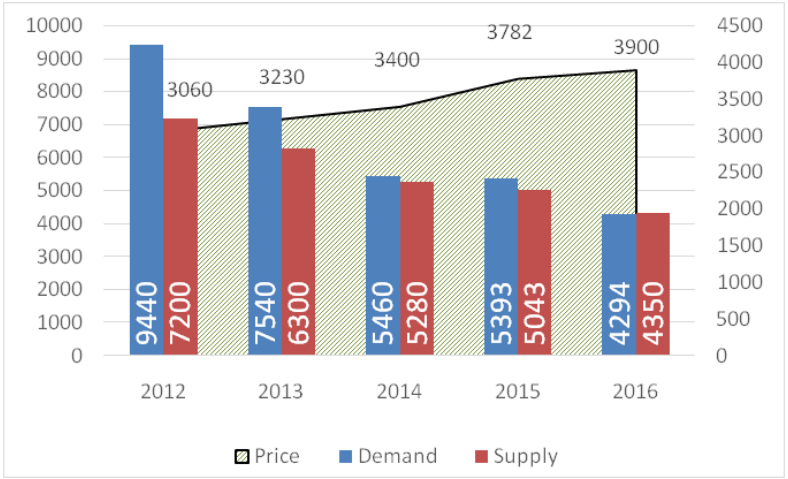

Figure 4.3.2: West Chennai Region: Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

4.4. KOLKATA

Rajarhat in North-east submarket remained the highest contributor with 40% share in new unit launches, followed by South-peripheral submarket with 19% share. The demand, supply and prices gradually increases from the year 2012 to 2016 showing a proper micro economic trend (Figure 4.4.1).High-end segment attracted highest share of new unit launches at 37%, closely followed by affordable segment with 36% share. The demand increased by 50% from 2012 to 2016 with supply also increasing at a slightly higher rate surpassing the demand (Figure 4.4.1).The prices also increased with the increase in demand, which unlike other cites seen above does follow the micro economic trend. Capital values maintained status quo across most segments and submarkets in comparison to previous quarter.

South Kolkata maintained its share of new launches in the first quarter of 2015 since the preceding six months, while observing a significant increase over the share in the first quarter of 2015. With the most favorable residential area, developers are more inclined towards this area of the city thereby securing 27% new launches in the first quarter of 2016, as against just 15% in the first quarter of 2015(Figure 4.4.2). The prices also eventually increased by 45% in the period from 2012 to 2016, due to high demand. South Kolkata observed a stable trend in absorption till the first quarter of 2016. It showed 25% share of the sales volume in the first quarter of 2016, which lowered marginally from 26% share of the absorption in the first quarter of 2015. Due to large scale residential redevelopment during the past few years, South Kolkata holds a major share of 33% for total number of units under construction.

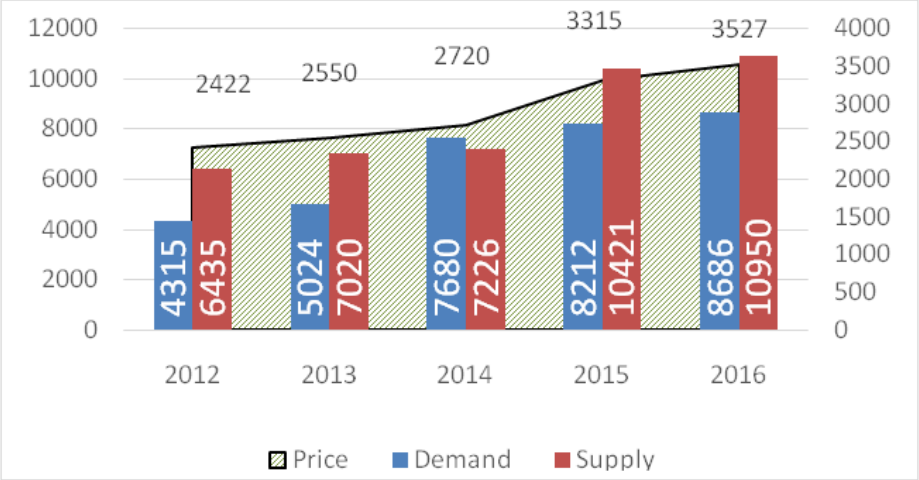

Figure 4.4.1: Kolkata- Rajarhat: Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

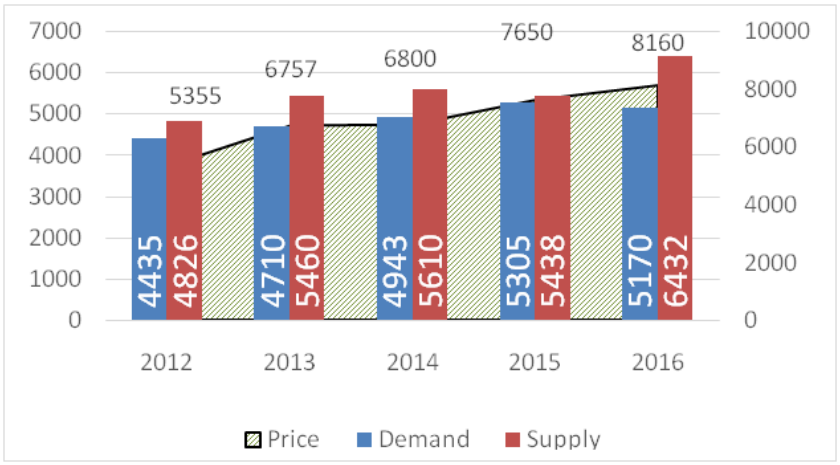

Figure 4.4.2 : South Kolkata : Demand Supply Curve 2012-2016

(Knight Frank, 2015; Knight Frank, 2014; 99 acres, 2017)

5. SUMMATION

According to the demand-supply curve, the price of a commodity whose demand is decreasing should also decrease, but the case studies depict the differing trends. The prices for residential sector have escalated over the years despite a decrease in the demand in almost all the cases. The price of the housing unit cannot be determined using this microeconomic theory. The price of a housing unit depends on multiple attributes such as geographic location of the city, local land prices, resources and differing local government policies. Every city based on its geographical location, has its own reasons to not follow the price corresponding to a shift in demand.

Proposing a unified theory that would be applicable for all cities encompassing the varying attributes is challenging. Deviation from the Demand-price curve is questionable for other sectors such as affordable housings, tier two cities, various income groups or even all the metros.

Following are some of the reasons as to the reason for such variations:

- Land is a scarce resource as compared to the population density of any place. This sequentially leads to an increase in the land value which constitutes 30-40% price of the residential unit. As this land price is stubborn and the construction costs are not decreasing, the final price of the residential unit ceases to increase (The Hindu Business Line, 2016).

- The unsold inventory in real estate housing is up to 18% (Economic Times, 2016). Selling this existing inventory at lower prices will result as an unfair behaviour to people who have bought the property earlier and would also mean the net asset value is going down. Thus, builders do not cut the prices of the property but offer incentives such as free parking, club memberships, foreign trips etc.

- Government policies such as Ready Reckoner Rates (Mumbai) are increasing by an average of 7-10% per year (Karnik, 2016). These government charges are mandatory and cannot be forgone which finally affects the price hike of the residential units.

- It has become very difficult to purchase residential property due to high rates when compared to the household income. For instance, due to an imbalance in the house price-to-monthly income ratio i.e. average number of monthly incomes required to own a house in Mumbai, is highest among major Indian cities. For the Q3 of fiscal year 2015, this ratio was 67, compared to the national average of 60 (https://m.rbi.org.in). This makes purchasing property out of reach for many.

- Macroeconomic indicators such as fiscal deficit and interest rates were high, while the Indian rupee was still depreciating. All these factors affected the demand in the industry wherein the end users as well as the builders were affected (Hans, 2012).

- Although the rate of inflation in the country is differing over the years, the cost of real estate units is torrentially rising. This might be because the final cost of these units is linked to various other sectors such as transportation, fuel prices, different production industries, human resources etc. Even a slightest increase in price of any or all these sectors will lead to an incremental increase in production cost of one real estate unit.

- Builders and promoters of real estate have a huge overhang and hence are forced to lower the prices. They are finding it difficult to lower the prices, dueto thehuge cost of construction rising from liquidity problemsalong with delay in receivingsanctions (The Hindu Business Line, 2018).

- In the year 2017, real estate witnessed radical transformations such as enactment of the Real Estate Regulation Act (RERA), Goods and Services Tax (GST) and Demonetisation. Under GST Tax regime, the under-construction properties attract 18% GST and allow abatement of one-third of the apartment value towards land cost taking the effective tax rate to 12%, whereas, there is no GST (i.e. 0% GST) on ready-to-move-in properties. This change in policy has led to increase in sales, wherein huge pile up of inventory that majorly consisted of ready-to-move-in properties are in high demand due to 0% GST, as compared to under construction properties that attract 12% GST.

- The reforms such as RERA have gradually increased the confidence of stakeholders. Many developers have re-launched their projects with competitive prices in areas where RERA is properly implemented, which has led to a positive outcome in terms of overall sales in for the year 2017.Also, demonetisation has led to a slight decrease in prices to

drive up the sales of the pile up of inventory. (Babar and Das, 2017).

Thus, implementation of a combination of regulatory reforms has led to demand supply and price adjustment. Hence, this study facilitates the understanding of the imbalance in the demand supply and price which will then lead to formulation of necessary policies, such as the ones mentioned above, in order to regulate the imbalance in the market.

The above study hereby shows that these cities do not follow the microeconomic trend with certain exception of Kolkata. Due to the factors mentioned above, a unified theory for the relationship between demand-supply-price of real estate housing sector cannot be proposed for tier I cities. Thus, for the years 2012-2016, the Microeconomic theory can be rejected for Real estate housing sector of Mumbai, Delhi-NCR and Chennai.

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Technological Innovation and Human Capital Development in Nigeria: A Study Of Ogun State Technological Hub

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ABSTRACT : *There is no doubt that the palpable contributions of Human Capital Development (HCD) to the growth of any economy cannot be underestimated. The study examines the impact of technological innovation on human capital development with specific reference toOgun State Technological Hub, Nigeria. The eclectic approach was utilised as the study is anchored on both the human capital and institutional theories. It adopts the survey research design and primary data was collected through the use of interviews and questionnaires. Data collected were analysed using both descriptive and inferential statistics. More specifically, the stated hypotheses were tested using Pearson Moment Correlation Coefficient with the aid of the Statistical Package for Social Sciences (SPSS). The findings of the study reveal that the Nigerian educational system has failed to address the challenges of technological innovation due to lack of funding and poor coordination of research and development and this has negatively impacted on employees effectiveness and the quality of human capital in the country. Therefore, the study recommends among others that the government should ensure that there is a functional educational system as well as regular training of employees to enhance the improvement of skills, knowledge and professional development. This, no doubt will engender the overall development of human capital in Nigeria. Also, institutions should be equipped with state-of-the-art technology that can be deployed to enrich and develop the human capital which is the necessary concomitant of economic growth and development. It concludes that technology is the cheapest and easiest way to improve human capital development through youth empowerment programs.*

Keywords: Human Capital Development,Technological Education,Technological Infrastructure,Technological Innovation, Trust Development

Introduction

Nigeria's economy has been faced with the problem of human capital development (HCD) over the years. In spite of all the abundant resources the nation has been endowed with, Nigeria has failed to realize her full development potential in terms of sustainable human capital development or people-oriented development like many other prosperous economies of the world that have adopted a similar strategy which includes technology to boost their economic growth (Hassan, 2018:27). Amidst the socio-economic quagmire that bedevilled the country and its people, it is obvious that the available human and other resources have failed to meet the yearnings of Nigerians and other developing nations in their quest for economic development. Countries like Japan, China, British and other developed nations lacked abundant natural resources but robust human capital development which was able to reflect in their development indexes such as economic, health, education, technology and infrastructure as they used this index to drive their developmental plan (Ismaila, 2017:11). Meanwhile, human capital is an important factor used in converting all resources to mankind use and benefit.

Sankore (2019), Olayemi (2015) and Ismaila (2017) observe that the development and utilization of human capital is important in national economic growth. They view human capital development as an end of development. It is a means of fulfilling the potentials of people by enlarging their capabilities and this necessarily implies empowerment of people, enabling them to participate actively in their development.Glyfason (2011) opines that education, technology, and health are essential in human capital development. Education enhances economic development and improves people's lives in many ways such as increased efficiency, fosters democracy and therefore creates good conditions for quality governance, enhance the quality of services provided and improve the health care system.

In support of this fact, the United Nations Development Programme (UNDP, 2017) argues that development should focus on investment in technology and human capital which should be seen in the light of how the

economy is managed and wealth is distributed for the benefit of people. Thus, it is recommended that at least 26% of the annual government budget should be allocated to the education and health sector to enhance human capital development. This study, therefore, focuses on the impact of technological innovation on human capital development with specific reference to Ogun State Technological Hub.

Statement of the Problem

A cursory look at the indices of human capital development for Nigeria does not reflect a substantial expenditure on education, technology, requisite job skills, infrastructure and health (Olayemi, 2015). Furthermore, a considerable body of research by UNDP (2017) revealed that adequate investment in human capital catalyzes improved productivity and economic growth. Besides, evidence has also shown that across countries, government expenditures in education and health which are prime indicators of 'healthy' human capital development that can steer our economy to prosperity is low. Ogunsola (2016), rightly observed that countries that do not invest in enough human capital tend to rely on one sector of the economy to grow (monocultural) which Nigeria categorically belongs to. Also, he stated that a lack of effective and efficient human capital prevents entrepreneurship, innovation, and creativity which consequently prevents diversification.

There is no doubt that Nigerian government has failed to commit financial resources through the budget in managing education, health, skills, training and other related factors as well as to explore whether poor coordination of research and development has negatively impacted on employees effectiveness and the quality of human capital in the country.

Policy analysts and developmental experts have argued that the results of various studies on the impact of technological innovation and human capital development on economic growth in Nigeriahave often resulted in limited findings (Sankore, 2019; Olayemi, 2015; Ismaila, 2017; &Makinde, 2018). This may be attributed to various measures used to measure human capital development such as technology, education, health, productivity, trust development, and youth empowerment. Besides, few studies have explored the contributions of human capital development from the perspective of technological innovation on the growth of Nigeria's economy. Scholars such as Sankore (2019), Ogunsola (2016), Ismaila (2017), and Olayemi (2015) have examined the impact of technology on human capital development. However, none of these scholars have undertaken an empirical study on technological innovation and HCD with reference to a technological hub. It is this research gap that this current study intends to fill.

It is in the light of the foregoing that this study on the impact of technological innovation on human capital development in the public sector with particular reference to Ogun State Technological hubhas become quite appropriate as a way of understanding more comprehensively Nigeria's human capital development to date and how human capital development can boost Nigeria's economic growth and development with the aid of technology.

Objectives of the Study

The main objective of the study is to examine the impact of technological innovation on human capital development in the public sector. Other specific objectives include:

1. To investigate how technological education is associated with the development of job skills in the public sector.

2. To know the relationship between technological infrastructure and trust development in the public sector.

Research Questions

1. Is there any association between technological education and skills development in the public sector?

2. Can technological infrastructure have a relationship with trust development in the public sector?

3. Does technological innovation have a significant impact on human capital development in the public sector?

Statement of Hypotheses

H01: Technological education is not associated with the development of job skills in the public sector.

