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CONTENTS

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Editorial Note

India has experienced the effect of demonetization. All sections of the society have experienced the pains of the policy measure. Different sections of the society are expressing their views on both the positive and negative effects of the measure. In order to fill the knowledge gap in the present issue we publish the speech given by Dr. M Govinda Rao, an expert in the field of Public Finance as the lead article. He describes the genesis and the pitfalls in the scheme of demonetization.

Prior to the demonetization the Government had introduced the Make-in-India scheme. People were eager to know the contents and the benefits of the scheme. Accordingly number of dailies are still covering the highlights of the scheme. In the present issue we publish the exhaustive review of the scheme. The objectives, scope and the benefits are discussed in detail by the author.

In the third article the authors extensively use the statistical tools for analyzing the consumer behavior. The case study pertains to a family owned enterprise and its experiences of growing in the competitive environment. It is good management case for students specializing for careers in industries.

Lastly we include a book review on R for Data Science. The reviewer presents detailed highlights of all the chapters. The review will be useful to all interested in the field to give a snap-shot of the contents of the book. Overall the present volume of SAJMR will be useful knowledge input to Researchers & Teachers.

Dr. C. S. Kale
Editor

Demonetization: Are Gains Commensurate with the Pain?

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Abstract : Demonetisation is being discussed in all sections of the society. As part of the discussions at various levels the author was invited for a special lecture in CSIBER, Kolhapur on 10th December 2016. The present research article is the speech delivered to the students in the Institute

The announcement by the Prime Minister on November 8 that the currency notes with the face value of Rs. 500 and Rs. 1000 will no longer be valid has been hailed by the ruling party as historic and unprecedented attack on black economy and the main opposition party has called it a "monumental blunder" and "organized loot!." For the people at large, this has sent waves and has led to serpentine ques to deposit the money and to collect cash for their daily needs. The discussion on the difficulties andquestions relating to selective demonetisation refuses to die down anytime soon. This should have been expected as in an economy with over 96 per cent of the number of transactions are carried out in cash, rendering 86 per cent of the currency with the sleight of hand cannot but plunge the economy into a chaotic spin. The people have been patient and enduring but the question on everyone's mind is for how long?The Prime Minister in his broadcast had asked for the forbearance for 50 days but it remains to be seen whether normalcy can return by then.

Ostensibly, the measure was taken with the principal objective of curbing black economy, though other objectives like ending terror financing and nullifying the counterfeit notes were also mentioned. The important questions that need to be asked are (i) whether this is the appropriate policy choice to achieve the stated objectives? (ii) Has the government taken into account the capacity of the system to cope with such a large scale invalidation of cash? (iii) How long will it take to remonetise the economy and (iv) What are the short and medium term implications of the measure?

As far as the first question is concerned, it must be said that selective demonetization of the type undertaken is neither necessary nor is it sufficient to deal with the menace. First, the measure by itself will not have any impact on the incentives to generate black money and it does not deter earning illegal incomes and evade taxes. The principal sources of black economy generation in activities like political funding and election expenses, real estate transactions, construction, tax evasion, government contracts including defence contracts and bureaucratic corruption will continue. Kautilya, writing more than 2000 years ago wrote, "Just as it is impossible not to taste honey or poison that one may find at the tip of one's tongue, so it is impossible for one dealing with government funds not to taste, at least a little bit, of King's wealth." So long as the bureaucracy has the discretionary power to endow or reduce punishment there will be bureaucratic corruption use discretion below benefits. Indeed the Government has stated that there will be additional policy initiatives to deal with the generation of black economy. If so, those measures should have been initiated first for, they are independent of demonetization, would have impacted on the process of generating black money and would not have inflicted the pain and misery to the poor and vulnerable.

To understand the significance of the policy it is important to understand the size of the black economy and extent of black economy held in cash. Unfortunately the estimates made by NIPFP, NIFM and NCAER for the government have not been placed in public domain yet. The World Bank has

estimated that the size of parallel economy at 20.7 percent (same as in Israel!) and the estimate by McKinsey is that it is 26 percent. Credit Suisse has estimated that wealth to GDP ratio in India is about 2. Assuming that the parallel economy has the same ratio and taking McKinsey estimate of the flow of black money, the black wealth works out to 50 per cent of GDP. This implies that the demonetised money Rs. 15.4 trillion (Rs. 15.4 lac crore) which is equivalent to 12 per cent of GDP is equivalent to 40 percent of the black economy or 20 per cent of the black wealth. Assuming that 15 per cent of the currency is not deposited with the banking system, the measure would have impacted about 4.5 per cent of the black economy or 2.5 per cent of the black wealth! This is quite consistent with the estimate contained in the White Paper brought out by the Ministry of Finance in 2012. The extent of cash revealed in various search and seizure operations between 2006 and 2012 was 3.8 to 7.3 per cent. Thus, the generous estimate is that only about 5-6 per cent of the black economy is held in cash and only a small proportion of this may not find its way into the banks. The important point to note is not all currency accumulations are illegal and only a small proportion of illegal wealth is held in cash. An overwhelming proportion of the black economy is either stashed abroad, held in gold, real estates, foreign currency and the volume of black wealth held in cash is less than 6 per cent according to the most generous estimate. This begs the question as to whether the Government should have adopted such a sledgehammer method to deal with 3 per cent of the black wealth.

Even within this, the black wealth is extinguished only to the extent that it does not actually find its way back into the banks. It is reported that already over Rs. 14.5 trillion of Rs. 15.4 trillion has been deposited in the banks and the volume of invalid currency not coming back into the system is yet to be seen. Admittedly, there are stories about round-tripping by measures like surrogate accounts to impregnate Jan Dhan accounts, laundering through the North-eastern route, converting by using paid labour and advance payments for services to be rendered in future. The capacity of income tax administration to unravel these remains to be seen and surely, quite a few of the cases will end up in already overburdened courts.

Is the banking system geared to meet this contingency? The very fact that the Reserve Bank of India has been coming out with more than one regulation every day speaks volumes for its capacity to cope with the problem. Admittedly, demonetization had to be done with utmost secrecy. Nevertheless, it is important to take the capacity of the system to cope and to work out the costs and benefits of the measure before embarking on the adventure. As mentioned above over 45 per cent of the people employed in India are in the informal sector and over 30 per cent are casual and contract labourers who receive their wages and pay for the purchases with cash who have had to lose their daily wage while standing in the Que. How long will this problem continue? It is estimated that even to remonetise about 12 trillion as against the prevailing 15.4 trillion, at the present capacity printing presses, it would take not less than 170 days. Hopefully the extent of suffering will abate with time but in the next two months the banks will continue to be crowded.

What are the short terms implications of this policy on the economy? Indeed, as far as common people are concerned this has led to unprecedented hardships and this reminds us of the era when the economy was scarcity hit and rationing was the order.In particular, the informal sector employees, small and medium enterprises and farmers. The informal sector in India provides 80 per cent of employment and contributes 45 per cent of GDP and the impact of cash crunch has been severe. The real income on the incomes will be known only when the third quarter GDP estimates are put out. This has also adversely impacted on trade, tourism, small-scale manufacturing and construction activities. The measure has been taken at a time when Rabi sowing is in progress and the cash starved farmers are finding it difficult to purchase seeds and fertilizers and in States like where there is a drought situation in

many parts, this comes as a double whammy. With the decline in money supply and volume of transactions (velocity of circulation), the quantity theory of money posits that at the prevailing rate of inflation, the income will decline sharply. If about 15 per cent of the demonetised currency is not deposited by December 31, the nominal GDP is estimated to decline by 1.7 percentage points. The deceleration impact on real GDP varies widely depending on the assumptions made but could be close to 2 per cent.