H02: Technological infrastructure is not a function of trust development in the public sector.

H03: Technological innovation is not related to Human Capital Development in the public sector.

Conceptual Review

The concept expected of us to be reviewed are human capital development, technological innovation, technological education and skills development and lastly technological infrastructure and trust development.

Human Capital Development

Various authorities have attempted to define human capital. According to the Oxford Dictionary (2008), the concept is referred to as the skills acquired by an individual in the course of vocational and technical education training, and the experience drawn from industrial work after training. Human capital, otherwise defined as "human resources in vocational and technical education, is an inevitable issue that calls for the attention of both in the public and private sectors"(Enyekit, 2011:131).Jaiyeoba(2015:10) also describes "human capital development as a process of increasing human knowledge through improving job skills by vocational and technical education, aimed at enhancing trainees' productivity and stimulating their resourcefulness in a systematic, sustainable and strategic manner".

Elements of human capital encompass knowledge, skills, attitudes, and motivation of an enterprise or society brought together to engage in the development of that enterprise or society and fulfill its objectives (Davis, 2018). Human capital development presupposes investments, activities, and processes that produce vocational and technical education knowledge, skills, health or values that are embodied in people. Ismaila, (2017) concludes that any effort to increase human knowledge, enhance job skills, productivity and stimulate resourcefulness of individuals is an effort towards human capital development.

Technological Innovation

Technological innovation consists of those pieces of knowledge and ideas that can impact infrastructure development at the designing and planning stage, such as modelling software and apps which allows for better visualisation, better planning, and forecasting. Over time, better software and modelling has been and will continue to be developed to make a better forecast of costs and time required for infrastructure development. All these will lead to better designs and hopefully, a faster way of carrying out work (Sankay, 2017). Meanwhile, this innovation related to the actual construction of the infrastructure assets that can be used by technology developer's in driving the human capital and economic growth of the concerned State.

Challenges of Human Capital Development in Nigeria.

The challenge of human capital development for a developing country like Nigeria is enormous. Nigeria's high population, vast socio-cultural diversity, yet to mature politically and the great hope reposed on her to emancipate the black-race makes the challenge even more critical. Nigeria is greatly endowed with both human and mineral resources but has low human capital development. The greatest investment any nation can make is in the development of her human capital (Sankore, 2019). The more technological innovation is encouraged, the more the country is better able to harness her human capital potentials (in education, health, etc). Ogunsola (2016:140) observes that "the usefulness of technology for the promotion of human capital development is faced with many challenges". These in his view include: inadequate funding,lack of infrastructure, equipment, facilities, and materials, lack of awareness and data and unattractive working conditions for researchers

Other challenges of human capital development that have affected the growth and development in Nigeria include among others.

Low rating in human development indices which is a reflection of Nigeria's socio-economic performance. The human capital status is low and undeserving of a country with huge natural endowments and human capital potentials. Nigeria's population is about 210 million and about 90 million people roughly half Nigeria's population live in extreme poverty (World Data Lab's Poverty Clock, 2018:1). The country is rich in biodiversity and fast arable land in addition to abundant natural and mineral resources including crude oil and natural gas. With all these endowments, Nigeria should have a strong and vibrant economy and be among the richest countries in the world with at least a medium quality life index and well above the average of human development indices. Unfortunately, this is not the case as Nigeria is grouped among poor under-developed countries.

Also, "brain drain as reported by human development estimated that more than 21,000 Nigerian doctors are participating in the United States, United Kingdom, and other European countries human capital annually whereas there is a dearth of medical practitioners in the nation's health care system"(UNDP,2017:1). This situation repeats itself in many other disciplines and professions. The gap in the number of professionals trained and produced and the number engaged can be accounted for by "Brian Drain", low capacity utilization

and unfavorable working environment. The negative implications and effects of this in Nigeria's human capital development are devastating.

Technological Education and Skills Development in Nigeria

According to Ismaila (2017:12) "technology education is seen as a form of education for the development of the industry as well as practical skills".It is that aspect of education that prepares an individual for the acquisition of practical skills to earn employment.

The philosophy behind technology education is that the learner will be self-reliant in society in the face of unemployment as seen in Nigeria or be employed in an industry. It trains different classes of manpower needed for the development of a nation. In Nigeria, technology education has been criticized because it has not been able to produce practically competent graduates who are equipped with problem-solving abilities. The major reason is as a result of uncoordinated research and development, poor and inadequate training facilities and equipment in the institutions. "This has caused a wide damaging effect on trainees specifically and the national economy generally" (Olayemi, 2015:75). Hence, no institution in Nigeria can provide models of machines or equipment similar to those used in the industries to equip learners with skills needed by the industries. In this situation of limited or no equipment, the students are short-changed in the acquisition of technological skills (Amadi, 2013).

It is in the light of the foregoing situation that the Federal Government of Nigeria further entered into a bilateral agreement with some developed countries of the world to train Nigerian youths at the middle level to acquire technological experience in various fields in a scheme popularly referred to as "Crash programs". The manifestations of the benefits of the crash programs testify to the significance of manpower training as an essential step in preparing for the industrial development of any nation. "The training among others aims to develop middle-level manpower for various sectors of the Nigeria economy" (Jaiyeoba, 2015:27). Ogunsola (2016:135) argues that "the introduction of this scheme had gradually uplifted technology to a reasonableextent of development, but without outstanding economic breakthrough as it failed to address the nation economic growth and development, which is the primary essence of the program".

Technological Infrastructure and Trust Development in Nigeria

Trust development is relevant to human capital development of any nation that aims to attain greater feat among the committee of developed nations.Hassan (2018:10) notes that this kind of "development must be accomplished with technological innovation and infrastructure so that it can propel the citizens to engage in research and development that will lead to invention in science and technology which can be useful in driven the economy and this will also aid industrialisation since the requisite job skills will be readily available and accessible".

"Nigeria remains and ranked as Africa's largest ICT market with 82% of the continent's telecoms subscribers, 29% of internet usage, and about 11.8% contribution to national GDP in 2018. The Nigerian Communications Commission estimates that the country has over 64 million subscriptions on broadband (penetration of 34%) and 173 million lines in the voice segment as of March 2019, representing 91% teledensity" (Digital Africa, 2019:1). The government recognizes technology as the enabler for developing other critical sectors including finance, agriculture, and manufacturing. Thus, in its drive to diversify the economy from oil and gas, the government is encouraging partnerships between local tech companies and multinational/foreign investors to build trust development in her human capital (Adebayo, 2019). To promote these partnerships and grow an entrepreneurial eco-system in the technology sector, the federal government has supported creating government or private sector-led incubator hubs, youth innovation programs, and science-technology parks that will engender technology infrastructure in the nation economy.

Prominent among the partnerships with the private sector are collaborations with local accelerators like IDEA (startup) and the Co-Creation Hub (CC-Hub) in Yaba, Lagos. "These initiatives have attracted foreign investors like the Silicon Valley-based Y Combinator who recently participated in pitches by Nigerian startups and New York-based Andela which established an incubation center in Lagos to recruit and train talented Nigerians to code and subsequently hire them to foreign firms" (Digital Africa, 2019).

In mid-2016, Facebook invested $24 million in Andela

through its Chan Zuckerberg Initiative and was followed by the visit of Mark Zuckerberg, who also toured the CC-Hub in August during his African business tour. In March 2017, a group of leading Silicon Valley venture capital seed fund accelerators, 500 Startups visited Nigeria – on the Geeks on a Plane program – to explore investment opportunities and engage with local ecosystem stakeholders in Nigeria's ICT space. "In July 2018, Nigeria's Vice President, Prof. YemiOsibajo led a delegation of Nigerian entrepreneurs on a roadshow to Silicon Valley. The VP addressed global industry leaders in San Francisco and Hollywood regarding Nigeria's recently inaugurated Advisory Group on Technology and Creativity – an integral part of the National Industrial Policy & Competitiveness Advisory Council poised to project the investment opportunities and business potentials of the country"(Techgist, 2018:2).

In Nigeria, smart devices such as tablets, iPads, iPhones, notebooks, smartphones, laptops, point of sale and point of payment systems have a large and fast-growing market. Demand will be generated as the Central Bank of Nigeria implements its cashless policy and electronic banking. The influence of social media and the expansion of the cellular telecommunications infrastructure and services across the country have fueled the market place.

Technological Innovation and Human Capital Development in Ogun State Tech Hub, Nigeria.

Ogun Tech Hub is an open living lab and pre-incubation space designed to be a multi-functional, multi-purpose space aim to catalyze creative workplace and social tech ventures. The Hub is a place for technologists, social entrepreneurs, government, tech companies, impact investors and hackers in and around Ogun State to co-create new solutions to the many social problems in Ogun state, Nigeria. The "Tech Hub would support individuals and organisations to smartly apply innovation and technology to solve commercial and social problems as the Hub aimed to facilitate creative thinking and collaborative problem solving using the smart application of technology" (Techgist, 2019:1).

Ogun State Government through her TechHub is building an incubator for social entrepreneurs, to aid Small Medium Enterprises (SMEs) across the State and to create platform for initiatives that would drive the State's economy as the State have been able to place an importance premium on ICT through her human development and capacity building while describing it as essential in driving the growth of all spheres of the economy, as well as government operations. "TechHub is not just a training ground but an incubator centre where ideas would be hatched, informing that ICT laboratories would be incorporated into the school system, with the training of teachers, which will, in turn, train their colleagues and impart the knowledge on the students"(Abiodun, 2019:1).

Moreover, "the hub promotes sharpest entrepreneurial minds together with innovative ideas for a chance to receive funding and business support as it aims at creating enabling environment and with the cooperation of companies with industrial presence in the State, the youths of Ogun State can actively participate in the drive towards reducing unemployment and solving numerous challenges facing both public and private sectors in the State. The State Government in driving the innovation agenda and setting the stage for the creation of what would become Africa's future"(Ogun State News, 2019:1).

However, the goal of delivering innovation through job skills and knowledge is a human-centered design approach combined with our expertise in turning ideas into products, and then the sustainable organization is at the core of the Ogun state tech hub engagements. The Hub also serve as a knowledge platform where citizens can connect, share, build new skills and competencies to solve local challenges that improve the quality of life of Nigerians. "The Government of Ogun State is partnering with the public-private sector stakeholders to create opportunities, upskill and expand the job space for our teeming young men and women and those who have innovative talents so as to develop human capital"(Adekunte, 2019).

Empirical Review

Previous research notes that there is dearth of research technological innovation and human capital development in the public sector. Existing studies on the relationship between the level of technology and human capital development are mostly foreign. The few studies on the effect of technology on the level of productivity in Nigeria focused mainly on information and communication technology (ICT) in the private sectors.

Joseph, Julius and Olugbenga (2014) assess the impact of technological innovations, capabilities and clustering on

the performance of firms making furniture in South Western Nigeria. The study found that technological innovations, capabilities and clustering have a positive impact on the performance of firms making furniture in the study area. Also, Adeyeye, Jegede and Akinwale (2013) examine the effect of technological research and development, and innovation on the performance of firms in the service sector in Nigeria. The results revealed that technological innovation has a positive and significant impact on the performance of firms in the service sector in Nigeria.

Another study by Madu (2016) evaluates the impact of the choice of production technique and orientation of technology on the performance of manufacturing enterprises in Nigeria. The study was based on the survey of ten manufacturing enterprises in Jigawa, Kano and Kaduna states, and the OLS method of estimation. The results indicated the existence of a strong positive relationship between production technique and the performance of manufacturing enterprises within the study area. The results further indicated that there is a positive relationship between the technological orientation and performance of manufacturing enterprises within the study area. Dauda and Akingbade (2011) examine the impact of technological change on the performance of employees in selected manufacturing enterprises in Lagos state, Nigeria through the use of the OLS and the analysis of variance (ANOVA) techniques. The study found that there is a significant relationship between changes in technology and the skills of employees in the sampled enterprises.Similarly, Posu (2006) conducted a study on the impact of technology on productivity which assessed the role of (ICT) in Nigeria between 1999 and 2004 using the OLS method of estimation. The study found that ICT has a positive impact on economic growth in Nigeria.

Ringim, Razalli and Hasnan (2015) also investigate the link between information technology capability and the organizational performance of banks in Nigeria using the OLS method. The data for the study was collected using 560 questionnaires. The study found that information technology capability of banks in Nigeria had a significant impact on their performance. A related study by Chinonso (2012) assessed the effect of information technology on the growth and development of the Nigerian banking industry through the use of First Bank, Zenith Bank and United Bank for Africa as case studies. The study results indicated that the use of information technologies has resulted in the development of banking activities in Nigeria as reflected in improvements in the quality of services delivered, improvements in the satisfaction of customers, as well as reduction in the incidence of fraud.

However, none of these studies conducted in Nigeria have used empirical approach to investigate the link between Technological innovation and HCD in the public sector. It is against this background and the observed gap in the extant literature that this study seeks to examine the impact of technological innovation and human capital development in the public sector with reference to Ogun state Technological Hub.

Theoretical Frame work

This study is anchored on human capital and institutional the oriessince both are germane to technological innovation and human capital development.

Human Capital Theory:

Human Capital theory as postulated by Paul Romer (1986) emphasizes how education increases the productivity and efficiency of workers by increasing the level of their cognitive skills. Schultz (1961), introduced the concept that people who invest in education increase their stock of human capital. Examples of such investments include expenditure on job skills, education, on the job training, health, and nutrition. Such expenditures increase future productive capacity at the expense of current consumption. However, the provision of education is seen as a productive investment in human being, an investment which the proponents of human capital theory consider to be equally or even more worthwhile than that of physical capital.

In fact, policy analysts and development experts acknowledge that investment in human capital especially when it is technologically inclined, is three times greater than that in physical capital. Human capital progenitor believes that basic literacy enhances the productivity of workers in low skill occupations. It has been proven that the greater the provisions of schooling, the greater the stocks of human capital in the society, and consequently, the greater the increase in national productivity will lead to economic growth.

Institutional Theory:

The institutional theory was postulated by Scott William Richard (2008). An important element of institutional theory is conformity. The institutional environment shapes political processes and the rules of the political game and vice versa. There is a link between how technological innovation shape administrative institutions, how administrative behavior influences policy-making processes and their capabilities. In the case of technological innovation, governments are responsible for the establishment of policies and programs that will drive the economy into prosperity using technology as an instrument to empower the citizens. Hence, "the government is expected to adopt this instrument in its administrative activities in order to make her business efficient and effective" (Sankay, 2017). There is no doubt that technological education and infrastructure tend to have effect on institutional capabilities which can foster the development of technological innovation.

However, institutional theory is used to analyze the influence of the institutional environment on technological innovation policies with the intention of refining and proposing it for further research to study the interplay between the institutional and policy outcomes. The categorization proposed by Glyfason (2011) stipulated that technological infrastructure serves as a means to delimit the institutional environment and characterize the institutional capabilities needed for the development of technological skills, education, and innovation.

Methodology

The paper aims to examine technological innovation and human capital development in the recent TechHub that was created by the Ogun state government. The data for this paper were drawn from both primary and secondary sources as the study both adopted the survey research design and primary data was collected through the use of interviews and questionnaires. Data collected were analysed using both descriptive and inferential statistics. Descriptive statistics such as percentages, means, and standard deviations were used while the stated hypotheses were tested using Pearson Moment Correlation Coefficient with the aid of the Statistical Package for Social Sciences (SPSS). Based on this, multiple sources were used to minimize the risk of error in order to improve the reliability and validity of the study.

Results and Discussions

This section presents the research findings and discussions of the study. The main objective was to examine the impact of technological innovation on human capital development with reference to Ogun State Tech Hub. The analysis of data was done based on the objectives of the study as captured on the questionnaire.

Table 1: Respondents' Demographic Characteristics

		Frequency	Percentage %
Sex	Male	16	72.7%
	Female	6	27.3%
Age	Below 30 years	15	68.2%
	31-40 years	5	22.7%
	41-50years	2	9.1%
	51 years and above	0	0.0%
Marital status	Single	16	72.7%
	Married	6	27.3%
	Divorced	0	0.0%
	Widowed	0	0.0%
Educational qualification	WAEC/NECO	2	9.1%
	OND/NCE	1	4.5%
	B.Sc/HND	15	68.2%
	MSC/PGD/PhD	4	18.2%

Professional qualification	Yes	11	55.0%
	No	9	45.0%
Working experience	Below 5years	12	54.5%
	6-10years	8	36.4%
	11-20 Years	2	9.1%
	21-30 years	0	0.0%
	Above 30 years	0	0.0%

Source: Field Survey Data, 2019.

Majority, of the respondents are male (72.7%) with 68.2 percent of them up to 30 years old. Many of them are married (72.7%), none of them is neither divorced nor widowed. It was discovered that the sample used for the study are well educated as 86.4 percent have a minimum of HND degree. More than half of them, that is 55 percent, have professional qualifications. 90.9 percent of the respondents have up to 5 years of working experience.

Table 2 : Technological Innovation and Human Capital Development.

	Items	SA	A	U	D	SD	Mean	StdDev.
1.	Technological innovation is related to human capital development.	13 (59.1%)	7 (31.8%)	2 (9.1%)	0 (0%)	0 (0%)	4.50	0.67
2.	Technological innovation is associated with the growth and development of Nigeria economy.	13 (59.1%)	8 (36.4%)	1 (4.5%)	0 (0%)	0 (0%)	4.50	0.74
3.	Technological innovation can enhance trust development in the nation capital.	10 (45.5%)	8 (36.4%)	2 (9.1%)	1 (4.5%)	1 (4.5%)	4.14	1.08
4.	Technological innovation will improve job skills and create employment opportunities in Nigeria.	13 (59.1%)	8 (36.4%)	1 (4.5%)	0 (0%)	0 (0%)	4.55	0.60
	Grand Mean						4.42	0.77

Source: Field Survey Data, 2019.

Table 4.7 shows that 90.9 percent of the respondents agreed that technological innovation is related to human capital development (M = 4.5, SD = 0.67); 95.5 percent agreed that technological innovation is associated with the growth and development of Nigeria economy (M = 4.45, SD = 0.74); 81.8 percent agreed that technological innovation can enhance trust development in the nation capital (M = 4.14, SD = 1.08). Lastly, 95.5 percent agreed that technological innovation will improve job skills and create employment opportunities in Nigeria (M = 4.55, SD = 0.06).

The grand mean of 4.42 shows that on average, the respondents agreed that technological innovation has a significant impact on the nation's human capital development. The grand standard deviation of 0.77 which is less than 1.0 signifies that shows that the respondents have similar opinions about the impact of technological innovation on the nation's human capital development since the responses were clustered around the mean.

Table 3 : Items on Technological Education and Skills Development

	Items	SA	A	U	D	SD	Mean	Std Dev.
5.	There is a relationship between technological education and employment opportunities in Nigeria	7 (31.8%)	12 (54.5%)	3 (13.6%)	0 (0%)	0 (0%)	4.18	0.66
6.	Development of job skills is associated with technological education	7 (31.8%)	10 (45.5%)	3 (13.6%)	2 (9.1%)	0 (0%)	4.00	0.93
7.	There is a positive relationship between talent development and technological education	3 (13.6%)	11 (50%)	5 (22.7%)	1 (4.5%)	2 (9.1%)	3.55	1.10
	Grand Mean						**3.91**	**0.90**

Source: Field Survey Data (2019)

Table 4.7 shows that 86.4 percent of the respondents agreed that there is a relationship between technological education and employment opportunities in Nigeria (M = 4.18, SD = 0.66); 77.3 percent agreed that development of job skills is associated with technological education (M = 4.00, SD = 0.93); and 63.6 percent agreed that there is a positive relationship between talent development and technological education (M = 3.55, SD = 1.10).

The grand mean of 3.91 shows that on average, the respondents agreed that technological education is related to employment opportunities in Nigeria. The grand standard deviation of 0.90 which is less than 1.0 signifies that shows that the respondents have similar opinions about technological education being related to employment opportunities in Nigeria since the responses were clustered around the mean.

Table 4 : Technological Infrastructure and Trust Development.

Items		SA	A	U	D	SD	Mean	Std Dev.
8.	Government funding of technological infrastructure can drive human capital development in the economy.	11 (50%)	8 (36.4%)	3 (13.6%)	0 (0%)	0 (0%)	4.36	0.73
9.	Existing technological infrastructure can improve trust development in the public sector of Nigeria economy	3 (13.6%)	11 (50%)	6 (27.3%)	2 (9.1%)	0 (0%)	3.68	0.84
10.	Technological infrastructure is associated with trust development in the public sector	5 (22.7%)	13 (59.1%)	3 (13.6%)	0 (0%)	1 (4.5%)	3.95	0.90
	Grand Mean						**4.00**	**0.82**

Source: Field Survey Data (2019)

Table 4.7 shows that 86.4 percent of the respondents agreed that government funding of technological infrastructure can drive human capital development in the economy (M = 4.36, SD = 0.73); 63.6 percent agreed that Existing technological infrastructure can improve trust development in the public sector of Nigeria economy (M = 3.68, SD = 0.84); and 81.8 percent agreed that Technological infrastructure is associated with trust development in the public sector (M = 3.95, SD = 0.90).

The grand mean of 4.00 shows that on average, the respondents agreed that technological infrastructure can improve and drive trust development in the nation economy. The grand standard deviation of 0.82 which is less than 1.0 signifies that shows that the respondents have similar opinions about technological infrastructure improving and driving trust development in the nation economy since the responses were clustered around the mean.

Testing of Hypotheses

Hypothesis One

H0: Technological innovation is not related to human capital development in the public sector

H1: Technological innovation is related to human capital development in the public sector

Pearson Product Moment Correlation Analysis is used to test this hypothesis at 0.05 level of significance.

Table 5 : Correlation Analysis of Technological innovation and Human capital development

		Technological Innovation	**Human Capital Development**
Technological Innovation	Pearson Correlation	1	0.694**
	Sig. (2-Tailed)		0
	N	22	22
Human Capital Development	Pearson Correlation	0.694**	1
	Sig. (2-Tailed)	0	
	N	22	22

****. Correlation Is Significant At The 0.05 Level (2-Tailed).**

The Pearson Product Moment Correlation coefficient computed in Table 5 shows that there is a positive relationship between technological innovation and human capital development in the public sector® = 0.694, n = 22, p = 0.000). The relationship is statistically significant because the p-value of the result is less than the level of significance used for the study ($p < 0.05$). The result implies that in the public sector, an increase in technological innovation is correlated with an increase in human capital development.

Decision

Null hypothesis is not accepted, while the alternative hypothesis is accepted. This signifies that technological innovation is significantly related to human capital development in the public sector.

Hypothesis two

H0: Technological education is not associated with the development of job skills in the public sector

H1: Technological education is associated with the development of job skills in the public sector

Pearson Product Moment Correlation Analysis is also used to test this hypothesis at 0.05 level of significance.

Table 6 : Correlation Analysis of Technological education and Development of job skills

		Technological education	**Development of job skills**
Technological education	Pearson Correlation	1	.464*
	Sig. (2-tailed)		0.029
	N	22	22
Development of job skills	Pearson Correlation	.464*	1
	Sig. (2-tailed)	0.029	
	N	22	22
***. Correlation is significant at the 0.05 level (2-tailed).**			

The Pearson Product Moment Correlation coefficient computed in Table 6 shows that there is a moderate positive relationship between technological education and development of job skills in the public sector ($r = 0.464$, $n = 22$, $p = 0.029$). The relationship is statistically significant because the p-value of the result is less than the level of significance used for the study ($p < 0.05$). The result implies that technological education is moderately associated with the development of job skills in the public sector.

Decision

Null hypothesis is not accepted, while the alternative hypothesis is accepted. This signifies that technological education is associated with the development of job skills in the public sector.

Hypothesis three

H0: Technological infrastructure is not a function of trust development in the public sector

H1: Technological infrastructure is a function of trust development in the public sector

Regression Analysis is used to test this hypothesis at 0.05 level of significance.

Regression Analysis						
	r^2	0.447	n	22		
	r	0.668	k	1		
	Std. Error	0.594	Dep. Var.	**Trust development**		
ANOVA table						
Source	*SS*	*df*	*MS*	*F*	*p-value*	
Regression	5.7051	1	5.7051	16.14	.0007	
Residual	7.0676	20	0.3534			
Total	12.7727	21				
Regression output					*confidence interval*	
variables	*coefficients*	*std. error*	*t (df=20)*	*p-value*	*95% lower*	*95% upper*
Intercept	0.6885	0.7892	0.872	.3933	-0.9576	2.3347
Technological infrastructure	0.7172	0.1785	4.018	.0007	0.3449	1.0896

The model summary above shows the extent to which technological infrastructure affects trust development in the public sector. The correlation coefficient value shows that there is a significantly positive relationship between technological infrastructure and trust development (r = 0.668, p = 0.0007). The coefficient of determination (R2 = 0.447) shows that 44.7% of the variance recorded in trust development is accounted for by technological infrastructure. The result is statistically significant because the p-value of the result is less than the level of significance used for the study ($p < 0.05$).

The regression model for this hypothesis has a good fit because the calculated F ratio of 16.14 is greater than the tabulated F ratio value of 4.35 ($F_{1,20} = 4.35$).

Mathematical representation of the model:

$$Y1 = \beta 0 + \beta 1 X1$$

Trust development= 0.69 +

0.717Technological infrastructure

An evaluation of the unstandardized coefficient of technological infrastructure in the coefficient table and its associated p-value shows that technological infrastructure ($\beta TI = 0.717$, $p < 0.05$) is statistically significant and can be used in predicting trust development. For every unit increase in technological infrastructure, there is a 71.7 percent contribution to trust development.

Decision

Null hypothesis is rejected and the alternative hypothesis accepted. This implies that technological infrastructure is a function of trust development in the public sector.

Discussion of Findings

The result from the hypothesis 1 tested revealed that technological innovation is significantly related to human capital development in the public sector. This is because there is a positive relationship as the Pearson Product Moment Correlation computed in table 5 shows (r = 0.694, n = 22, p= 0.000). This finding is in line with Adeyeye, Jegede and Akinwale (2013) on the effect of technological research and development, and innovation on the performance of firms in the service sector in Nigeria. The results revealed that technological innovation has a positive and significant impact on the performance of firms in the service sector in Nigeria. The study further found that while government support and embodied knowledge do not have a significant impact on technological innovation in Nigeria, factors such as technological acquisition, training, in-house research and development have a positive impact on technological innovation in the country.

Also, the hypothesis 2 tested revealed that technological education is associated with the development of job skills in the public sector as it is been depicted in table 6 with the instrument of Pearson Product Moment Correlation coefficient computed in the table shows that there is a moderate positive relationship between technological education and development of job skills in the public sector as shown by (r = 0.464, n = 22, p = 0.029). The finding agreed with similar study conducted by Dauda and Akingbade (2011) which examined the impact of technological change on the performance of employees in selected manufacturing enterprises in Lagos state, Nigeria. The study found that there was a significant relationship between changes in technology and the skills of employees in the sampled enterprises. The study also found that there was a significant relationship between changes in technology and the performance of employees in the selected enterprises.

Finally, hypothesis 3 tested revealed that technological infrastructure is a function of trust development in the public sector as it also supported the findings that every unit increase in technological infrastructure, there is a 71.7 percent contribution to trust development. The finding concurs with the study of Joseph, Julius and Olugbenga (2014) on the impact of technological innovations, capabilities and clustering on the performance of firms making furniture in South Western Nigeria. The study found that technological innovations, capabilities and clustering have a positive impact on the performance of firms making furniture in the study area.

Conclusion and Recommendations

This paper is expected to guide and engage government at all levels, policymakers, experts and also frame citizen's perception on how technological innovation will shape the nation human capital development as it aims to proffer solutions to our precarious economy. The study concludes that trust development through science, technology, engineering and mathematics (STEM) should be encouraged from the level of primary school to tertiary level so that more young talents can be discovered and capture at the early stage. This should be supported by full-blown functional scholarship and STEM should also be inculcated into our curriculum system. This can lead to future human capital that will drive our industrialisation which can also be impacted positively into our economy. Based on this, the paper recommends the following:

1. The government should provide enough funding, scholarship, and investment from the primary school to the tertiary level so that more technological infrastructures can be available at all levels. This will make human capital to develop and consequently to make the economy to be vibrant.

2. The government should make engage students in STEM and CODING from primary to tertiary levels as a deliberate policy so as to develop our economy through technological innovations.

3. Government should establish more universities of technology and they should brace up in their primary responsibility of promoting coordinated research and development which can drive industrialisation through technological innovation.

4. The government should ensure that there are functional educational systems as well as regular training of employees in order to enhance the improvement of skills, knowledge and professional development. This no doubt will engender the overall development of human capital in Nigeria.

5. Also, institutions should be equipped with state-of-the-art technology that can be deployed to enrich and develop the human capital which is a necessary concomitant of economic growth and development.

6. The government should try to embrace Tech hub rather than an educational hub because Tech hub is a superset of education hub which will give adequate supports to human capital development in the facet of investment, social and entrepreneurship in the economy.

7. Finally, institutions should be equipped with state-of-the-art technology that can be deployed to enrich and develop the human capital needed for economic growth and development.

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Migration of Indian Professionals and Professionalism

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ABSTRACT : *Migration, a dynamic practice has been in vogue. It is a practice; it has been evolving and is growing in myriad direction. This study focuses on Indian migration within and outside the country. Profession and professionalism are the axis of the research. The paper is based on extensive survey of local migrants and emigrant Indian professionals. The aim of the paper is four-fold.*
1 Migration of people, in whichever type of profession, subjecting it to deeper exploration.
2 Individual development and competitiveness inculcate new ideas in the mind trending towards innovations, these three aspects work in tandem.
3. The families of these professionals adapt sooner or later to new environment within or outside the country.
4. The effect of entire process of migration strengthens the concept of global village.
Migration enhances vertical development in any stream of profession. Monetary foundation undoubtedly becomes stronger and resolves manifold number of routine life problems. The migrants' family's financial security and social mobility attain newer heights. All these aspects make them adaptive, accommodative, flexible, and integrative with new culture. In short, it gives momentum to the feeling of a global village. After all the globe is one and we are connected with it in many ways. This teaches us humanity too.
Undoubtedly it boosts development irrespective of boundaries. But somewhere, further research gateways become open, to find out new policy framework to make home places more attractive to them, keeping their aspiration as realised. Can the use of technology in new fashion and everywhere, give solution, in very near future? Has Covid 19 made changes in minds of migrants? Has pandemic changed the mind set of potential Indian Migrants? What would be dimension of migration in post Covid era particularly in respect of social mobility?