The release of the second quarter GDP shows that the economy has virtually been stagnant and actually all the sectors excepting agriculture have decelerated. In fact, the growth of Gross Value Added, which is a more appropriate measure than GDP, despite the better performance of agricultural sector in the second quarter has slowed down from 7.3 per cent in the first quarter to 7.1 in the second. With the GDP growth during the first two quarters averaging at 7.2 per cent, the RBI's growth forecast of 7.6 per cent average for the year can be realized only if the growth rate in the next two quarters average 8.2 per cent. With trade, tourism, small-scale manufacturing and construction activity coming to a standstill and with agricultural sectors starved of cash for purchasing seeds and fertilizers for Rabi sowing, the GDP in the economy will decelerate significantly. At a time when gross fixed capital formation relative to GDP has been showing a steady decline from 32 per cent to 29 per cent and growth is primarily fuelled by private consumption, the selective demonetisation has hurt the growth prospects significantly in this quarter and the next. The core sector growth has grown at a six month high of 6.6 per cent in October, particularly due to strong performance of steel (16.9%) and cement (6.2%). Demonetisation is likely to adversely impact on these sectors as the real estate transaction and construction have come to a grinding halt.

One positive implication is the gains to the government from the measure. To the extent that demonetised currency does not get deposited, the Reserve Banks, liability gets extinguished. The mismatch in asset- liability position can be corrected wither by extinguished the government securities (assets) or by issuing new notes (seigniorage). In the first instance, interest payments on government debt in the future gets reduced and in the second, RBI's profits will increase and it will pay larger dividends for the government which could be used for reducing the fiscal deficit or recapitalising the banks or additional spending. Unfortunately, there is no precedence to go by and a part of the gain may have to be kept in reserves. The other major gain may be that excess liquidity could prompt reduction in the interest rate which could translate into lower deposit rates. The additional market stabilization bonds will to some extent arrest this. However, lower lending rate could trigger economic activity. The important issue therefore is how much of the cash will not return to the banking system, how much impact it will have on the lending rates, how much of that will be transmitted and finally, whether this will result in more lending at a time when the banking system is overburdened with the overhang of the non-performing assets and industry is yet to get ready to make new investments and excess capacity continues to exist.

The long term benefits from the measure will be formalisation of the economy by switching over to digital transactions. At present 98 percent of the volume of transactions and 68 per cent of the values are transacted in cash and even if the number of cash transactions are reduced by 10 per cent in the next few months, the country will continue to be predominantly cash dependent. Even that is a questionable assumption because, in a country where there are 1.5 crore shops the point of sale devices are just 14.6 lac. There are issues power availability, internet connectivity and bandwidth. Nevertheless, to the extent it promotes formalisation, it is a benefit but the question is, whether such a sledgehammer method was called for. There is also an issue of potential loss of credibility, for the measure penalizes not just those who hole their ill-gotten wealth in cash but the entire population. Can this be a deterrent for keeping the black

incomes and wealth in cash? Now that we have Rs. 2000 notes, keeping the ill-gotten money in hard currency has become easier! Well, we will have to live with the decision for which we are not a party! We will also have to brace up to the situation there will be a number of sophisticated digital frauds.

It has been mentioned that demonetisation is one of the series of measures that will be taken to deal with the menace of black economy. Since these measures are independent, it would have been more appropriate to begin with those measures that adversely impact on the generation of black money rather than starting with the sledgehammer measure. If the government is serious about tacking the menace of black money, it should begin with cleaning political funding. The high moral ground taken by the Prime Minister will be amply justified if the ruling party throws open its books of accounts to independent audit and subject itself to the Right to Information Act. In 2013, the Central Information Commission ruled that political parties are public authorities and yet, all the six national parties (except the left) closed their ranks to violate the ruling by rejecting the right to information. The donations to political parties have continued to be opaque and the limits on election expenses are violated with impunity. The Election Commission has laid down the ceiling on election expenses at Rs. 70 lac for a Parliament seat and Rs. 28 lac for a seat in Legislature for the candidates, but there is no restriction on the spending by political parties. The Hindu media studies report estimated that as against declaration of Rs. 7000 crore by candidates in 2014 General Elections, the estimated expenditure was Rs. 30000 crore. Indeed, as Roosevelt famously said, "Carry a big stick and you can speak softly!"

Besides the reform of political funding, the abolition of the capital gains tax and reduction of stamp duties by the States to 3 per cent will substantially reduce the black money generated in the real estate transactions. Similarly, simplification of laws and procedures to reduce the discretion by bureaucracy will help a great deal in reducing bureaucratic corruption. The clearances required for construction abound. We keep reading about the huge corruption in defence purchases. We are well aware of the goings on in the Medical Council of India and despite the Rajya Sabha report severely criticising its functioning and an important report by the NITI revealing much that is wrong andmaking important recommendations, not much has been done. Hope, the government will act on it sooner than later. The situation is not very different in the case of higher and technical education.

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Make in India- An Initiative for Sustainable Development

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Abstract: Experts, not only at national but at global level believe that India has potential to become super power in near future because of demographic dividend and because of growing economy. But it has overcome and resolves certain issues like low productivity, low performance, lack of work skills among the youths, lack of commitment and so on. To overcome these challenges the present union government has taken certain initiatives including 'Make in India'initiative. The initiative Make in India intends to develop and create favorable atmosphere in the country to motivate Indian and foreign entrepreneur to invest in certain units of manufacturing sector to generate employment for the youths. Certain schemes are declared to improve productivity of manufacturing and agricultural sectors and to increase contribution to gross domestic product (GDP).If Make in India program implemented properly,it can become the right initiative of the government for sustainable development of India.

Key Words: Make in India, Demographic Dividend, Manufacturing Sector, Gross Domestic Product, Manufacturing Skill, Opportunities. Foreign Direct Investment, Key Sectors, Industrialization, Sustainable Development.

1.0 INTRODUCTION:

India is recognized in the world as a country of larges young population which has enormous working capacity and huge productivity potentials. It has the third largest higher education system with more than 30 billion enrolment of learners. But it has very low productivity in industrial and agricultural sector contributing around 16 percent and 4 percent respectively to the gross domestic product (GDP). The country has to increase its productivity in these two important sectors and has to create its own identity at the global level. Most productive countries in the world are ableto generate very high Gross Domestic Product (GDP) having less population and less percentage of working population as compared to India. As per the analysis made by the Organization for Economic Cooperation and Development (OECD), most productive country in the world was able to generate 45.71 pound per hour per person with 7 hours of working per day during the year 2014-15. Whereas, India was able to produce only around 2.686 British pound per hour per person for 8 hours of working in a day during the same year. Most productive countries in the world have been giving importance to human capital and quality education due to which those countries have veryhigh level of innovation and low unemployment. India being a country of huge young population by giving priority to quality education to transform the youngsters into innovative working class can become a part of most productive countries in the world. India has huge potentials for its development with the help of its population, particularly young population. It has huge area of agricultural land with favorable climate for agricultural production and two third of its population works in agricultural industry. India is recognized as one of those few countries who have a capacity to develop and launch satellites in the space. Indian economy has become one of the fastest growing in the world with a growth rate of around 6 percent per annum. Work force in India is the second largest in the world with 486.6 million workers. It isthe second most favourable outsourcing destination in the world after United States of America and third largest smart phone users after China and United States. India exported around 25 million Indian intellectuals who are working in foreign countries and contributing for economy of other countries. It is the biggest market place for the products of developed countries. Hence entrepreneurs and business houses from developed countries are interested