Keywords: Migration, Profession, professionalism, opportunity, competitiveness, family future.

I. Introduction

Migration is not an uncommon nor a new concept. Migration is a very common and dynamic practice. It has grown like a banyan tree. It is concerned with movement. Obviously, we are here concerned with human migration. Human migration is movement of people from one place to another. It is as old as human civilisation. It is as dynamic as human being. Migration is not merely shifting of people from one region to another; People carry with them PESTEL factors- political, economic, socio-cultural, psychological, technological, environmental, legal aspects of life. Migration is a complex phenomenon. It is more of qualitative and subjective in nature and requires empathy to understand it.

India has a long history of migration; one can go back in centuries and explore the matter.

People in the past had migrated to near regions basically for earning their livelihood. But today's scenario is different. Migration is no more limited to neighbourhood areas, rather has become widespread within the country and abroad.

There is dearth of detailed spatial and regional data, so cannot quantify the rate of change but can say it is showing a good enough upward graph whether it is intra - country or inter-country. Since 1991, the globalisation phase has given a new momentum to migration.

India is the top source of international migrants, with one-in-twenty migrants worldwide born in India. The number of international Indian migrants has more than doubled over the past 25 years, growing about twice as fast as the world's total migrant population. (Connor, 2017)

Asians are projected to become the largest immigrant group in the U.S. by 2055, surpassing Hispanics. Pew Research Center estimates indicate that in 2065, Asians will make up some 38% of all immigrants; Hispanics, 31%; whites, 20%; and blacks, 9%. (Radford, 2019)

Migration enhances vertical development in any stream of profession. For example, an engineer of particular branch becomes more proficient as the concerned person seizes a desired opportunity after migration. Migration is said to promote competitiveness, professionalism and individual development, these three aspects are in tandem. At least, this is what people generally tend to believe before migrating or the general feel of people about migration. While there is no science or tool available to prove that such beliefs are true or justified, yet this popular belief is going stronger day by day. Competitiveness, professionalism and individual development are nothing but different forms of opportunity which helps individual or a group to achieve larger level of self-satisfaction. Humans have been very creative beings and have always been known to be in pursuit of something new and innovative. It was this nature of human beings which made them to invent new things thereby making human life better and simple.

It is this chase, which makes humans to migrate. Humans always look for better opportunities i.e. they desire to be more competitive, more professional and look for ways to maximize their development. We are trying to analyze the relation between and defined opportunities with regards to our objectives. However, a lot is dependent upon perception as all these concepts are abstract and qualitative and differs from person to person.

Objectives Of The Study

1. To analyse the impact of migration on professionalism
2. To identify the association between competitiveness and migration
3. To understand individual development and migrated professionals.
4. To know how migration develops the concept of global village.
5. To explore family happiness status and migration
6. To know the degree of region/country interface
7. To identify migration and cultural transmission

Literature Review

The study of migration has to a large extent been centredon flows from low and middle-income countries to high-income countries. The primary purpose of this study is to identify the determinants of the migration of professionals from a lower middle-income country, Fiji, to a high-income country, New Zealand.' (Azmat Gani, 1995)

The definition of professionalism is a construct of the set and setting which synthesize to make up the defining characteristics of principles of professionalism. This paper advocates for professional principles and standards to be maintained to ensure that the trust given to professionals by society is strengthened. (StuartKinsingerDC, 2005)

The purpose of this article is to analyze how university teachers' professionalism shapes the coordination processes in higher education institutions (HEIs). By developing an innovative framework, which combines governance theories and theories about professionalization, we found that university teachers' roles in coordination with governance actors in HEIs follow two different logics: to comply with decisions, policies and rules; to follow their own professional attributes, interests and desires. (Nikos Macheridis, 2017)

This study is concerned with the links between international migration and economic development in the lower income countries. This interplay is two-way: development affects migration and migration affects development. The effects of development on migration and of migration upon development are intimately linked. (Lucas, 2005)

Hypothesis Formulation

Hypothesis 1 Migration helps professionalism

The Merriam-Webster dictionary (https:// www.merriam-webster.com/, n.d.)defines professionalism as "the conduct, aims, or qualities that characterize or mark a profession or a professional person;" and it defines a profession as "a calling requiring specialized knowledge and often long and intensive academic preparation." In other words, professionalism is an expectation from a

professional. In order to promote professionalism, the organization must encourage autonomous innovative practices, positive inter-professional collaboration, enable practice learning and development and provide appropriate resources to undertake the requisite activities.

When a highly skilled employee of a certain company is promoted to a region, it adds skills and knowledge for growth of the company in that region. For example, IT students migrate to the cities where there is high need of IT skills. In persuasion of their goals being learner or being in profession they excel themselves there by enhancing their profession and professionalism. Bangalore in India is an IT hub. It is a conglomerate of skilled people from different parts of the world. These are professionals with varied levels of skill, knowledge and experience. This generates innovative ideas. It does not stop here; these professionals migrate to different parts of the country or the world in search of new opportunities which provides new avenues to their profession and their professionalism. The growth of professionalism becomes cumulative with multiplier effect.

Here to reproduce one of the responses 'In Jodhpur we don't have much job opportunities. I always wanted to be in import export line and Jodhpur is exporting only one major product i.e. Handicraft. I also like to travel a lot and from Jodhpur we don't much connectivity. Apart from this in Jodhpur people are not much professional and they are taking their own sweet time to do any task.'

Hypothesis 2

Migration promotes competitiveness

Shanu migrated abroad after completing his CA course. He was passionate of going abroad in search of new "opportunities". It will be incorrect to say that money was not a factor for passion. Indians have been always passionate to go abroad for studies and work mostly because of the high perception about foreign nations. He decided to go to Ireland. This was back in 2017 when UK was about to leave EU and he believed that Ireland is going to be the next financial hub as countries that operate in UK will be now moving to Ireland for borderless access to Europe. He took admission into an Irish University for M.Sc. in finance. After completing his education, he started looking for a job opportunity whereby he could explore horizons which was otherwise very difficult in his own country due to the kind of existing system. He works for a multinational company which provides block chain solutions to various organizations. Ramu moved to a different country in search of his interest which he could not find in his own country. There are many Shanus and Joys in the country. They decide to migrate abroad. This motivates professionals to be competitive and allows chasing their curiosities. It promotes gaining more knowledge that ultimately leads to innovation and competitiveness. Migration helps competitiveness as those places which are open for innovation attract a lot of talent and there is collaboration of different ideas and concepts among such professionals. Each one of them brings their expertise on the table. Some who have prior experience, bring experience to the table, others bring ideas, passion, resources. This develops fair competition excelling all participants. We witness many Ramus and Shamus in all streams whether it is medical, engineering, or any other. Ramus and Shamus move every part of the world irrespective of inter or intra country.(Ramsay, 2019)Like many disciplines, modern occupational, safety, and health (OSH) in the US is the result of years of professional maturation by three main drivers: practitioners/best practices, professional associations (i.e., certifications, education standards, etc.) and a series of external events (law, policy, accidents, etc.) i.e., that continue to influence the collective development of the profession.

Hypothesis 3

Migration helps individual development

When migrants leave their native country/region they face up new challenges which force them to come out of their comfort zone and sense of new responsibilities hits them hard; they become more capable to tackle all the problems. Everyday new personal experiences make them stronger and dedicated towards their aim. Meeting professional experiences lead those to grow faster, changed environment give them an opportunity to learn new things.

Hypothesis 4

Migration develops the concept of global village

The term global village was coined in 1964 by Marshall McLuhan because a good pace of dissemination of technology encompassing the entire world made the world shorter than before. There is good enough increase in interface, rather a blast. These days physical distance

is reduced because of good platforms for being connected.

Global village is one of the outcomes of globalisation. Globalization refers to movement and integration of people across various nations. People migrate for variety of reasons one of which is employment.

When people move transnational making sacrifices and adjustments, what is top on their mind is better survival than what their home state offers. This brings people from across the globe on an agenda of living and working in harmony in any country/region that offers opportunities. It is not to mean that people forget their roots, nostalgia about and attachment to their roots are almost always at the back of their mind which might dissolve with the passing of the first-generation migrants.

(Iredale, 2008)The increasing globalization of firms and the internationalization of higher education are encouraging professions to internationalize.

Hypothesis 5

Migration secures the family future/happiness

The place of family in one's life is of utmost importance. People migrate with their families with the objective of providing better life, health, environment, education to their families. Those migrants who wish to come back and resettle in theirhometowns, whether from Mumbai to Palanpur (Rajasthan) or from Dubai to Hyderabad, are tied up due to their kids' education and future financials.

Hypothesis 6

Migration promotes national integrity

Those who had migrated to other parts of the world/state have inclination towards their home country/region. Whether they want to be back or want to stay where they are, is a matter of long discussion. We have people on both sides.

There is mixed reaction of people and have different views in their minds. They want to come back but are pre committed to some may be their spouses or children. Some may have the feeling of nationality but get suppressed and may vanish later.

Should I go back to India? Your mind might start making up various reasons, evaluating the pros and cons. Set that aside. There will be a small feeble voice inside you which wants to be heard. That is your conscience, or your heart. Listen to it. Make your decision accordingly. (Nath, 2015)

Hypothesis 7

Migration promotes cultural transmission

Culture depends on individual, family, society, and environment. It has deep roots because it is cumulative. It is learned over a period of time. It is transmitted from person to person and from region to region. It is not short term concept rather it is long term phenomenon.

Migration does not only imply movement of people, but also of cultures (Castles and Miller 2009, p. 41). Successful assimilation to the destination country requires the migrants to interact with the new society, while keeping the culture of the origin country alive. This creates a positive environment for the multicultural identity to form (Guarnizo eta/. 2003, Faist and Gerdes 2008). On the other hand, some migrants may resort to the customs of the origin country more rigorously as they would have done back home. This highlights the importance of integration of the immigrants and supporting them in the creation and formation of their new multicultural identity. (Ratha, 2010)

Research Methodology

The research methodology of this research paper is an integrated one. We have integrated both qualitative and quantitative research orientations. The reason for doing so is because any discussion on migration cannot be done entirely on numerical basis. Migration is a social science and it would be difficult to adopt a purely statistical approach as such approach would, out rightly ignore the "humane" aspect of migration. Migration is not just an economical decision, but also an emotional one. Hence, it calls for a hybrid approach wherein both qualitative & quantitative methods have been adopted. This has enhanced our research as it helps us to understand the concept of migration in a more holistic and contextual flavour. We collected primary data by way of Google form survey. Secondary sources considered by us are books, PDFs, E-books, different websites, journals and reports.

We had 350 filled questionnaires for our analysis. Utmost care was taken while approaching the respondents. These were not forwarded blindly. Those people who had migrated within or outside India were approached through a chain of friends and relatives.

We have also studied the responses on individual basis and have reached out telephonically to few participants in order to understand their perspective for responding/choosing a particular option in order to ensure the qualitative & quantitative aspects of our research.

Statistical Tools: We had applied Chi Square and Z testto find results.

Limitations

The study is not focused on the advantages and disadvantages of migration. The research paper does not talk about the inflow of population in India. The study does not analyse in detail the loss to the host country due to migration, i.e. the concept of brain- drain is not discussed in this research paper. An analysis of the advantages of foreign remittance by migrants is also excluded from the study. The research is qualitative in nature and is based on aggregating the responses of various individual respondents which makes it difficult to evaluate in quantitative terms at all levels. There is limited literature on migration with regards to the objectives of this research, thereby limiting the amount information pertaining to migration.

ANALYSIS AND INTERPRETATION

Testing of H1

Migration helps Professionalism

H0 - Migration does not help professionalism

H1 - Migration does help professionalism

question

a) do you agree with positive changes in your profession?

b) positive changes in your profession

Table 1 : Chi Square Test

Particulars	Job Satisfaction	Career Satisfaction	Salary Satisfaction	Tech Savvy	Others	Total
Strongly Agree	49 (44.52) [0.45]	35 (33.39) [0.08]	58 (57.24) [0.01]	4 (6.36) [0.88]	6 (10.49) [1.92]	**152**
Agree	85 (79.96) [0.32]	58 (59.97) [0.06]	103 (102.80) [0.00]	12 (11.42) [0.03]	15 (18.85) [0.79]	**273**
Neutral	4 (10.54) [4.06]	6 (7.91) [0.46]	15 (13.56) [0.15]	2 (1.51) [0.16]	9 (2.49) [17.08]	**36**
Disagree	1(2.34) [0.77]	2(1.76) [0.03]	2 (3.01) [0.34]	1 (0.33) [1.32]	2 (0.55) [3.79]	**8**
Strongly Disagree	1 (2.64) [1.02]	4 (1.98) [2.07]	2 (3.39) [0.57]	1 (0.38) [1.03]	1 (0.62) [0.23]	**9**
Total	**140**	**105**	**180**	**20**	**33**	**478***

Explanation: Here, we have triedassessing the positive changes in the profession by plotting the responses of the respondents against the extent to which they believe that such changes exist. Hence, we have a relative measure of opinion for each positive change and we have traced it for each response. The above is a classic contingency table technique under Chi-square Statistics. We have compared the observed values (as above) with the expected value with a standard 5% degree of freedom making the significance level 95%. Degree of freedom implies the extent up to which the values can vary from their independent value. If the sample findings are unlikely, given the null hypothesis, we reject the null hypothesis. Typically, this involves comparing the P-value to the significance level and rejecting the null hypothesis when the P-value is less than the significance level. Since the chi-square statistic is 37.6283. The p-value is .001709. The result is significant at $p < .05$. , i.e.

significant level is 5%. Hence, we reject H0 and conclude that migration does help professionalism.

Note: '1' has been taken as nominal value where no responses were available in order to enable hypothesis testing.

Since, the respondents believe in more than one positive change in their professional life, multiple responses have been selected so the number of responses exceed 350.

Testing of H2

Migration promotes competitiveness

H0- Migration does not promotes competitiveness

H2- Migration promotes competitiveness

Question a) Are you fresher or migrated with experience?

Question b) How migration affects job market of your profession?

Question c) Have you observed any job insecurities among your local colleagues?

Hypothesis Testing done using Z test for difference of proportion (2 tailed)

A v/s B

P1 = Migrants migrated with experience = 305/350 = 0.871

P2 = Migration makes the job market competitive = 212/350 = 0.606

P = Overall proportion = (0.871+0.606)/2 = 0.739, n1=n2=350

Z = P1- P2-0/(p(1-p)(1/n1+1/n2))^ ½

Assigning the values in the formula, we get, Z = 7.99

Alpha level is 0.05, i.e. 5% Hence, Z =1.96. 7.99>1.96, therefore the result is significant.