in investingtheir resources in India. It is an opportunity to India to exploit the situation to make use of foreign resources for industrial and economic development to achieve the concept of Make in India. Rural India is urbanizing and around one third of the total population stays in urban areas. Standard of living and the needs of urban middle class are improving and there is increasing demand for quality products and services and spending capacity of Indian urbaniteshas also been increasing due to increased earnings.The significance of foreign trade has been admitted from the inception of modern economic thinking. It has gained more importance when classical economists propounded the theory of comparative cost advantage which tellsus that international trade is favourable for the trading partners (Mahajan, 1992). Nations can improve their economic conditions by taking part in foreign trade. The foreign trade policy of the country is characterized by a continuous and creative renewal of its goals, means, and methods in accordance with the concrete requirements of the national economy. In a most general sense, the foreign trade policy of a given country consists in a system of means and methods used to achieve its basic economic goals in its trade relations with foreign countries. This system is determined by the existing concrete historical, socio-political, and economic conditions (Penko, 1970).Make in India is a major new national programme of the Government of India designed to facilitate investment, foster innovation, enhance skill development, protect intellectual property and build best in class manufacturing infrastructure in the country. The primary objective of this initiative is to attract investments from across the globe and strengthen India's manufacturing sector. It is being led by the Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India. The Make in India programme is very important for the economic growth of India as it aims at utilizing the existing Indian talent base, creating additional employment opportunities and empowering secondary and tertiary sector. The programme also aims at improving India's rank on the Ease of Doing Business index by eliminating the unnecessary laws and regulations, making bureaucratic processes easier, making the government more transparent, responsive and accountable. Make in India initiative is an honest attempt to revive the fortunes of Industry / Manufacturing sector. Revival of Industry sector is key to revival of Indian economy. In short, we need to increase the contribution of Industry / Manufacturing sector in Indian GDP. It doesn't mean that Government will loose focus in service sector. Digital India will help to maintain contribution of Service sector but manufacturing / industry sector has to grow at much faster pace to outpace service sector. It is not an easy task. Government should target to increase contribution of Industry /manufacturing from existing 16% to 35% in next 5 years. Make in India will help to achieve this goal but it comes with its own set of challenges. Manufacturing is capital and resources intensive sector which will require conducive environment for business. Labour issues will be major hurdle which the government is trying to handle through labour reforms. Besides this, a major push is required to upgrade infrastructure of country. Government has also set up10,000 Crore start up fund to encourage entrepreneurship. Basically objective is to create ecosystem of small industries in periphery of manufacturing hub similar to Maruti model. Government will provide all the approvals under Make in India initiate in a time bound manner through single online portal. The logo for the Make In India campaign is a an elegant lion, inspired by the Ashoka Chakra and designed to represent India's success in all spheres.

2.0 REVIEW OF LITERATURE:

Since the year 2009, manufacturing sector of India is showing reverse trend with its share of GDP falling from2.2 to 2.0 (Bhattacharya, Bruce, and Mukherjee, 2014). It is undoubtedly true that, if India aspires to be a powerfulnation by 2030, it needs a strong sustainable growth which can only be achieved if India creates a strongmanufacturing base (Shah, 2013).The existing labour laws are less employment friendly and biased towards theorganized labour force; they protect employment and do not encourage employment or employability;

they give scopefor illegitimate demands of the Trade Unions and are a major cause for greater acceptance of capital-intensivemethods in the organized sector (Datta and Milly, 2007). Employers complain of major skills gaps, and fewer than25% of graduates are estimated to be employable in manufacturing sector. ("The Manufacturing Plan,").India'sunderdeveloped infrastructure is the top most issue faced by Japanese manufacturers ("Make In India: Opportunitiesand Challenges," 2015).Senior managers of manufacturing companies consistently rank difficulties in acquiring landas one of the top priority areas to be tackled by the government (Bhattacharya, Bruce, and Mukherjee, 2014). Theshare of manufactured goods in total merchandise exports fell from 77% in 2003 to 65% in 2013 (Joumard, Sila, andMorgavi, 2015). As per the statement of General Dwight D.Eisenhower the former President of USA, "What counts is not necessarily the size of the dog in the fight – it's the size of the fight in the dog".'Make in India' is a dream campaign launched by the Prime Minister of India to boost this sectorso that India can present its candidature for becoming the Global Leader (Chattopadhyay, 2015).

3.0 OBJECTIVES OF THE STUDY:

(i).To study Make in India program of Government as an initiative for Sustainable Development

(ii) To study the challenges in Make in India and to suggest the remedies to overcome the challenges.

4.0 CONCEPTUAL BACKGROUND:

4.1 MAKE IN INDIA:

India in-spite of having potentials to grow and capacity to become a developed country in the world it has not been able to exploit it's potentials to the fuller extent. There are different parameters used to measure the development of a country and the rate of Gross Domestic Product (GDP). It is one of the important parameter to measure economicdevelopment. Indian economy during the year 2012-13 was growing at a rate of around 4.5 percent which was lowestin a decade. This lowest growth rate was mainly due to poor performance of manufacturing and agriculture sectors.And such lowest economic growth rate created confusions for the global investors whether investment in Indian is anopportunity or risk. To remove the confusion and to create confidence among the foreign investors and Indianentrepreneurs India central government launched a scheme Make in Indiain September 2014.It is initiative for the sustainable development of the nation.

4.2 SUSTAINABLE DEVELOPMENT:

Sustainable development is defined as a process of meeting humandevelopment goals while sustaining the ability of natural systems to continue to provide the natural resources and ecosystem services upon which the economy and society depends. While the modern concept of sustainable development is derived most strongly from 1987. In Brundtland Report, it is rooted in earlier ideas about sustainable forest management and twentieth century environmental concerns. As the concept developed, it has shifted to focus more on economic development, social development and environmental protection for future generations.

Sustainable development is the organizing principle for sustaining finite resources necessary to provide for the needs of future generations of life on the planet. It is a process that envisions a desirable future state for human societies in which living conditions and resource-use continue to meet human needs without undermining the "integrity, stability and beauty" of natural biotic systems. It was suggested that "the term 'sustainability' should be viewed as humanity's target goal of human-ecosystem equilibrium while 'sustainable development' refers to the holistic approach and temporal processes that lead us to the end point of sustainability."

5.0 OBJECTIVES OF MAKE IN INDIA:

Make in India is a scheme launched by central government with specific objective mainly to boost Sustainable development of India by providing certain facilities and incentives to the Indian and foreign investors. Some of the important objectives are given as

under:

1. Encourage multi-national and national companies to manufacture products and services in India.
2. Creation of jobs for unemployed youths and skills enhancement for 25 identified sectors of economy which are high employment generating sectors.
3. Aiming at production of high quality and high standard products of global level standards and minimizing the impact on the environment.
4. Attract foreign capital and technological investment in industrial sector.
5. Promoting India as an investment destination and establishing the country as a global hub for manufacturing, design and innovation.
6. Relaxation of rules and regulations and simplification of licensing procedure.

5.1 INITIATIVES:

1. Under Make in India scheme the central government has taken some specific and clear initiatives to achieve the important objective of demographic dividend.
2. Established a separate department "Department of Industrial Policy and Promotion" (DIPP) to work out on the initiatives for make in India.
3. Established Investor Facilitation Cell (IFC) in September 2014 to assist investors in seeking regulatory approvals, handling services through the pre-investment phase, execution and after care support
4. Various important sectors have been opened for investments like Defence, Indian Railways, Space etc. with relaxed policies to facilitate for investments and ease of doing business
5. Opening up of Industrial corridors across various regions of the country for better transport system to carry the goods. Central government has already declared development of five corridors in the country. (Delhi – Mumbai,Amritsar – Kolkata, Bangluru – Mumbai, Chennai- Bangulur and Vizag – Channai). Industrial corridors build and provide developed land and quality infrastructure for industrial townships, creation of areas with cluster of manufacturing or industry. These corridors will be having rail and road connectivity for faster movement of material at affordable cost.
6. Identified 25 industrial units which are labour intensive and can generate more jobs for demographic dividend.
7. Simplified labour laws mainly for small and medium scale enterprises to minimize visits of inspectors to the factories.

5.2 MAJOR HIGHLIGHTS OF THE MAKE IN INDIA PLANS ARE AS FOLLOW:

(i). Invest India cell: An investor facilitation cell set up by the government will act as the first reference point for guiding foreign investors on all aspects of regulatory and policy issues and to assist them in obtaining regulatory clearances. The cell will also provide assistance to foreign investors from the time of their arrival in the country to the time of their departure. The information and facts that potential investors need for each sector have been compiled in the brochures.

(ii). Consolidated services and faster security clearances: All central government services are being integrated with an e-Biz single window online portal while states have been advised to introduce self-certification. The ministry of home affairs has been asked to give all security clearances to investment proposals within 3 months.

(iii). Dedicated portal for business queries: A dedicated cell has been created to answer queries from business entities through a newly created web portal ([http://www. makeinindia. com). The back-end support team of the cell would answer specific queries within 72 hours. The portal also boasts of an exhaustive list of FAQs answers.

(iv) Interactions with the users/visitors: A pro-active approach will be deployed to track visitors for their geographical location, interest and real time user behaviour. Subsequent visits will be customized for the visitor based on the information collected. Visitors registered on the website or raising queries will be followed up with relevant information and newsletter.

(v). Easing policies and laws: A vast number of defence items have been de-licensed and the validity of industrial license has been extended to three years.