B v/s C

P1 = Migration makes the job market competitive = 212/350 = 0.606

P2 =Local colleagues feel insecure =200 /350 = 0.571

P = Overall proportion = (0.571+0.606)/2 = 0.589, n1=n2=350

Z = P1- P2-0/ (p (1-p)(1/n1+1/n2))^ ½

Assigning the values in the formula, we get, Z = 0.945

Alpha level is 0.05, i.e. 5% Hence, Z =1.96. 0.945<1.96, therefore the result is insignificant.

A v/s C

P1 = Migrants migrated with experience = 305/350 = 0.871

P2 = Local colleagues feel insecure =200 /350 = 0.571

P = Overall proportion = (0.571+0.871)/2 = 0.721, n1=n2=350

Z = P1- P2-0/ (p (1-p)(1/n1+1/n2))^ ½

Assigning the values in the formula, we get, Z = 2.80

Alpha level is 0.05, i.e. 5% Hence, Z =1.96. 2.80>1.96, therefore the result is significant.

Explanation:

The two-proportion z-test is used to compare two observed proportions. Here we have3 sets of data. We have compared 2 sets of data at one time using the formula for 2 proportions. The formula helps to understand the similarity between the two data sets and we reject the null hypothesis if we get a value that exceeds the Z value at the standard significance level of 95%. Since, in A v/s B and Av/s C, Z value exceeds the standard value of 1.96, we can say that migrants with experience make the job market competitive. Migrants also create a feeling of insecurity but there is no significant evidence which proves that there is a relation between job competitiveness and fear among local colleagues.

Testing of H3

Migration helps individual development

H0- Migration does not help individual development

H3- Migration does help individual development

Question a) what made you migrate?

Question b) professional benefits of migration

Hypothesis is testing done using Z test for difference of proportion (2 tailed)

A v/s B

P1 = Monetary factors of migration= 270/350 = 0.87

P2 = Monetary benefits of migration = 312/350 = 0.89

P = Overall proportion = (0.87+0.89)/2 = 0.88, n1=n2=350

Z = P1- P2-0/ (p (1-p) (1/n1+1/n2)) ^ ½

Assigning the values in the formula, we get, Z = -4.2403

Explanation:The two-proportion z-test is used to compare two observed proportions. Here we have2 sets of data. We have compared 2 sets of data using the formula for 2 proportions. The formula helps to understand the similarity between the 2 data sets and we reject the null hypothesis if we get a value that falls in the rejection area i.e. under the rejection area. Since, in A v/s B, our Z value falls under rejection area, Alpha level being 0.05, i.e. 5%, the value is p<0.00001. Therefore, the result is significant and hence, we reject H0 and conclude that migration does help individual development.

Note: Few non-monetary factors of individual development have been excluded while calculation of probability such as marriage, learning, etc.

Hypothesis 4

Migration develops the concept of global village

Here, we have globalization perspective so inter-national migration is considered. When we consider globalization, the study of better employment opportunities and better lifestyle becomes an important part of this study

The reasons for migration are classified it into two.

- Better employment conditions in terms of better salary, prospects, opportunities
- Other reasons such as marriage, city attraction, etc. So, our hypothesis is

H0= People migrate for other reasons.

H4= People migrate due to better employment opportunities

P= People migrated due to better employment condition=206/251= 0.821

Z test for one population test

Z = P-p/ (p*q/n) ^ ½,

Where p=q=0.5 and alpha level is 0.05, i.e. 5% Hence, Z =1.96

Z = P-0.5/ (0.5*0.5/251)^ ½

Z = 10.17

The one proportion Z-test is used to compare an observed proportion to a theoretical one. Here our observed proportion is 0.821. It denotes the proportion of population which migrated due to better job opportunities. Theoretical proportion of this being true (p) or false(q) is 0.5 as the data is evenly distributed. Considering the alpha level as 5%, being the standard tolerance level, we get Z as 10.17 as solved above.

Hence, there is enough evidence to reject null hypothesis and therefore, people migrate internationally due to better employment conditions. We can also say that migration is the most significant aspect of globalization.

Testing of H5

Migration secures the family future/happiness

H0 - Migration does not help to secure family future

H5 - Migration does help to secure family future

Question a) have you migrated with family?

Question b) Are you and your family happy with this decision?

Hypothesis testing is done by using

Table 2 : Chi Square Test

Particulars	Migratedwith family	Migratedwithout family	Total
Happy	193 (180.33) [0.89]	121 (133.67) [1.2]	314
Unhappy	8 (20.67) [7.77]	28 (15.33) [10.48]	36
Total	**201**	**149**	**350**

Explanation: Here we are assessing the migration decisions of respondents by plotting the responses against their sentiments. Here, we have two decisions and we plotted the same against the corresponding sentiments of the respondents. The respondents have selected one option and a corresponding sentiment and hence the total responses equal the number of respondents. It is a classic contingency table technique under Chi-square Statistics. We have compared the observed values (as above) with the expected value with

a standard 5% degree of freedom making the significance level 95%. Degree of freedom implies the extent up to which the values can vary from their independent value. It involves comparing the P-value to the significance level, and rejecting the null hypothesis, when the P-value is less than the significance level. Significance level being 5% p<0.05, the chi-square static is 20.344. The p-value is <0.00001. Hence, it is significant. So, we reject H0 and conclude that migration does help to secure family future/happiness.

Testing of H6

Migration promotes national integrity

Question: Given the opportunity, would you like to move back to your hometown?

Hypothesis Testing done using Z test for single proportion (2 tailed)

H0- Migration does not develops the national integrity

H4- Migration develops national integrity

H0 v/s H1, where P>p for H1.

P = Respondents would like to move back

P = 103/159** = 0.648*

Z test for one population test

Z = P-p/ (p*q/n) ^ ½,

Where p=q=0.5 and alpha level is 0.05, i.e. 5% Hence, Z =1.96

Z = P-0.5/ (0.5*0.5/159)^ ½

Z = 3.73

Explanation: The One-Sample Proportion Test is used to assess whether a population proportion (P) is significantly different from a hypothesized value (p). This is called the hypothesis of inequality .Here, we are trying to assess whether the number of responses are strong enough to conclude the evident probability which is depicted by the population. For this, we try to find the Z-value using an equation and compare the value so derived with the table values defined at various significance levels. As Z=3.73>1.96, there is enough evidence to reject null hypothesis and therefore, migration develops the feeling of national integrity.

*rounded off **"maybe" responses are removed. Only Inter-national migration is considered

Testing of H7

Migration promotes cultural transmission

H0- Migration does not promote cultural transmission

H6- Migration does promote cultural transmission and adaptability

Question a) How you made yourself comfortable?

Question b) How long did you take to accommodate?

Question c) Professional disadvantage of migration

Hypothesis Testing done using Z test for difference of proportion (2 tailed)

A v/s B

P1 = Migrants took up to 6 months to adapt = 298/350 = 0.851

P2 = Migrants self -accommodating in the new culture = 217/350 = 0.62

P = Overall proportion = (0.62+0.851)/2 = 0.7355, n1=n2=350

Z = P1- P2-0/ (p (1-p)(1/n1+1/n2))^ ½

Assigning the values in the formula, we get, Z = 6.92

Alpha level is 0.05, i.e. 5% Hence, Z =1.96. 6.92>1.96, therefore the result is significant.

C v/s B

P1 = Migrants took up to 6 months to adapt = 298/350 = 0.851

P2 = Professional disadvantage other than culture issues=245 /350 = 0.7

P = Overall proportion = (0.851+0.7)/2 = 0.7755, n1=n2=350

Z = P1- P2-0/ (p (1-p) (1/n1+1/n2)) ^ ½

Assigning the values in the formula, we get, Z = 4.787

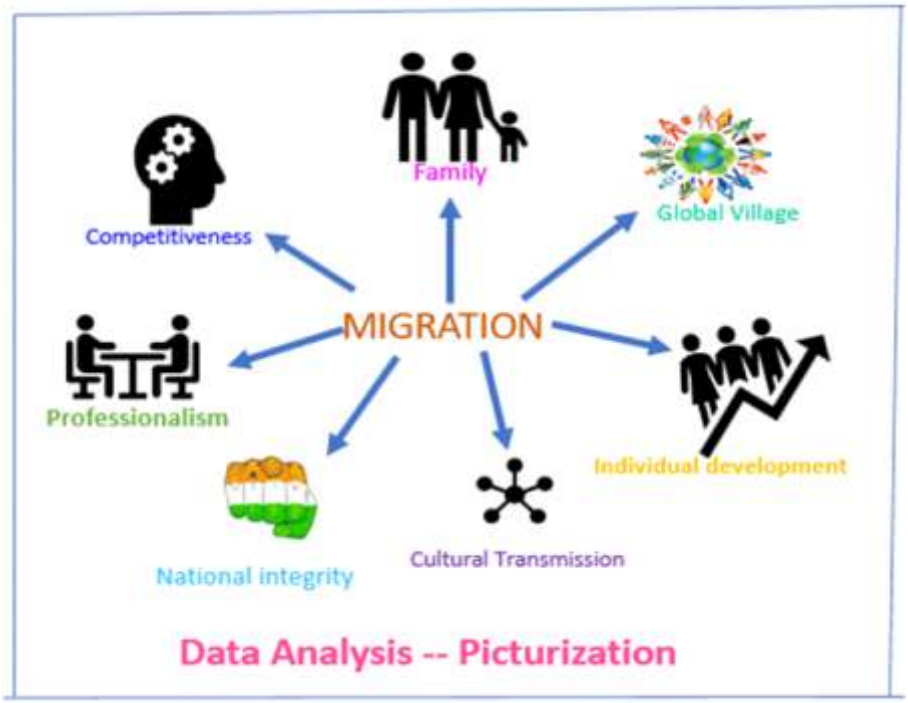
Alpha level is 0.05, i.e. 5% Hence, Z =1.96. 4.787>1.96, therefore the result is significant.

Explanation:The two-proportion z-test is used to compare two observed proportions. Here we have3 sets of data. We have compared 2 sets of data at one time using the formula for 2 proportions. The formula helps to understand the similarity between the 2 data sets, and we reject the null hypothesis if we get a value that exceeds the Z value at the standard significance level of 95%. Therefore, from above calculations, self-accommodating migrants who were trying to fit into a different culture took 6 months to adapt and hence we can

say that self-accommodation in a culture does support culture transmission. We also observe that despite having various non cultural issues, migrants were able to adapt within six months. Hence, non-cultural issues do not hinder adaptability/cultural transmission.

The following pictorial presentation of data analysis gives an iconic view of the entire study. Migration promotes individual competitiveness making one more capable of grabbing employment opportunities. It does give one to grow more in one's profession and thereby giving impetus to professionalism. Monetary foundation undoubtedly become stronger and resolves 'n' number of routine life problems. Family future security and their social upliftment reaches to higher level platform. All these aspects make them adaptive, accommodative, flexible, and integrative with new culture. In totality it gives pace to the feeling global village. After all the globe is one and we are connected many ways. This teaches us humanity too. These above aspects are applicable to all migrants irrespective of being intra-country or inter-country.

Pictorial Presentation of data analvsis



Note: Diagram created by authors

Future research insights

The group of researchers may come together to have brainstorming, how the country may attract our own people towards it. It is just alike how a parent brings his own child from his neighbour's or distant neighbour's place. Undoubtedly, migration boosts development irrespective of boundaries. But somewhere, further research gateways become open, to find out new policy framework to make home places more attractive to them, keeping their aspiration as realised. Can the use of technology in new fashion and everywhere, give solution, in very near future? Has Covid 19 made changes in minds of migrants? Would pandemic change the mind set of potential Indian Migrants? What would be dimensions of migration in post Covid era particularly in respect of social mobility?

Conclusion

Migration has very positive effects. It promotes individual development. It is extremely supportive in development of their profession and professionalism. Our own nationals grow in their profession and they get the opportunity to satisfy their interests. It is good, and satisfactory to the extent they migrate within the country. This creates crowding but still within the country. But after their overseas movement, problems like brain drain, repatriation issues occur. These problems are not considered in this study. They have emotional issues, at the back of their mind, because even if they wish to come

back, they are bound by many constraints. They have personal and family issues. These are not problems to us; these are common to all countries.

The major reasons for migration are already discussed in earlier part of this paper. We have reasoned that the humans migrate for better opportunities i.e. for individual development, family security and professional development. However, when we look at the results of our hypothesis under national integrity, we come to know that a large population wishes to come back to India despite various opportunities received abroad. We tried to find out the reasons behind this and after interacting with few respondents. The taste of better infrastructure, easy availability of amenities, high salary could not make them to come back to their country or region.

Innovations and more focus on research and development may develop professionalism. India spends close to 0.7% of its GDP on research & innovation. Narayan Murthy suggested that India must spend 5% of its GDP on innovation. (Das, 2020). This may reduce the altitude of migration within and outside the country. Government support to both public and private sector is the basic priority.

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A Study on an extent of sensitivity between Indian GDP and IT Industry

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ABSTRACT : *Each Industry reacts in a different way to the business cycle fluctuations. Some of the industries are very vulnerable to economic swings whereas some do not get affected at all. The degree of timing and fluctuation may vary for those industries which are cyclical in nature. The study is carried out to understand how sensitive Indian IT Industry is to Business Cycle Fluctuations in Indian Economy. The substantial growth in IT Industry and analysis of its sensitivity towards Indian Business cycle has been carried with the help of data captured from Central Statistical Organization, Reserve Bank of India and Ministry of Information Technology and Communications. The direct employment by the sector for both the Exports segment and domestic market has increased from 3.267 million to 3.968 million between 2009-2017 (Source is Ministry of Information Technology and Industry) which highlights the growing significance. The vital parameters used in the study are Indian GDP, Indian Exports, IT Domestic, and IT Exports. For the GDP and IT Turnover the analysis include checking of stationarity first and then carrying out de trending to understand the sensitivity of the IT Industry to Indian GDP.The cyclical trends have been identified by drawing inference from comparative growth charts. As per the study undertaken to understand the relatedness of IT Sector and Indian GDP the inference drawn reflects a positive relationship between the two.*

Keywords: IT Industry, GDP, Business Cycle, Indian Export.

I. Introduction

Each Industry reacts in a different way to the business cycle fluctuations. Some of the industries are very vulnerable to economic swings whereas some do not get affected at all. The degree of timing and fluctuation may vary for those industries which are cyclical in nature. During expansionary phase the gains of such industries may vary from modest to high depending on the sensitivity and coherence with the economic activity.

The intertwine between economic activities and Information Technology Industry lays the foundation of a deep rooted alignment which has to be proven through statistical fundamentals to draw the factual inference. The contribution of IT Industry to GDP has increased from .4% in the year 1991-92 to 7.4 % in the year 2019-20. The duration is from the year 1991-92 to 2018-19.

The contribution of IT Exports to Overall IT industry exhibits the increasing domination of IT Exports therefore there is an interdependent factor of Global Fluctuations which is likely to intervene in the analysis.

2. Statistical Tools:

➢ Strong Stationarity

Stationarity is the statistical properties of the process generating a time series which do not change with time.

It needs the shift invariance in time of finite dimensional distribution of a stochastic process.