(vi). Labour – Skill Development: With a view to providing flexibility in working hours and increased intake of apprentices for on the job training, the government plans to introduce a single labour law for small industries. An advisory has been sent to all departments/state governments to simplify and rationalize regulatory environment (which includes online filing of all returns in a unified form).

5.3 KEY SECTORS:

Make in India focuses on the following twenty-five sectors of the economy:
1.Automobiles 2. Automobile Components 3.Aviation 4.Biotechnology 5.Chemicals 6.Construction 7.Defence manufacturing 8.Electrical Machinery 9.Electronic systems 10.Food Processing 11.Information Technology and Business Process Management 12.Leather 13.Media and Entertainment 14.Mining 15.Oil and Gas
16. Pharmaceuticals
17.Ports and Shipping 18.Railways 19.Renewable Energy 20. Roads and Highways 21.Space and astronomy
22. Textiles and Garments 23. Thermal Power 24. Tourism and Hospitality 25. Wellness.

5.4 FOREIGN DIRECT INVESTMENT:

Foreign direct investment (FDI) in India is the major monetary source for economic development in India. Foreign companies invest directly in fast growing private Indian businesses to take benefits of cheaper wages and changing business environment of India. Economic liberalization started in India in wake of the 1991 economic crisis and since then FDI has steadily increased in India. It were Manmohan Singh and P. V. Narasimha Rao who brought FDI in India, which subsequently generated more than one crore jobs. According to the Financial Times, in 2015 India overtook China and the US as the top destination for the Foreign Direct Investment. In first half of the 2015, India attracted investment of $31 billion compared to $28 billion and $27 billion of China and the US respectively. As per the new Govt. Policy 100% FDI is permitted in all the above sectors, except for space (74%), defence (49%) and newsmedia (26%).Foreign direct investment (FDI) in India has received a dramatic boost from the launch of the Make in India initiative, according to the latest Economic Survey. After the September 2014 launch of the initiative, which seeks to promote manufacturing and attract foreign investment, there was an almost 40% increase in FDI inflows from October 2014 to June 2015 over the year-ago period. Under the programme, the government has awarded 56 defence manufacturing permits to private sector entities in the past one year, after allowing 49% FDI in the defence sector in August 2014, compared with 47 granted in the preceding three years.Entities from several countries such as Japan, China, France and South Korea announced their intention to invest in India in various industrial and infrastructure projects.
The concept of Make in India has really succeeded as it added more employment. With this, India has now become a vibrant market for manufacturers. For the products that are made out of the initiative, we have a strong domestic market with increasing demand The major objectives behind the Make in India initiative are job creation and skill enhancement in 25 sectors of the economy, including automobiles, aviation, biotechnology, chemicals, construction, defence manufacturing, electrical machinery, electronic systems and mining.According to the Department of Industrial Policy and Promotion, FDI inflows under the approval route (which requires prior government permission) increased by 87% during 2014-15 with an inflow of $2.22 billion. More than90% of FDI was through the automatic route. Also in 2014-15, foreign institutional investment rose by an unprecedented 71.7% to $40.92 billion.

5.4.1 SOME MAJOR SECTORS FOR FOREIGN DIRECT INVESTMENT:

During 2014–15, India received most of its FDI from Mauritius, Singapore, Netherlands, Japan and the US. On 25 September 2014, Government of India launched Make in India initiative in which policy statement on

25sectors were released with relaxed norms on each sector. Following are some of major sectors for Foreign Direct Investment.

(i). Infrastructure: 10% of India's GDP is based on construction activity. Indian government has plans to invest $1trillion on infrastructure from 2012–2017. 40% of this $1 trillion is to be funded by private sector. 100% FDI under automatic route is permitted in construction sector for cities and townships.

(ii). Automotive: FDI in automotive sector was increased by 89% between April 2014 to February 2015. India is 7thlargest producer of vehicles in the world with 17.5 million vehicles annually. 100% FDI is permitted in this sector via automatic route. Automobiles shares 7% of the India's GDP.

(iii). Pharmaceuticals: Indian pharmaceutical market is 3rd largest in terms of volume and 13th largest in terms of value. Indian pharma industry is expected to grow at 20% compound annual growth rate from 2015 to 2020.100% FDI is permitted in this sector.

(iv). Service: FDI in service sector was increased by 46% in 2014–15. Service sector includes banking, insurance,outsourcing, research and development, courier and technology testing. FDI limit in insurance sector was raisedfrom 26% to 49% in 2014.

(v). Railways: 100% FDI is allowed under automatic route in most of areas of railway, other than the operations, like High speed train, railway electrification, passenger terminal, mass rapid transport systems etc. Mumbai-Ahemdabad high speed corridor project is single largest railway project in India, other being CSTM-Panvelsuburban corridor. Foreign investment more than 90,000 crore (US$13 billion) is expected in these projects.

(vi) Chemicals: Chemical industry of India earned revenue of $155–160 billion in 2013. 100% FDI is allowed inChemical sector under automatic route. Except Hydrocynic acid, Phosgene, Isocynates and their derivatives,production of all other chemicals is de-licensed in India. India's share in global specialty chemical industry isexpected to rise from 2.8% in 2013 to 6–7% in 2023.

(vii). Textile: Textile is one major contributor to India's export. Nearly 11% of India's total export is textile. Thissector has attracted about $1647 million from April 2000 to May 2015. 100% FDI is allowed under automaticroute During year 2013–14, FDI in textile sector was increased by 91%. Indian textile industry is expected to reach up to $141 billion till 2021.

(viii). Airlines: Foreign investment in a scheduled or regional air transport service or domestic scheduled passenger airline is permitted to 100, with FDI up to 49% permitted under automatic route and beyond 49% throughgovernment approval. For airport modernization, 100 % FDI will be allowed for existing airport under automatic route.

6.0 THE MAKE IN INDIA VISION:

A state-wise analysis of FDI inflows by the economic survey shows that Delhi, Haryana, Maharashtra,Karnataka, Tamil Nadu, Gujarat and Andhra Pradesh together attracted more than 70% of total FDI inflows to India during the last 15 years.States with vast natural resources like Jharkhand, Bihar, Madhya Pradesh, Chhattisgarh and Odisha have laggedbehind.

"To make the recently launched Make in India initiative a success, the states will have a critical role infacilitating FDI in different sectors," the survey said.Singapore, Mauritius, the Netherlands and the US account for the major share of FDI inflows into India. Out of FDI equity inflows of $24.8 billion during 2015-16 (April-November), more than 60% came from two geographically small countries-Singapore and Mauritius."These inflows need perhaps to be examined more closely to determine whether they constitute actual investmentor are diversions from other sources to avail of tax benefits under the Double Tax Avoidance Agreement that thesecountries have with India," the economic survey said.

6.1 NEW INFRASTRUCTURE

Drive economic growth and improve the quality of life of citizens by enabling industrial

and urban infrastructure development

6.2 INDUSTRIALIZATION AND URBANIZATION

1. Industrial Corridors and 21 new nodal Industrial Cities to be developed:
- Delhi-Mumbai Industrial Corridor (DMIC)
- Chennai-Bengaluru Industrial Corridor (CBIC)
- Bengaluru-Mumbai Economic Corridor (BMEC)
- Vizag-Chennai Industrial Corridor (VCIC)
- Amritsar Kolkata Industrial Corridor (AKIC)

These 21 new nodal cities will be having advantages like; Large land parcels, Planned communities, ICT enabledinfrastructure, Sustainable living, Excellent connectivity-Road, Rail etc.Delhi-Mumbai Industrial Corridor is a mega infra-structure project of USD 100 billion with financial and technical aids from Japan, covering an overall length of 1,483 km. Dedicated Freight Corridor (DFC) of 1504 kmas the backbone, DMIC will intersect 7 states namely Delhi, Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra

2. Doubling of Network of Roads by 2020 and Construction of 15,000 km new roads by 2017 is targeted undervarious projects

3. Railway projects such as Setting up of New Railway Stations, Modernization of Rolling stock, High Speed Railways, Port Mine connectivity etc. have been initiated for modernizing and better connectivity of Indian Railways.

4. Eastern Dedicated Freight Corridor of 1840 km length and Western Dedicated Freight Corridor of 1504 kmlength is under construction as well as many projects are under planning stage.

5. Sagar Mala project is started by the Govt. of India to modernize India's Ports and Inland waterways so that portal development can be augmented and coastlines can be developed to contribute in India's growth, providing aproject outlay of US$ 10 billion

6. The Smart Cities Mission having a project outlay of US$ 7.69 billion is progressing, with Special Purpose Vehicles for 19 cities already set up.

7. Aviation industry with target of becoming 3rd largest by 2030 and to cater international and domestic traffic.

7.0 NEW DESIGN, INNOVATION AND RESEARCH AND DEVELOPMENT:

Investment in Innovation and Rand D offers large payoffs in terms of economic growth and competitiveness in global economy.

1. 3rd largest tech driven Start-up ecosystem globally and Tech Startups in India are expected to reach 11,500 in 2020 from 4,300 in 2015.

2. "Start-up India" initiative was launched aiming at fostering entrepreneurship and promoting innovation by creating an ecosystem that is conducive for growth of Start-ups.

3. Intellectual Property Rights Policy launched in May 2016 having salient features such as :Strong TRIPS compliant policy framework, Ease of Access using World-class IT enabled patent offices Internationally acclaimed systems for International Searching and Preliminary Examination of patent applications, Augmentation of Manpower: 721 additional technically competent Patent Examiners appointed, Time for examination of patents to come down to 18 months from 7 years by March, 2018,and Time for examination of trademarks to come down to 1 month from 13 months by March, 2017.

8.0 EASE OF DOING BUSINESS:

Improved business processes and procedures open up new avenues of opportunities and create confidence among entrepreneurs as a result of which India moved up 12 places in the World Bank's Doing Business ranking 2016 released in October, 2015

Main features are as follows:
- Incorporation of a company reduced to 1 day

instead of 10 days.

- Power connection provided within a mandated time frame of 15 days instead of 180 days.
- Number of documents for exports and imports reduced from 11 to 3.
- Validity of industrial license extended to 7 years from 3 years.
- Bankruptcy Code 2015 has been changed that the new bankruptcy law, providing for simple and time-bound insolvency process to be operational by 2017.
- Goods and Services Tax – Single tax framework will be implemented by July, 2017.
- Permanent Residency Status for foreign investors for 10 years is allowed.

8.1 OTHER REFORMS:

1. Online portals for Employees State Insurance Corporation (ESIC) and Employees Provident Fund Organization(EPFO) for: Real-time registration Payments through 56 accredited banks Online application process for environmental and forest clearances etc are launched.

2. Department of Commerce, Government of India has launched Indian Trade Portal. Important feature of this portal is to be a single point for relevant information on measures other than tariff called the non-tariff measures like standards, technical regulations, conformity assessment procedures, sanitary and Phytosanitary measures which may affect trade adversely.

3. An Investor Facilitation Cell has been created in 'Invest India' to guide, assist and hand hold investors during the entire life-cycle of the business.

4. The Department of Industrial Policy and Promotion has also set up as Japan Plus and Korea Plus. They are special management teams to facilitate and fast track investment proposals from Japan and South Korea respectively.

9.0 CHALLENGES OF MAKE IN INDIA:

To make use of demographic dividend under the scheme of Make in India, the following are the important challenges to be resolved.

- **Where is the capital ? :** Huge monetary recourses are required to build and develop global level infrastructure for attracting foreign capital. Public sector banks have large amount of non-performing assets (NPAs) and taking precautionary measures while sanctioning new loans to the domestic entrepreneurs. Foreign investors are expecting that American federal bank may increase interest rate so that they can invest their investment in American economy

- **Reducing Jobs:** Large number of manufacturing industrial units in the emerging sector is making use of Robotson large scale at the place of human employees. Robots are able to give high standard products with zero defectswhich is not possible by workers. Such use of Robots is reducing manpower requirement in manufacturing units leading to increase in jobless people.

- **Unionism:** An important challenge in Indian organized industrial sector is how to handle the unionism mainly in public sector undertakings. Unions and union leaders have importance on self-interest rather than survival andgrowth of industrial units. Even the unionism has percolated in private organized sector and has resulted inwastage of man hours and wastage of physical resources

- **Where is skill?:** Though India is the country of youngest population in the world and around 15 percent of themare graduates but very few of them have the skills to take up some productive work. There is enormous demandfor skill oriented youths in the job market and only around 10 to 15 percent of the graduates have certain skills for jobs. National Skills Development Council has estimated that around 120 million skilled manpower is required for Indian job market. The present higher education system is underperforming in development of skills.Additional resources and institutes are required to train and develop the skilled manpower.

- **Low Research and Development:** Research and development (R and D) has become an integral activity of any industrial unit not only for development and growth of an organization but also for the survival in global competition. Huge capital investment is required for research and development in Industrial sector to sustain inglobal competition. But it has become a challenge to generate resources and make investment in research and development in Indian industries to achieve the objective of Make in India.

- **Red-tapism:** Indian bureaucracy has its own style of working which leads in delay in getting permission, no objection certificate from the government department. It is a system where excessive rules, regulations, procedures, excessive paper work etc leads delay in decision making and de-motivates the entrepreneurs for investments..

- **Ease of Doing Business**: Ease of doing business is the major obstacle to the growth of the manufacturing sector. The World Bank's "Ease of doing Business 2015" report has ranked India at 142nd out of 189 countries for its ease of doing business. The "ease of doing business" covers ease in starting a business, enforcing contracts,registering property, gaining access to electricity, paying taxes, etc. The easier and simple process gives a country a good rank. The more the complex and time consuming process the poorer is the rank given. It is amatter of great concern that more than two decades have passed since the commencement of economic reformsand still India lags behind in providing business encouraging environment and the other facilities as are providedby other countries of the world. In the exports section also, getting approvals require long time and huge cost. Allthese obstacles discourage the growth of manufacturing sector.

- **Environment Clearance:** Slogan of "Go Green" in the present day requires the businesses to be environmentally sustainable. 'Being green' should be the main focus of the businesses and should be taken as aduty by the manufacturing sector to preserve the environment. But the situation is challenging for MSMEs whouse obsolete and inefficient technologies. There is an urgent need to develop new techniques that help inprotecting the environment. As many as 17 highly polluting industries have been identified by the CentralPollution Control Board, the majority of which are manufacturing industries. MSMEs, in particular, cansignificantly affect the environment as the technology used by them is generally obsolete and inefficient. About70% of the total industrial pollution load of India is attributed to MSMEs.

- **Infrastructure**: The growth of manufacturing sector is highly dependent on its quality of infrastructure. The World Economic Forum's Global Competitiveness Report has given 81st rank to India out of 140 countries for its deficiency in infrastructure. Quality infrastructure is one of the top requirements for the success of "Make in India". India's underdeveloped infrastructure is the top most issue faced by Japanese manufacturers. Roadways in India pose a big challenge for the growth of the country and successive governments are continuously failingto implement their electoral promises. The projects of railways department suffer from even longer delays as compared to road sector. Also, rail transport is 70% more expensive in India as compared to the United Stateswhich makes it inefficient. There is a nationwide scarcity in terms of power generation. About 48% of firmssuffer from power cuts for more than 5 hours in a week and around 60% of firms are ready to pay more for continuous and reliable supply. In order to promote the foreign trade, ports play a very important role. There is ascarcity of modernized ports and those that exist, are using 90% of their capacity as against an average of70%international usage.

- **Labour Laws**: India's labour regulations are among the world's most stringent and complex, and over time havelimited the growth of the formal manufacturing sector. The present labour laws favour the

employees and protect employment and also a big tool in the hands of trade unions to raise their bargaining power giving a way to gofor capital intensive methods in the organized sector. This adversely affects the expansion of employment andgenerating jobs. There are more than 200 laws regarding conditions of employment, social security, health,safety, welfare, trade unions, industrial and labour disputes, etc. Another problem is that they have lost relevance of most of the labour regulations in the present day. As per the survey of CII-KPMG 2014 in India, about 47% of therespondents stated moderate to major difficulty in complying with labour laws.