Formally, the discrete stochastic process $\boldsymbol{X}=\{x \quad ;I' \quad\}$

is stationary if $Fx\,(xt_{1+T,\ldots\ldots} xt_{n+T}) = Fx\,(xt_{1,\ldots\ldots} xt_{n})$

Equation1: The stationarity condition.

This is the most general definition of stationarity, and it is usually referred to simply as stationarity.

➢ Weak Stationarity:

It only needs the shift-invariance in time of the firs moment and the cross moment.

➢ Trend Stationarity:

A stochastic procedure is trend stationarity if a fundamental trend can be removed, leaving a stationary process. It means the process can be stated as

$y = f(i) + \varepsilon$, where $f(i)$ is any function $f: R \rightarrow ?$ and ε is a stationary stochastic process with a mean of zero.

Since the time series stationarity test confirms that the series reflects non stationarity therefore to observe the co-movement of GDP and IT Industry de trending and log transformation was carried out for the statistical inference.

3. Objectives:

- To examine the cyclical patterns pertaining to GDP and Indian IT industry.
- To study the relationship between GDP and IT industry.
- To study the growing contribution of IT industry to GDP.
- To study employment of IT and GDP

4. Review of Literature:

Filters output to examine cyclical behaviour of the Indian economy since 1950. Six sets of turning points in IIP-Manufacturing are identified as the peaks and troughs of the cycle in the period.(Mall, n.d.)

The identification of the year 1957-58 as a period of downturn is supported by (Patnaik & Sharma, 2002)Similarly the downturn in 1965-66 is also selected by (Mall, n.d.)Chitre(1986) and Dua and Banerji (2000). The year 1979-80 is also selected as a trough, Chitre (1986). The downturn in 1991-92 identified as a trough by Dua and Banerji (2006)

The concept of the business cycle here is contrary to the perception of business cycles as continuous expansions that follow contractions and are followed by recoveries caused by the intrinsic characteristics of market economies. These are cycles caused purely by an external factor - the monsoon. Since agriculture accounted for up to 40 per cent of output till the end of the 1970s, the fall in GDP was mainly due to a monsoon failure.

In the literature on business cycles competing economic theories that seek to explain cycles in market economies are usually based on factors such as the stickiness of prices, wages or the role of expectations, technology and information asymmetries. In the Indian economy it was mainly monsoon cycles rather than market related factors that caused a decline in GDP. The usefulness of this evidence to understand and predict market related business cycles or to develop leading indicators that predict them is therefore limited.

In recent times the nature of the cycle appears to be changing. In the 1990's there has not been an actual fall in output. Cycles, that did occur, could be defined as "growth cycles" in which there is a periodic fluctuation in the growth rate of output, rather than in the output. In other words, the rate of growth at which the economy is expanding slows down or picks up. Though the economy keeps expanding there are visible cycles in the rate at which it does so.

In 1997-98 the fall in agricultural output only slowed down GDP growth rather than make it actually fall. This is partly because the share of agriculture had now declined to 26 per cent of GDP. Moreover, it appears that it was also the internal dynamics of the manufacturing sector itself that led to the slowdown in growth. For instance, one possible cause of the slowdown in industry was the initial period of overestimation of demand and hence huge investments made after industry was liberalized. The Indian market was estimated by both domestic producers and multinationals to be much larger than it actually was. In 1994-95 there was sharp growth but soon the pent up demand was exhausted. As consumer demand slowed, inventories piled up, investment was cut, demand for inputs fell and there was an overall slowdown in growth.

Cost advantage on account of skilled workforce and abundant pool of English speaking technical resources (Bhatnagar, 2006) formed the foundation of Indian IT industry. There is a growing demand of talent pool (Mathur, 2007). Knowledge needed included organization's structural capital including processes, technologies, patents; human capital including ability, skill and expertise; and customer capital including information about customers, suppliers, and stakeholders. Intellectual capital is a preeminent resource of knowledge economy. As an intangible asset, it occupied significance in assets portfolio of the knowledge intensive IT Industry. Skill requirements of the IT industry evolved with introduction of pervasive internet access and cloud computing, business technology consulting, business intelligence and analytics. (Aggarwal, Balaka B, 2001)

5. Research Methodology:

The study has been carried out to examine the extent of sensitivity that exist between Indian GDP and IT Industry. The composition of IT Industry has been broken into IT Domestic and IT Exports.

Source of the data: Secondary data of GDP, IT export, IT domestic, IT overall and Indian export and IT contribution since the year 1991 to 2019-20 is used for this study.

The study has been organizedin three partsas follows:

Part 1 examines the cyclical patterns pertaining to GDP and Indian IT Industry. Observation has been done by considering various graphical patterns including contribution of IT Domestic. IT Exports to GDP.

The cyclical trends have been identified by drawing inference from comparative growthcharts.For the GDP and IT Turnover the analysis include checkingof stationarity first and then carrying out de trending to understand the sensitivity of the IT Industry to Indian GDP.

Part 2 Estimates the correlation coefficient to establish the relationship between the GDP and IT Industry. A close examination of high contribution of IT Exports to overall IT points towards interference of Global Business Cycles. Spearman Correlation coefficient has been used to establish link between India GDP and IT industry parameters to clearly identify and comprehend the intervention of Global business Cycles;

Keeping an assumption that there exists a relationship between Indian GDP and Indian IT Industry the study will guide towards the fact that whether it relates highly or moderately.

The correlation coefficients using Spearman were calculated and was found to be more significant Finally Spearman correlation coefficient was applied in order to work on the correlation coefficient for this study as Spearman was found to be a better fit.

Part 3 examine the growing contribution of IT industry to GDP

This analysis might provide an opportunity to identify the influence of Economy on the IT Industry

6. Data Analysis and Interpretation:

➢ **Part 1: Examining the cyclical patterns pertaining to GD P and Indian IT Industry**

Table 1. IT Domestic, IT Exports, and IT Overall Data

Time	IT Domestic (Rs Crore)	IT EXPORTS (Rs Crore)	IT Overall (Rs Crore)	GDP at factor cost in Rs Crore At Current Prices
1991-92	2041	476	2517	613528
1992-93	2524	931	3455	703723
1993-94	3356	1405	4761	817961
1994-95	4956	1982	6938	955386
1995-96	7032	2661	9693	1118586
1996-97	8587	4652	13239	1301788
1997-98	10835	7150	17985	1447613
1998-99	13204	10752	23956	1668739
1999-00	17002	16050	33052	1858205
2000-01	24669	29896	54565	2000743
2001-02	24738	37846	62584	2175260
2002-03	26952	47835	74787	2343864
2003-04	35955	59661	95616	2625819
2004-05	45488	81023	126511	2971465
2005-06	57518	113792	171310	3390503

2006-07	73784	149823	223607	3953276
2007-08	95663	189970	285633	4582086
2008-09	106876	234417	341293	5303566
2009-10	78730	243850	322580	6108903
2010-11	92300	263800	356100	7248860
2011-12	106200	328600	434800	8391691
2012-13	120700	407400	528100	9388876
2013-14	132700	510100	642800	10472807
2014-15	145000	612800	757800	11504279
2015 -16	142066.6	705750.4	847817.1	12574499
2016 -17	160972.8	784742.4	945715.2	13965200
2017-18	161137.3	812131.7	973269	15513122
2018-19	286500	880700	1167200	17139962
2019 -20	316800	1058400	1375200	18343237

Source: Secondary data- Central Statistical Organization and Ministry of Information Technology and Communication

- **Stationarity Analysis**
- **Turnover Graphs**

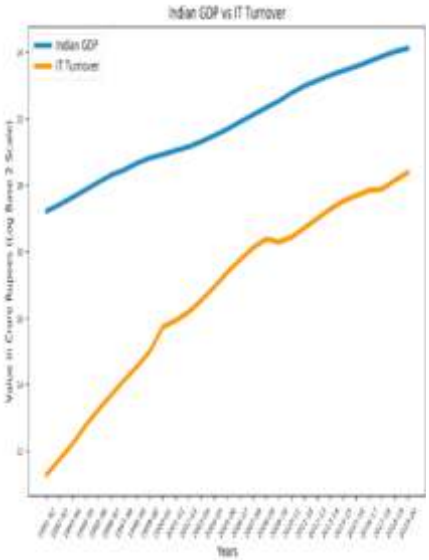

Figure 1
Indian GDP Vs. IT Turnover

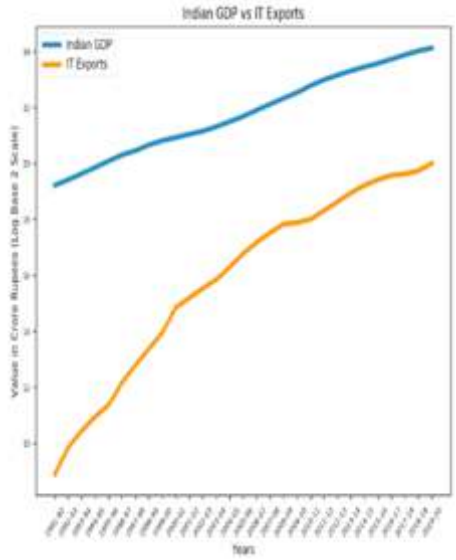

Figure 2
Indian GDP Vs. IT Export

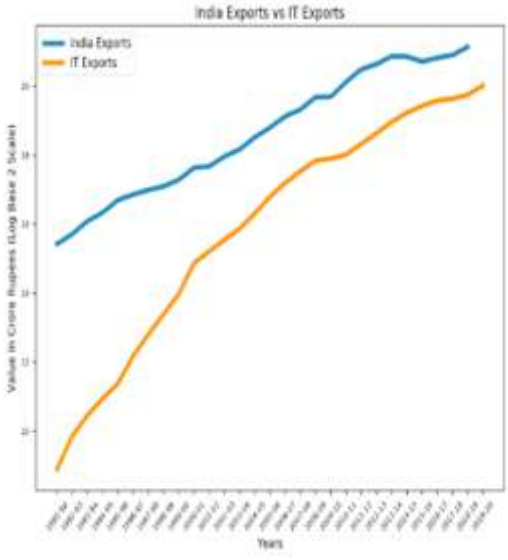

Figure 3
Indian Exports Vs. IT Exports

➢ **Comparative Growth Chart**

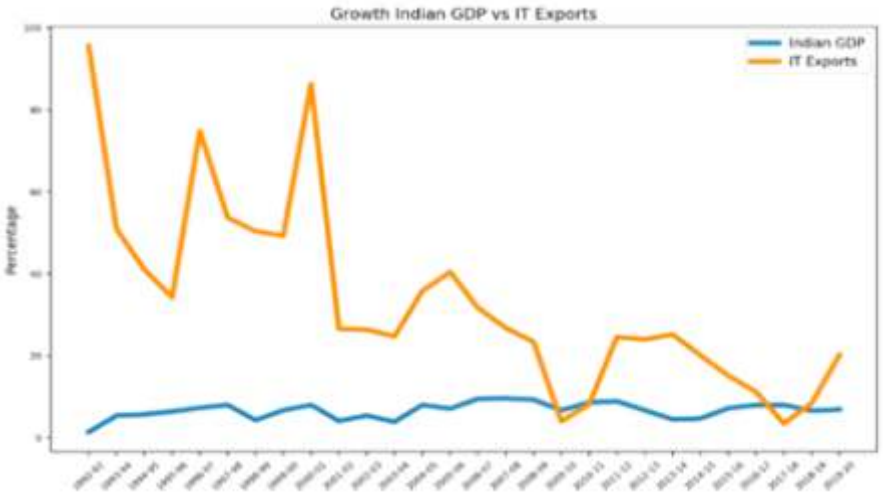

Figure 4. Growth Chart of Indian GDP and IT Exports

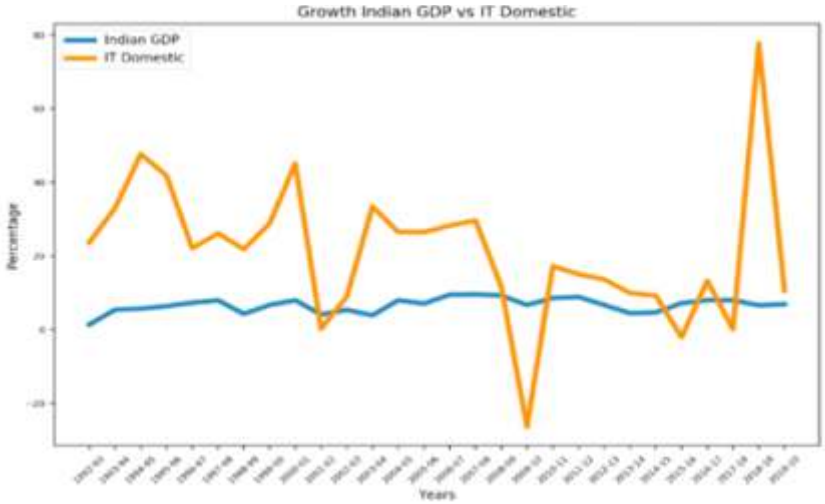

Figure 5. Growth Chart of Indian GDP and IT Domestic

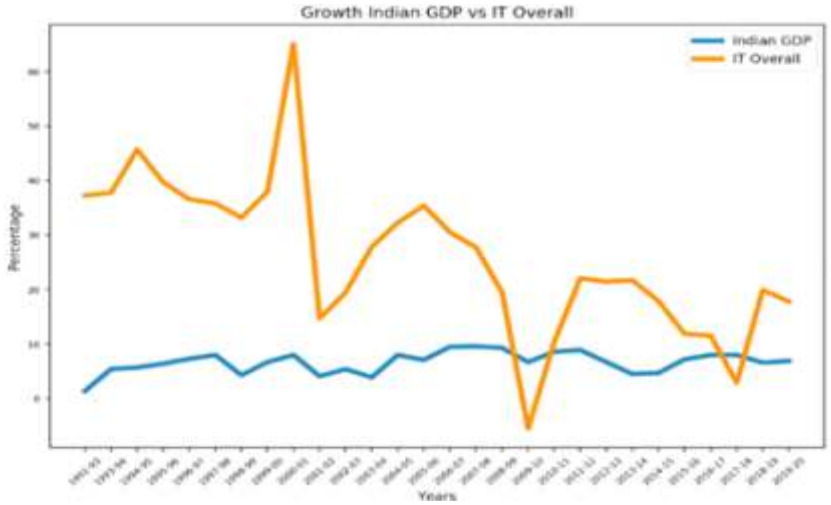

Figure 6. Growth Chart of Indian GDP and IT Overall

It clearly indicates the presence of trend in the data. Also mathematically through the stationarity analysis it is proven that trend is present. To understand the cyclical movement growth as a parameter has been considered to identify the movements of Indian IT Industry and GDP

- **Part 2 Estimate of Spearman correlation coefficient to establish the relationship between the GDP and IT Industry**

Table 2. Correlation Coefficient

Detrended (Coincident)	Spearman
Indian GDP vs IT Overall	0.792556103
Indian GDP vs IT Exports	0.836458199
Indian GDP vs IT Domestic	0.535303777

The data from Table 2 was detrended using Python and spearman correlation was calculated.

The principle statistical measure used to quantify both the industry Overall IT and IT Exports Relationship to GDP was the Spearman product moment coefficient of correlation (r) This Statistic provides an empirical measure of the degree of association between the movements of GDP and Overall IT Industry and IT Exports.