- **Land Acquisition**: Land acquisition is another major issue involving lengthy and cumbersome process. It is one of the main reasons for delay of the projects. About 70% of the infrastructure projects got delayed due to it. It takes 14 months on an average to acquire land. Another difficulty is to establish the land title due to incomplete land records which becomes a cause of litigation later. Also the owners of the land are often inadequatelycompensated which again leads to disputes and delays. As per the survey conducted by CII-KPMG among thevarious causes of difficulty in acquiring lands, the unsecured land title is the major problem. There are somecritical issues that pose challenges to obtaining land for industrial development. These include small landholdings, inaccurate, outdated land records and restrictions on usage of land, etc.

- **Micro Small and Medium Enterprises**: The Micro, Small and Medium Enterprises (MSME) of India play animportant role in providing huge employment and contributing considerably in manufacturing output. Theirpresence in the rural areas checks the migration of workforce to urban areas. They are the ancillary units to thelarge industries providing them various consumables and other services. This sector contributes nearly 45% ofmanufacturing output and 40% of total exports of the country and employs around 69 million persons in over 29million units throughout the country. Despite such a big contribution from MSMEs there are various challenges still suffered by them in the areas of skill, credit, infrastructure, technology, etc. MSMEs are the highest creditdefaulters which accounts for 5% of advances for the last three years. Even the process of providing loans tothese enterprises is costly as there is a need of intensive field work and high levels of scrutiny for the processingof each application.

- **Exports**: Exports play a major role in the growth of the manufacturing sector. But the share of India in global merchandise exports has been very low as compared to other countries. Whereas the developing countries' share in global merchandise exports rose from 24% in 1990 to 38% in 2006 and 45% in 2013. Of India's export basket,62% comprise of manufacturing exports (as of 2013) which is the lowest among most Asian economies with China having 94%, Japan 88%, Philippines 77%, Singapore.

10.0 MAKE IN INDIA AND SUSTAINABLE DEVELOPMENT;

(i). India's GDP has grown at around 7.9% between 2003-2012. This is likely to be continued for next 5 years withan average growth rate of 7.7% p.a. till 2017. This requires support from all types of business activities which can be taken up under Make in India programme.

(ii). In spite of global financial crisis the Govt. has set up a target of 8% growth rate during the current five year plan2012-2017.

(iii). There is a shift of population of working age group from working on farm to working in service or industrial sector. This is stated as India's demographic dividend. At the same time there is increase in disposable incomeswhich need availability of services and industrial products. By make in India this can be made possible.

(iv)The foreign investors cannot ignore the large size of Indian market and at the same

time the appropriate industrialenvironment created by the new government.

(v)Some industrialists have started the manufacturing of consumer need based products in India. E.g. Nano car by Tata Motors, in expensive hand held electro cardiogram (ECG) by GE Health Care and Water purifiers by Tata Chemicals. Such other productions are to be launched by foreign investors in India.

(vi)The increased income of the consumer should be properly tapped for the development of consumable marketwhich will result in sustainable growth.

(vii) Research and Innovation in industrial and services sector will help to increase the quality and reduce the prices.This will create the consumer friendly atmosphere in the market. Present govt. has purposefully set aside 3% of the total revenue on Research and Innovative activities.

(viii) In agricultural sector because of Make in India programme there is a concentration of almost utilization of cultivable land. This is also possible because of efficient water and power facilities. In the new Govt.'s planned programme special attention is given to this aspect.

(ix) Because of Make in India programme there will be removal of excess work force on agriculture and deploying that workforce for developmental activities in service and industrial sector.

11.0 OVERCOMING THE CHALLENGES OF MAKE IN INDIA:

India has no second option other than Make in India to grow in the emerging economy and to make the scheme Make in India work well the challenges are to be faced with following means :

- **Improve Higher Education:** First priority should be given to improve the performance of present higher education system and improve the performance of institutes of higher education. This is the sector which supplies manpower to industrial and other sectors of the economy. If the rate of employability is increased from 15 percent to 20 percent there will create additional manpower of around 1.5 million who will be having employability skills and can be absorbed directly by the employment sector. The institutes of higher education have basic infrastructure and manpower, by adding some modern techniques of skill development which can create additional manpower with very low cost. Department of higher education of both central and state governments with the help of regulatory bodies like UGC, Universities, AICTE can make mandatory to the institutes of higher education to improve employability among the learners.

- **Establishment of Specialized Institutes:** Well-equipped institutes with highly specialized experts in training the trainers can help the create a pool of trainers from the institutes of higher education who can assist in developing employability among the graduates. These institutes will design the curriculum of skill development, willdevelop techniques of training and conduct actual training for the trainers

- **Reforms in Rules and Regulations:** Rules and regulations are basically to bring some discipline and uniformityin the system so that the system will work smoothly for the welfare of the society. Rules need to be changed and reformed based on the needs of the society and changing conditions. The government of Telangana has recently made a provision to penalize an officer who causes unnecessary delays in projects on the basis of Rs. 1000/ perday.

- **Good Governance:** It is the primary responsibility of the government and governing is to meet the needs of the society or people. Government and governing bodies are for the people and need to establish a system which is transparent and for the welfare of the society as whole.

- **Accountability:** There is a phenomenon in

Indian organized sector who is accountable for non-performance or underperformance. Each stake-holder of the organization passes the buck on others for failure or non-performance. Organizations, whether industrial and commercial use of resources of the society, but very little is given back to the society or nothing is given to the society they should checked and should be punished. Many businessmen have collected money from the public,have taken loan from the bank for the purpose of business and they do not repay to the money lenders. Who is accountable for such cases? Ultimately common citizen are the sufferer who are real source of capital.

12.0 CONCLUSION:

Make in India initiative of the Govt. is to change the growth dynamics of the economy.Nearly 2 decades of economic liberalization, coupled with huge domestic demand, a growing middle class, a youth population and high return on Investment make India an incredible Investment destination. In conclusion, we have to accept the fact that advancing manufacturing growth will be essential if India wants to transform itself into a high-income economy. We cannot rely on service sector alone to fulfill this ambition. At the same time, we will also have to focus on skilling our youth population. Many governments in the past have announced lofty policies to transform India's manufacturing sector but few things have changed on the ground. The 'Make in India'programme may have the potential to transform India into a manufacturing hub.But if we want to achieve that potential,the government would have to move beyond rhetoric to actual implementation of the announced policies. A good start has been taken by the present Government and yet has to need few important changes to improve manufacturing sector. These years are crucial to implement the announcement well and seizing the opportunity to make the right investments which will do sustainable development of the country.

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An Empirical Analysis of Post-Purchase Behaviour of Consumer's and its Impact on Satisfaction Towards ITC Personal Care Products

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Abstract: The Fast Moving Consumer Goods (FMCG) industry in India is the largest sector and over the years has been growing at a very high rate, the market is expected to grow at US$ 110.4 billion during 2012-2020. Changing the lifestyles of Consumer's has been the key growth drivers for the Consumer market. India's policies and regulatory framework is developed recently to provide relaxation of license rules and approval of 51 per cent foreign direct investment (FDI) in multi-brand and 100 per cent in single-brand retailing. With this increasing market the Consumer satisfaction and behaviour has attracted much attention in recent years. Various organizations are doing research and analysis in understanding the consumers, and their behaviour and satisfaction level on personal care products. Satisfaction is an outcome of purchase and use of product by the buyer's. Measures of Consumer satisfaction may potentially be good, concurrent, and leading predictors of sales, competitive markets, societal performance of the firm and measures of Consumer behavior may be particularly useful for firms to identify and correct problems in the marketing process. This study analyses the post-purchase behaviour of consumer's and estimate the level of satisfaction of ITC personal care products. The primary data is collected from consumers and statistical tools like simple percentage method, t-test and ANOVA are used to draft analysis.

Keywords: FMCG sector, Personal Care Products, Post Purchase behaviour and Consumer Satisfaction.

1.0 INTRODUCTION

Globally accepted fact is that marketers have become dynamic and the Consumer has control over the strategic decisions made by the companies. Recent years companies are strengthening to understand the pulses of Consumers and their buying pattern. India, it is being a nation of diverse cultures and traditions, understanding the Consumers buying pattern become a difficult task. Increasing of globalization and the continuous changes in the country, many multinational companies have started making a foray into Indian FMCG market due to its sky-scraping potential.

In this competitive place where Consumer are the kings, success depends on the efficiency of the marketers in delivering what they have promised. The responsibility lies in the hands of organizations to develop business ethics, value and quality services are offered to achieve higher level of Consumers satisfaction.
For achieving Consumer satisfaction understanding dynamic Consumer behaviour is essential for organizations or marketers. As true believers in the marketing concept marketer should try their best to meet needs of Consumers. organizations should follow a proactive approach i.e. begin the satisfaction management process before they even come in and also be reactive i.e. look forward for Consumer complaints, welcome them and tell them what to do. This study is an attempt to develop a thought on consumer behaviour and identifying the satisfaction level and framing marketing strategies to increase relationship with customer.

2.0 REVIEW OF LITERATURE:

Review of literature is an indispensable part of research which opens the eyes of researcher to carry out their research in various dimensions. Through the review of earlier studies related to a relevant area in which research is intended to be carried on, the researcher came across the various ways in

which the research was started. The path through which such research journeyed and how such research reached its destination. Hence this study was born out of the earlier studies related to consumer satisfaction and behavior in FMCG sector. The review highlighted the present study into a meaningful, thought provoking and a brighter one. Further the review of earlier studies has helped this research to have a good shape in analytical terms.

Dr. Vibhuti, Dr. Ajay Kumar Tyagi, Vivek Pandey Study reveals that consumer behaviour is largely effected by place, product, price, promotion,physiological and pshycological factors.However effect of these factors also differ from product to product.

Mr. S.Thanigachalam, Dr. K. Vijayarani , focused on consumer behavior towards purchase decision, pre- purchase behaviour, consumer behavior at the time of purchase and post- purchase behaviour towards fast moving consumer goods in Puducherry.

According to Kotler and Armstrong , consumer buying behavior refers to the buying behavior of the individuals and households who buy goods and services for personal consumption. Consumers around the world are different in various factors such as age, income, education level and preferences which may affect the way they purchase of goods and services. This behavior then impacts how products and services are presented to the different consumer markets. There are many components which influence consumer behavior namely; cultural, social, personal, and psychological.

Chitra. R (2014) "An empirical study on Customers Purchase Intention towards Branded Apparels", this paper aims to study factors affecting customer's purchase intention towards branded apparel. Purchase intention is explained in terms of general consumer variables (normative influence, consumer confidence) and brand specific variables (perceived quality, emotional value).

Rajasekaran, B and Saravanan, P. A. (2014) highlighted, "Consumer's Satisfaction on Fast Moving Consumer Goods". The study concentrates on the attitudes, values, beliefs and perception of the consumers with regards to the consumption of fast moving consumer goods. To study the brand preference of fast moving consumer goods, the preference and opinion of consumer towards popular brands have been taken into consideration.

Shanmugapriya .G and Sethuraman .R, (2014) "Consumers Satisfaction towards Hamam Soap in Thanjavur Town", the marketing scenario in India has undergone vast change since 1991 due to the economic reforms. Post-liberalization, competition intensified in every product line and market, which forced brands to redefine their norms of existence in all industries. In the FMCG industry, especially in toilet soap sector there has been severe competition among the MNCs, national and local players. Brand loyalty is determined by several distinct psychological processes of the consumers and entails multivariate measurements.

Sonia and Garima Dalal, (2014) "To Study the Satisfaction Level of Customers towards the Brand of Consumer s Goods - A Study Carried out on Rural Masses", The Indian Fast Moving Consumer Goods (FMCG) industry began to shape during the last fifty odd years. The FMCG sector is a corner stone of the Indian economy. This sector touches every aspect of human life. Indian FMCG market has been divided into organized sector and the unorganized sector.

Anil Chandhok suggested that many companies have attempted multiple segmentation approaches in the rural market but it is clear that one cannot rely on a specific segmentation approach. Rather, one needs to explore and understand customers through behavioral research or by undertaking pilot projects in rural areas to identify well- defined segments. The greatest problem is that the rural market is still evolving in efficient dissemination of information and there is no set format to understand consumer behavior. A lot of research is still to be carried out in order to

understand the rural market. The future is certainly bright for the Indian rural market through the effective implementation of STP strategy, which will create more room for all players, including consumers, marketers and investors.

Mowen found that the focus of many consumer decisions was on the feelings and emotions associated with acquiring or using the brand or with the environment in which it was purchased or used than it's attributes. Whether consumer decision was attribute-based or driven by emotional or environmental needs, the decision process discussed helps to gain insights into all types of purchases.

T.Mamatha in her study 'Post purchase behavior and consumerism' says that consumer behavior is a very complex phenomenon, which needs more efforts to understand, explain and predict. In order to get a clear understanding of the same, every marketer should realize that consumer behavior is, in fact, an assumption every marketing manager must make, if he plans to market on any basis other than hit-or-miss. Although some individuals find it difficult to make this assumption, one must agree that behavior is not so erratic or mysterious that it defies explanation.

Susan Chirayath (2007) explains in their research 'Impact of Promotional Activities on Consumer Buying Behavior' that, FMCG Sector in India is characterized by cut throat competition, which leads to brand proliferation in various categories. In matured urban markets consumer sales promotion to differentiate one's offer is a very common practice. In fact consumers are lured by the ever increasing budget allocated to these activities. In such a scenario it is very essential to study how consumers make their choices in FMCG category where there are several brands in the consideration set of the consumer. Since the final risk being low, consumers do not mind switching from one brand to another due to sales promotion offers. Thus it becomes imperative to the marketer to learn about consumer preferences with respect to sales promotion offers, what schemes do the consumers prefer for what kinds of brands, which media they prefer to learn about the schemes, whether they prefer incentives immediately or at a later date.

Dr. T. Duraipandi, R. Kalaiselvi Paper focused on the factors influencing the consumers to choose a particular brand of skin care cosmetic product.

Saima Ulfat (2013) studied the role of brand consciousness and price sensitivity in relation with satisfaction of females with their selected beauty care products.

3.0 NEED OF THE STUDY

The research focused on understanding the need and wants of consumers through investigating their post purchase behaviour and satisfaction level.

3.1 Scope of the study:

The study is limited to the consumers from chittoor town and collecting post purchase behaviour information and the satisfaction level of consumers on ITC personal care products.

4.0 OBJECTIVES OF THE STUDY:

(i)To analyze the satisfaction level of consumers related to ITC personal care products through post purchase behaviour.

(ii)To study how demographic information plays a significant role in purchasing of ITC Personal care products.

5.0 RESEARCH METHODOLOGY

The study uses samples randomly chosen among the targeted population form chittoor town. The total of 100 consumers were taken, out of which 6 consumers did not be responded. So, total of 94 consumer's analyzed. This study is based on completely primary data collected through the questionnaire "A survey on ITC Personal Care products". The collected data was analyzed by using qualitative and quantitative techniques. The primary data collected from the consumers was analyzed by using the frequencies, t-test, Anova, with SPSS Software.

6.0 DATA ANALYSIS AND INTERPRETATION

Table 1: Shows Frequency Distribution

Age (yrs)		
Particulars	**Frequency**	**Percent**
Above 20	21	22.3
20 to 30	32	34
30 to 40	26	27.7
Below 50	15	16
Total	94	100
Gender		
Particulars	**Frequency**	**Percent**
Male	31	33
Female	63	67
Total	94	100
Income (₹)		
Particulars	**Frequency**	**Percent**
5000 to 10000	18	19.1
10000 to 20000	14	14.9
20000 to 30000	20	21.3
30000 to 40000	20	21.3
Below 50000	22	23.4
Total	94	100
Education		
Particulars	**Frequency**	**Percent**
SSC	18	19.1
Intermediate	24	25.5
UG	17	18.1
PG	35	37.2
Total	94	100
Marital Status		
Particulars	**Frequency**	**Percent**
Married	35	37.2
Not Married	59	62.8
Total	94	100

Table 2:t-test

Ho: There is no relationship between price , Promotion, product and distribution on the basis of gender

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean	T-value	P-Value
Are you satisfied with price offered by ITC ?	Male	31	2.03	.983	.176	-5.61	0.014
	Female	63	2.73	1.273	.160		
Whether ITC promotional aspects are good ?	Male	31	2.68	1.833	.329	1.344	1.007
	Female	63	2.41	1.756	.221		
Are you satisfied with product offered by ITC ?	Male	31	2.16	1.655	.297	-3.907	0.11
	Female	63	2.90	1.811	.228		
Are you satisfied with distribution system of ITC products ?	Male	31	2.77	1.586	.285	2.834	.321
	Female	63	2.27	1.658	.209		

Source: Computed from the primary data * significant at 1 % level

Interpretation: It was observed from the above table that the calculated p value is higher than 1 percent significance level so it shows the relationship between marketing mix elements and gender that's why null hypothesis is rejected.