As r approaches 1 or –1, the degree of correlation Increases, with coefficients closer to 1 showing cyclical industries, and coefficients closer to –1 showing countercyclical industries.The Spearman correlation coefficient brings forth thatIndian GDP is comparatively more correlated to Indian IT Exports. However IT domestic has a comparatively weak correlation with Indian GDP this fact is required to be probed

- **Part 3 Examine the growing contribution of IT industry to GDP**

Table 3. IT Contribution

Time	Contribution IT/ GDP	Contribution IT Exports / India Exports	IT Exports / Overall T
1991-92	0.41	1.1	18.9
1992-93	0.49	1.8	26.9
1993-94	0.58	2.1	29.5
1994-95	0.73	2.4	28.6
1995-96	0.87	2.5	27.5
1996-97	1.02	4.0	35.1
1997-98	1.24	5.6	39.8
1998-99	1.44	7.7	44.9
1999-00	1.78	10.1	48.6
2000-01	2.73	15.3	54.8
2001-02	2.88	19.0	60.5
2002-03	3.19	19.7	64.0

2003-04	3.64	21.5	62.4
2004-05	4.26	23.6	64.0
2005-06	5.05	28.1	66.4
2006-07	5.66	30.7	67.0
2007-08	6.23	35.1	66.5
2008-09	6.44	32.7	68.7
2009-10	5.28	34.2	75.6
2010-11	4.91	27.6	74.1
2011-12	5.18	27.4	75.6
2012-13	5.62	31.3	77.1
2013-14	6.14	33.5	79.4
2014-15	6.59	39.5	80.9
2015 -16	6.74	46.5	83.2
2016 -17	6.77	47.9	83.0
2017-18	6.27	47.4	83.0
2018-19	6.8	58.8	75.0
2019 -20	7.40	46.5	76

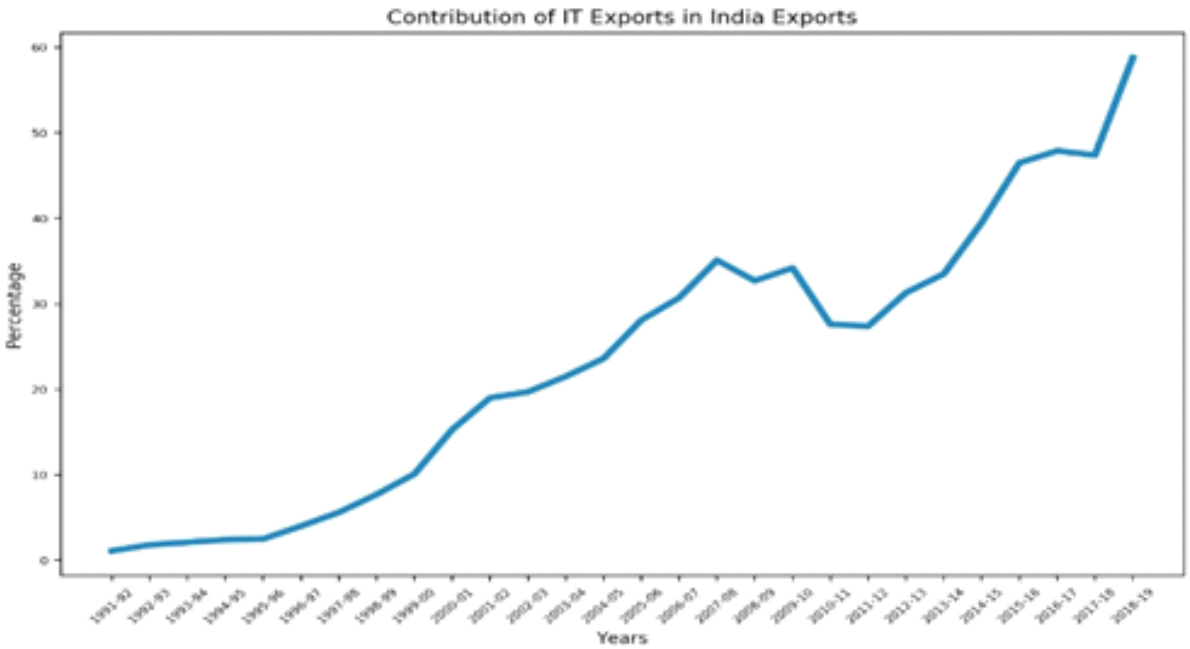

Figure 7. Contribution Graph of IT Exports in Indian Exports

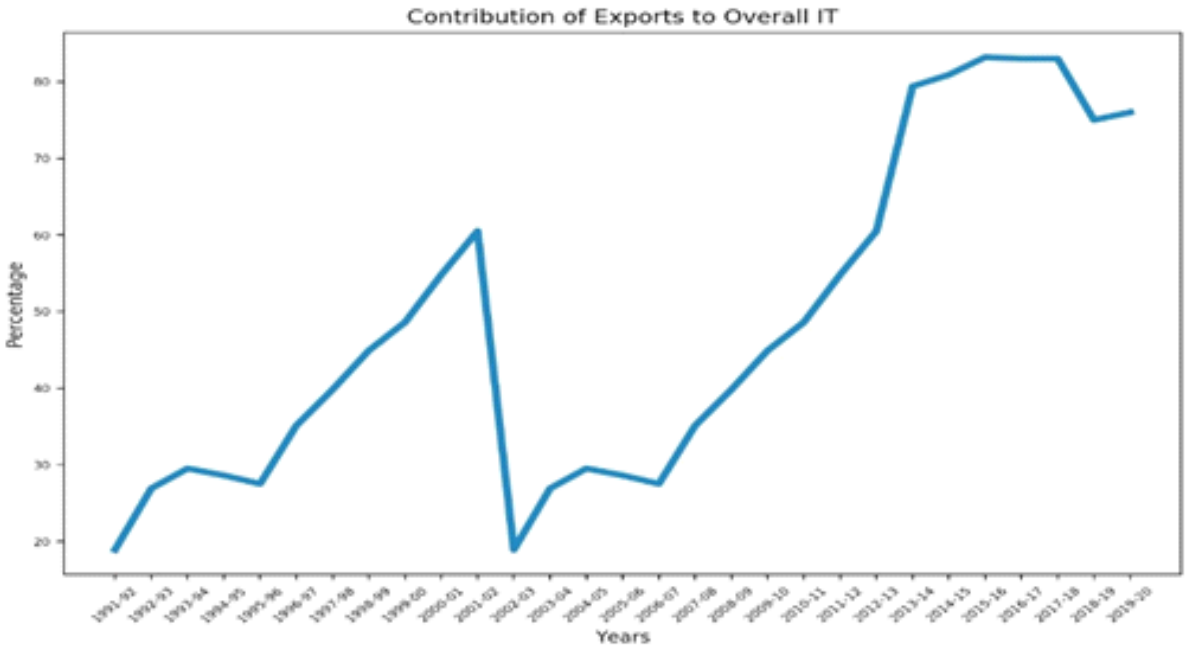

Figure 8. Contribution Graph of Exports

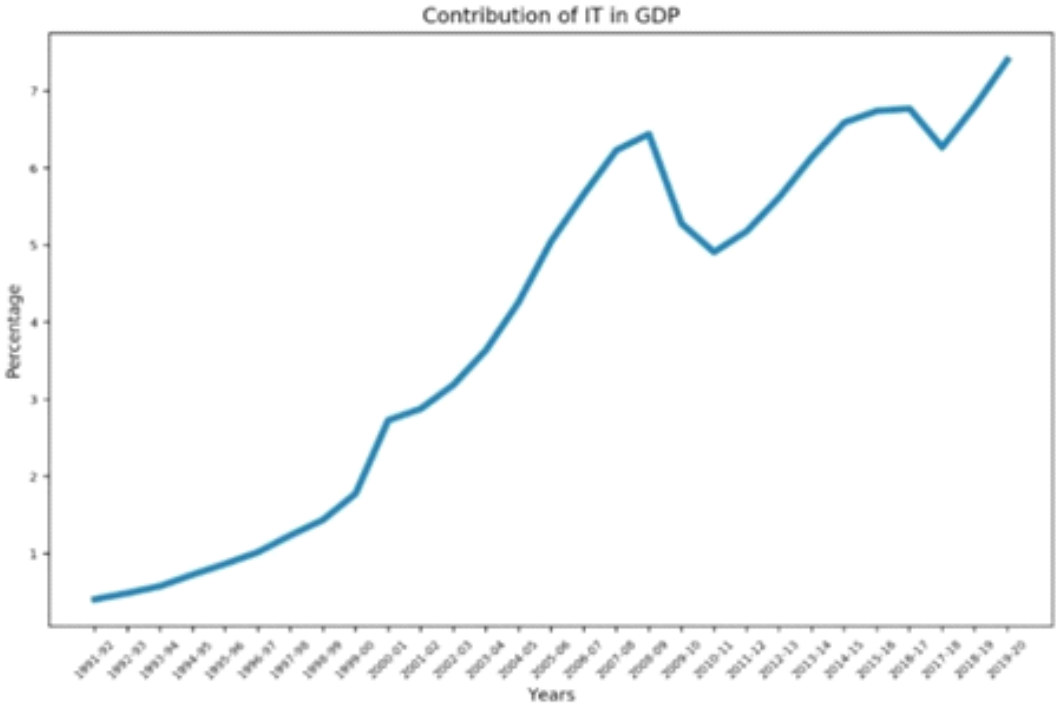

Figure 9 IT contribution in GDP

Post liberalization owing to the stimulus in all areas IT industry started gaining momentum and scaled to the level where it is adding to enhancement of the productivity of other critical Industries.

Value Contribution = Aggregate IT Turnover / GDP

As was observed in IT, India has built up valuable brand equity over the years. In IT enabled services (ITES) India is emerging as one of the most preferred destination for Business Process Outsourcing (BPO). The importance of IT industry in the Indian Economy can be gauged from the fact that its contribution to the national gross

domestic product (GDP) has increased by five fold in a span of two decades from .40 % in 1991 to 7.4 % in 2019.With the growing contribution of IT, it is critical to understand the role of IT exports as there has been a substantial growth in exports.

The contribution of India IT exports suggest that top Indian IT firms have a Global presence and are more prone to Global Cyclical Fluctuation. As the overall IT demand is intercepted by the Indian IT Exports, it becomes important to understand what role IT exports play in defining the relationship between Indian IT And GDP. The contribution brings forth the ever increasing significance of IT Exports. The composition and structuring of IT services has given the required impetus. The Contribution of IT Exports to Indian Exports has been traced by taking into consideration value of non-oil exports data, and it clearly highlights the IT is a major contributor to Indian exports from 1.1 in the year 1991-1992 it plunged to 58% on the year 2018-19. After a considerable drop of IT Contribution to overall IT in the year 2001-2002, The contribution of IT Exports to Overall IT Turnover has increased from 18.95% in the Year 1991 -92 to 83 % in the Year 2017 -18.

➢ **Inference :**

There cyclical movement observed between GDP and IT Overall exhibits that IT is not a coincident factor and the pro cyclical movement is almost absent during most of the time. The first graph draws a comparative cyclical movement of Indian GDP and IT Exports. During the recessionary period of 2001 and 2008 there was a negative impact and there was a slowdown in the demand of IT exports in the International Market.The second Graph highlights the cyclical pattern of IT Domestic in comparison to Indian GDP and reflects the higher sensitivity of Indian domestic demand which indicates towards the fact the there was a major cut in the IT Budgets of the Indian buyers. The third graph clearly depicts the slowdown even in the year 2017-18. Though the sensitivity exist but it is observed that there is no clear indication of pro cyclical movements in all the three graphs.

➢ **Employment in IT and GDP**

Table 4. Employment Data

IT Industry direct/indirect employment India FY 2009-2017		
Direct and indirect employment of the IT-BPM industry in India from financial year 2009 to 2017 (in millions)		
Year	**Direct employment**	**Indirect employment**
FY 2009	1.96	8
FY 2010	2.3	8.2
FY 2011	2.5	8.3
FY 2012	2.8	8.9
FY 2013	3	9.5
FY 2014	3.29	10
FY 2015	3.52	10
FY 2016	3.7	10
FY 2017	3.86	12

Source: Secondary Datafrom NASSCOM

The Indian information technology and business process management industry had over 15 million directly and indirectly employed personnel during financial year 2017. The south Asian country is the largest offshoring destination for IT companies across the globe. TheIT-BPM sector has gradually grown in recent years, accounting for more than 30 percent of the global outsourced BPM market. As of March 31, 2020, Tata Consultancy Services, the multinational information technology service company, had over 448,400 employees in the world.

The direct employment by the sector for both the Exports

segment and domestic market has increased from 3.267 million to 3.968 million between 2009-2017 (Source is Ministry of Information Technology and Industry) which highlights the growing significance.

The spearman correlation between IT Industry Employment and GDP is 1 which is greater than the correlation between GDP and IT overall. Possibly the reason behind is indirect employment generation of IT Industry is very high which further strengthens the relationship.

7. Conclusion:

As per the study undertaken to understand the relatedness of IT Sector and Indian GDP the inference drawn reflects a positive relationship between the two. The estimated correlation between IT and GDP is .83 which highlights the extent. Even though the correlation is high it was observed that the movement of IT overall, IT Domestic and IT Exports against GDP is not highly pro cyclical in nature.

There is high sensitivity of IT Domestic is reflected in the downswing during recession 2008-09, a closer analysis revealed that IT Exports took a comparatively lower hit.

As the Industry is not highly pro cyclical, it may be the case that due to increasing significance of Exports there are other intervening variables which are defining the fluctuations. It also seems that the Industry is prone to shocks and aftershocks of the occurrence of various events in the Economy. Also Global shocks can have an impact and define the fluctuations in Indian IT exports which can have an indirect impact on the cyclical movement of Indian IT Overall

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5. Mall. (n.d.). Business Cycle. Retrieved from https://www.oecd.org/sdd/leading-indicators/34898082. pdf significance of Exports there are other intervening variables which are defining the fluctuations. It also seems that the Industry is prone to shocks and aftershocks of the occurrence of various events in the Economy. Also Global shocks can have an impact and define the fluctuations in Indian IT exports which can have an indirect impact on the cyclical movement of Indian IT Overall

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Has the outbreak of the Coronavirus pandemic impacted the online pharmacy in Serving the nation or capitalization of business opportunities in India?

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ABSTRACT : *Before COVID-19, there were businesses as common. During the COVID pandemic, India across the globe and strive to find a path to overcome it and minimize its impact on all over the business. The pharmaceutical market is disperse over 8 L pharmacies and Electronic set-ups. COVID-19 pandemic has reached a grime stage and has nervous the healthcare systems across the world. The global economy has suffered a great slow down resulted in falling stock markets, travel restrictions, shortage of supplies, quarantined human resources, etc. The deliveries of medicines through e-commerce were declared as essential services. This study aims to understand, does the COVID-19 pandemic brought boon or boost to the E Pharmacy or whether it has contributed to serving the nation in this pandemic crisis. The results indicate the Online Pharmacy is an attractive model in the development of the nation. E-pharmacy has palpable benefits to the consumers as well as the industry. Other than urban another part also have considered in the supply of medicine. It has proven the parallel supply chain Government supports the E- Pharmacy in the starting phase of COVID that made a favorable political environment to cater to the need of people with growth in the country. Traditional retail/chemist Pharmacy hast share a big pie of their market to e- Pharmacy.*

Keywords: Online Pharmacy, e- Pharmacy, Pharmacy app, COVID-19

I. Introduction

With augmented Advanced Mobile phones and internet incorporations, online pharmacies will be an obvious part of the healthcare culture in an India, according to global professional services firm EY that country's probable market for e-pharmacies will surge to $18.1 bn. by 2023 compared with $9.3b billionin current year. Amazon September 2020comes with an online pharmacy service in India's city such as Bangalore, offering over-the-counter and prescription medicines. The shifts in customerperformance towards online pharmacies and e-commerce,increased by the pandemic Covid-19, the online pharmacy sector has increase the demand of affluent companies. According to FICCI report the right governing clarity and pharmacy Establishment and Practice Guidelines, this sector will attract many entrepreneurs for investment and unleash innovation across the healthcare value chain while dramatically improving access to medicines and healthcare across the India.

According the report of Global Economic Prospects(June 2020). Concerned with recent and futuristic the impact of the pandemic and the long-term damage may hamper growth. The baseline forecast envisions a 5.2 percent contraction in global GDP in 2020, using market exchange rate weights—the deepest global recession in decades, despite the unusual efforts of governments to counter the downturn with fiscal and monetary policy support. They also predict the deep recessions triggered by the pandemic are expected to leave negative impact through lower investment, an erosion of human capital through lost work and schooling, and fragmentation of global trade and supply linkages.

Online –pharmacies:-

According Mr. Rouse (2018), the advent of internet pharmacy and admittance of drugs and diagnostics is gaining f me due to cost effectiveness, high rapidly delivery to door step of patients. It is also known as Online Pharmacy, Internet Pharmacy, Web Pharmacy or

Cyber Pharmacy, E- Pharmacy, E-prescribing or automated prescribing is a machinery framework that allows physicians and other medical practitioners to write and send prescriptions to a participating pharmacy electronically instead of using handwritten or faxed notes or calling in prescriptions.

According to Mr. Rouse (2018), the electronic commerce or E-commerce is the purchasing and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the internet. These business transactions occur either as business-to-business, business-to-consumer, and consumerto-consumer or consumer-to-business. The footings e-business and e- commerce are often used interchangeably.

S. No	Online Startup	Website	Target
1.	HealthKart(2011)	www.healthkart.com	Online store for health, sport and nutritional supplements service
2.	1mg (2015)	www.1mg.com	Online pharmacy marketplace with doctor listing and telephonic consultation services
3.	Medlife (2014)	www.medlife.com	Medlife offers an app for purchase medicines.
4.	PharmEasy(2015)	www.pharmeasy.in	Mobile-first hyper local platform for medicine ordering and diagnostic tests
5.	NetMeds(2015)	www.netmeds.com	The online platform selling prescription, over-the-counter (OTC)
6.	EMEDIX (2016)	www.emedix.in	It gives better delivery and excellent services to the consumers across India

Table 1. Some of online pharmacy company in India

Retail Pharmacy:

According to Silicon India Healthcare Magazine (2018), the total retail pharmacy in Indian market has been mountingover the average of 18 percent per annum from last few years, with the present achievement achieved by consumer items in the industry, pharmaceuticals are the next large thing in the online business. However, from a regional perspective, the market is yet to gain an organized structure despite the growth at an average of 25 percent.

However, the industry is predicted to grow at a rate of 35-40 percent in the next decade this will be in sync with the population growth of 1.3 percent which will witness the occurrence of diseases such as diabetes and cancer with an increase of 20 to 40 percent.

COVID-19 Pandemic

The COVID-19 pandemic, also known as the corona virus pandemic, is an ongoing pandemic of corona virus disease 2019 (COVID-19) caused by the transmission of severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), first identified in December 2019 in Wuhan, China. The outbreak was declared a community Health Emergency of International Concern in January 2020,COVID-19 mainly spreads through the air when people are physically close, primarily via small droplet or aerosols, as an infected person breathes coughs, sneezes, sings, or speaks. Transmission via contaminated surfaces has not been conclusively demonstrated, and it is suspected that the main mode of transmission is airborne. It can spread from an infected person for up to two days before symptoms appear, and from people who are asymptomatic. People remain infectious for up to ten days in moderate cases, and two weeks in severe cases (2019–20 corona virus pandemic, 2020)

1	CMS - Central Medical Stores
2	KEMSA - Kenya Medical Supplies Agency
3	RFID - Radio Frequency
4	APIs - Active Pharmaceutical Ingredients
5	CPFR - Collaborative Planning Forecasting and Replenishment
6	EDI - Electronic Data Interchange
7	EPZ - Export Processing Zone
8	MNCs - Multinational Corporations
9	NGOs - Non Governmental Organizations
10	OTC - Over the Counter
11	POS - Point of Sale Identification
12	TMS - Transport Management System
13	UNIDO - United Nations Industrial Development Organization
14	VMS - Vertical Marketing System
15	WMS - Warehouse Management System
16	COVID-19- Corona virus disease

Table 2. Abbreviation of Digital Pharmacy term

E - PHRAMCY:

Inventory-based Model of E-pharmacy:

The account of drugs and services is self-owned and operated by the e-pharmacy stage itself. No third-party participation is observed here.

Market-based Model of E-pharmacy:

In this model, a number of pharmaceutical retailers and stockiest contribute to a common digital stage, which connects them with end-consumers through a system and provide an edge between the two.

Generic E-commerce Model:

The common departmental store in a digitized shape sells presently about all under one roof, or here, one platform. These include sales and distribution of prescribed medicine and associated pharmaceutical products.

Organized E-pharmacy

The market-place isrepresentation that a common platform for the nearby collection of pharmacy retailers. The inventory model, which is the online stage of a licensed, offline pharmacy

Non-organized pharmacy

Here, the sale of pharmaceuticals and drugs is rather movable. There is smaller amount or sometimes no limit and justification over the prescription of the drugs ordered in this model. This lowers the genuineness and reliability of the drugs purchased here, thus making them a rather preventable option for buying medicine.

Online marketers might influence the buying choiceprocess of online consumers by using traditional marketing in combination with sufficientonline experience or web familiarity (Constantinides, 2004). (Jayawardhenaet al. 2003))suggested that stimuli that activatenecessitateappreciation might come from a number of varied sources that could originally be either online or offline; especially as many organizations use both channels for communication.

According Davies (2014), to Healthcare is continually evolving. Contemporary technologies offer scope for more effective ways to manage disease. Over the course of the last two decades, the Internet has transformed the method in which information is accessed. Mobile

devices (i.e. smartphone and tablet platforms) took this a step further by allowing users to have remote access to the World Wide Web at their fingertips. Such devices now outnumber private computers and will soon become the most common way to access data.

Review of Literature:

Literature review chapter has been divided into various sections namelyCustomer attitude toward towards buying medicines through digital forum,COVID impact in e- consultation and e pharmacy, governmentinitiative: delivery of medicines through e-commerce as an essential service,e- pharmacy sector's in covid-19,e-pharmacy market post-covid-19, the challenges in app base pharmacy business

Costumer attitude toward towards buying medicines through digital forum:

According to Red Seer Consumer Surveys (April, 2020), around 75% consumers cite that their online pharmacy purchase has either increased or remained the same in the unlock phase, compared to pre-COVID-19 this especially post June 2020.

to see the futuristic change in the Pharmaceuticals market. Positive output in e-pharmacy is even stronger among tier II and tier III cities; according to Red Seer (IP) this COVID-19 led the e- Pharmacy platforms have been able to considerably increase their get to across deeper areas in the country.

COVID Impact in E- consultation and E Pharmacy:

More than 50% consumers are seen a decline the face-to-face doctor consultation in the COVID-19 period (Red Seer Consumer Surveys (July, 2020)). Ministry of Health and Family Welfare, Government of India issues the guidelines that indicate the support to use of online doctor consultation for effectual patient management. As per these guidelines, Ministry of Health and Family Welfare, Government of India classified medicines into different clusters and clear the permissible mode of e-Consultation, the corresponding to each of the medicine groups.

Government Initiative: Delivery of Medicines through E-Commerce as an Essential Service: The union home ministry, vide order number 403, 2020, D in March 2020, particularly mentioned delivery of medicines through e-commerce as an essential service. As result 19 state governments declared e-pharmacy essential during covid-19 lockdown

E-Pharmacy Sector's In COVID-19 : According to Red Seer Consumer Surveys (July, 2020). Online Pharmacy consumers and enable important impact to supply convenient access to reasonably priced medicines, in the difficult COVID-19 times. This was confirmed in the recent consumer surveys pretend around 65 % consumers cite top of the mind awareness (TOMA) about e- Pharmacy initiatives, compared to an average of 50% for other internet verticals.According to Red Seer survey this sector was able to achieve about 2.5 growths in households in the COVID-19 lockdown period to reach about 8.8 Million households by June e-Pharmacy

E- Pharmacy Market Post - COVID-19 :

According to report from global professional services 2020 indicate that India's potential market for e-pharmacies will increase to $18.1 billion by 2023 compared with $9.3bn in 2019.

According to Fortunes business insight Survey 2020, the global e-Pharmacy market was valued at $49,727.7 Million in 2018 and is predictable to reach $177,794.9 Million by 2026. The market is also expected to undergo an exponential growth of 17.3% CAGR in the next 5 years, riding on the back of the merged influence of the rise in internet adoption and e-Commerce giants such as Amazon.com acquiring pharmaceutical companies.

The Challenges in App Base Pharmacy Business

According to Economic times (2017) the Online pharmacies are facing stiff opposition from their offline counterparts too. Facing allegation of encourages irrational use of medicines and sale of fake drugs.Pharmaceutical Regulation (2019) The Drugs and Cosmetics Act, 1940, and the Drugs and Cosmetics Rules, 1945, have guidelines on the sale of Schedule H and Schedule X drugs. These drugs can be sold only on prescription and there are specific rules for labeling and bar coding(Sorman-Nilsson, A. 2013) How to leverage the enduring human need for analogue experiences to attract and retain more customers.

Doubt of digital-connect ever really replace the personal touch.

Research Methodology :

The Qualitative analysis of Corona-virus pandemic impacted the online pharmacy in Serving the nation or capitalization of business opportunities in India.The

study was carried out using the qualitative research approach to find the significant co relations with growth of online pharmacy and COVID 19 economic environment and what does it help India to maintaining economy or serving its people.

Sr. No	Interviewed/ Guidelines	Covered on	Interpretation
1	Mr. Ashwini Kumar Choubey, Minister of State for Health and Family Welfare	"The e-pharmacy model can work effectively with the administration Common Services Centres (CSC) aimed at civilizing access to essential healthcare facilities in rural India"	Not only to urban but also rural part and *tier* II and III cities are also taken in to consideration in continues supply of medicine.
2	Mr. DilipChenoy, Secretary General, FICCI	The e-Pharmacy sector through active partnership with existing pharmacies is firmly dedicated to support the administration and help the nation in fighting COVID-19. The industry is working 24×7 to ensure that people get essential medicines at home all across the country, and the reach of existing pharmacies are expanded	Serving Nation through the E- Pharmacy, To reach out to people at difficult time and emergency.
3	Ministry of Home Affairs, Government of India (guidelines issued dated 24th March 2020)	Commercial and private establishments shall be closed down, with exception of delivery of all essential goods including food, pharmaceuticals and medical equipment through e-commerce."	Government supports the E-Pharmacy in the starting phase of E pharmacy. It create the favorable political environment to growth in the country.
4	Competition Commission of India October 2018,	Electronic trading of medicines via online platforms, with appropriate regulatory safeguards, can bring in transparency and spur price competition among platforms and among retailers, as has been witnessed in other product segments."	Making Markets Work for Affordable Healthcare
5	Mr. Anil , (An Interviewed , 2019), User of 1 Mg , Online Pharmacy	This e-Pharmacy app is a game changer. I am unable to go out to buy medicines, but the app gives me the liberty to shop essential medicines from home. It is very user friendly and I being an elderly person do not find any difficulty in using it. They deliver well in time.	Consumer who used the app is happy with the services.
6	Krishnan Akhileswaran, CFO, Apollo Hospitals. (Vyas, J. 2020)	Launched Apollo24/7, India's largest end-to-end, Omni-channel healthcare digital stage to access services. "With 11 million downloads so far, this can be animportant revenue provider going forward,"	Point out the important of digitalization in Healthcare sector

Sr. No	Interviewed/ Guidelines	Covered on	Interpretation
7	Rajiv Singhal, general secretary, The All - India Organization of Chemists and Druggists (AIOCD)(Dey, S. 2018)	The nationwide protests are aimed at highlighting the repercussions of online pharmacy initiative and educate policymakers on its dangers. Around 8.5 lakh chemists are facing livelihood risk due to online pharmacy	There is negative side as well , retail / chemist Pharmacy have to share big pie of their market, raised theconcern about unemployment and poverty because of E-pharmacy
8	ET-Healthworld, Deepak Tomar, CEO, Heycare (Akhter, S. ,2017)	online pharmacy is catering to the medicine requirements of the retailers, wholesalers and people in an easier and safer way	Online pharmacy not only toward the customer but the intermediaries as well.
9	Mr. Shubham Saxena (interviewed, Nov. 2020) Sr. Digital Marketing Expert	Online Pharmacy is become the key factor in the Digital Marketing. Not only the Medicines but it becomes the wonder world for health accessories, that with affordable pricings & offers.	Online pharmacy is the one of prime platform of Digital Marketing, which could cover major part of world.
10	Mr. Sandip Awachite (interviewed, Nov. 2020) A frequent user of App based pharmacy	I would be so thankful for these app based serves, because of them I never felt the shortages of medicines for my family .I see to continue with the service post pandemic too.	Loyalty of customers enhancing on online services of pharmacy.

Conclusion And Future Prospective:

Online Pharmacy becomes the attractive model that innovates the electronic healthcare system and similarly it shows the high possibility to increase demand in the future. Considering this possibility e -pharmacy significantly represents tangible benefits to its consumers and industry. In this study, another outcome is found that not only urban but also the nonurban too taken into consideration in the supply of medicine. This could emerge as a separate segment where pharmaceutical companies can supply directly to the consumer and this could also benefit the intimidators. Government's supports to E- Pharmacy in the starting phase of COVID that made a favorable political environment to cater to the need of people with growth in the country. This short qualitative study also gave a glance at the affordable Healthcare concept with E pharmacy. However, there are negative consequence also came out for traditional retail / chemist Pharmacy business as there is a possible threat of sharing big pie of their market to E pharmacy. Overall this reflect positive impact in this coronavirus pandemic in terms of Nation serving and executing the business opportunity.

Limitations And Future Research

While attempting to generalize the findings, caution must be exercised as the study was conducted with a few limitations. First, due to the limitations of mobility and time constraints, the study was limited to specific cities and help of some online assistance and so the results need to be looked at from on this perspective. Nevertheless, organizations can use these results to design strategies by focusing on the factors that were arrived at.

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