Table 3:t-test

Ho: There is no relationship between price, Promotion, product and distribution on the basis of marital status.

Group Statistics

	Marital Status	N	Mean	Std. Deviation	Std. Error Mean	T-value	P-Value
Are you satisfied with price offered by ITC ?	Married	35	3.03	1.339	.226	6.592	0.003
	Not Married	59	2.19	1.042	.136		
Whether ITC promotional aspects are good ?	Married	35	2.71	1.919	.324	1.771	0.758
	Not Married	59	2.37	1.691	.220		
Are you satisfied with product offered by ITC ?	Married	35	1.94	1.589	.269	-6.356	0.004
	Not Married	59	3.08	1.774	.231		
Are you satisfied with distribution system of ITC products ?	Married	35	2.66	1.862	.315	1.954	0.664
	Not Married	59	2.31	1.500	.195		

Source: Computed from the primary data * significant at 1 % level

Interpretation: It was noticed from the above table price and product was not having that much effect on marital status ,so null hypotheses is accepted and for promotion and distribution has a greater price that p value that's why we reject null hypothesis.

Table 4

Ho: There is no relationship between price, Promotion, product and distribution on the basis of educational qualification

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Are you satisfied with price offered by ITC ?	Between Groups	12.215	3	4.072	2.337	.079
	Within Groups	156.775	90	1.742		
	Total	168.989	93			
Whether ITC promotional aspects are good ?	Between Groups	4.503	3	1.501	.467	.706
	Within Groups	288.997	90	3.211		
	Total	293.500	93			
Are you satisfied with product offered by ITC ?	Between Groups	53.933	3	17.978	8.281	.000
	Within Groups	195.397	90	2.171		
	Total	249.330	93			
Are you satisfied with distribution system of ITC products ?	Between Groups	4.486	3	1.495	.546	.652
	Within Groups	246.631	90	2.740		
	Total	251.117	93			

Source: Computed from the primary data * significant at 1 % level

Interpretation: It was noticed from the above table price, promotion and distribution has a greater p value that's why we reject null hypothesis and product was not having that much effect on education ,so null hypotheses is accepted.

7.0 FINDINGS

- From the study it was found more female respondents and un married respondents are highly preferred to purchase personal care products.
- It was found that the price, place, promotion and product plays an important role in purchasing product.
- The observation from my study is the demographic information i ,e. age, gender, education and Martial status plays very important role in purchasing of product.
- Majority of people are satisfied with the price of ITC personal care products
- It was observed that the dissatisfaction on promotional aspects are high related to ITC personal care products

7.1 Suggestions

- The company should focus more on promotional aspects and it should build loyalty towards their customer related to personal care products so that dissatisfaction can be removal.
- All ready ITC brand occupied very good market and because of the competitors it was suggested to the company to maintain better and continuous CRM so that satisfaction can increase.
- It was suggested consumer's need and wants are important in launching of product it helps in innovating the new product so that the existing problem related to personal care products can remove.

8.0 CONCLUSION

The present study concluded that, successes of many businesses depend on their ability to create and retaining the consumers. Companies to sell their products in standard price with good quality, availability of brands in all stores and is less cost to attracting new customers. Brand Loyalty provides companies strong and competitive weapons to fight with competitors in the market place. To achieve all the factors influencing the consumer's behaviour towards the purchase the marketer should understand the sensitivity of consumers on brand, quality, packaging, promotion, distribution and price of the product.

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Women Empowerment Through Information and Communication Technology in Karnataka-A Case Study

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Abstract : With the emergence of IT on the national agenda and the announcement of ICT policies by various state governments have recognized the convergence of core technologies and e-governance as the tool for good governance, sustainable development, globalization of economy and social empowerment. Across the globe, countries have recognized Information and Communication Technology (ICT) as an effective tool in catalyzing the economic activity in efficient governance and in developing human resources. There is a growing recognition of the newer and wider possibilities that technology presents before the society in the modern times. IT together with Communication Technologies has brought about unprecedented changes in the way people communicate; conduct business, pleasure and social interaction. The evolution of new forms of technologies and imaginative forms of applications of the new and older technologies makes the lives of the people better and more comfortable in several ways.

A large group of working women of India is in the rural and unorganized sectors. Socially, the majorities of Indian women are still tradition bound and are in a disadvantageous position. More women are involved in careers in the communications sector, but few have attained positions at the decision-making level or serve on governing boards and bodies that influence media policy. The lack of gender sensitivity in the media is evidenced by the failure to eliminate the gender-based stereotyping that can be found in public and private local, national and international media organizations.

Key Words: IT (Information Technology) ICT(Information and Communication Technology) NGO (Non Government Organization)

1.0 INTRODUCTION

Women are equal beneficiaries to the advantages offered by technology. The study finds out the infrastructure available to different segments of the women and social advantages and opportunities in rural areas in the Karnataka State. The applicability may invite Government intervention to stop digital divide among women and more empowerment for rural women with ICT usage.

Emergence of ICT on the national agenda and announcement of ICT policies by several State Governments has strengthened India's position in the ICT sector in the world. For example states of Tamil Nadu, Andhra Pradesh, Delhi, Goa, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh, West Bengal, Pondicherry etc. announced several ICT policies in their respective states.

It is a commonly held view that women are less engaged with ICTs than men. The benefits accrued from the synergy of knowledge and ICT need not be restricted to the upper strata of the society but have to freely flow to all segments of the female population. The gamut of areas in which ICT can put a greater control in the hands of women is wide and continuously expanding having access to lifelong learning opportunities. The communication technologies in convergence with other forms of communication have the potential to reach those women who hitherto have not been reached by any other media, thereby empowering them to participate in economic and social progress, and make informed decision on issues that affect them.

Inequality in women's access to and participation in all communications systems, especially the media, and their insufficient mobilization to promote women's contribution to society. Since globalization is opening up the Indian economy suddenly at a very high

speed, during the past decades, advances in information technology have facilitated a global communications network that transcends national boundaries and has an impact on public policy, private attitudes and behavior, especially of children and young adults. Everywhere the potential exists for the media to make a far greater contribution to the advancement of women.

Women are exposed to great discrimination in economic, education, health and social services access worldwide. On the other hand the range of women's economic activities in developing countries is very broad. It includes formal sector and informal sector employment, as well as self-employment in farming, trading and crafts production etc. There are numerous possibilities for ICTs to improve women's economic activities in the field of trade, governance, education, health, crafts, employment in formal as well as informal sector. ICT's bring lot of opportunities to women in the work situations and small business. Teleporting, flexi time and work from home arrangements are some of the gender dimensions of ICT usages.

2.0 RURAL WOMEN AND ICT

Like urban-rural disparity, the women also divided on the basis of economic and social positions in the rural society to understand their information needs. Their information needs are akin to that of the urban elite women excepting for the fact that they often are passive viewers in the changing socio- economic scenario because they are bound by traditions. The rural educated middle class women are more prone to change. They are in the process of gradually breaking the caste and class barriers and are working towards better education and economic independence. They are in urgent need of information regarding their new entitlements, namely,

- Educational opportunities outside the village
- Job opportunities in both formal and informal sectors
- Government assistance programs for career advancement within the restriction of traditions
- Health services including sexual reproductive health
- Modern child care facilities
- Legal provisions to counter sexual harassment, domestic violence and social injustice.

The largest group, which has been marginalized from getting any need based information is the rural poor. Though this is the most active group of women in the rural sector, they have never been specially considered for information dissemination. Information system specially designed for the rural poor has to be need based because this group has been worst affected by the process of globalization. Their information needs will encompass their economic, social and familial roles.

3.0 OBJECTIVES OF THE STUDY

Women are the equal beneficiaries to the advantages offered by technology and the products and processes, which are by product of the technology use. However, it should not be confined to elite group of society but to flow to the other segments of women in Indian society. The study intends to know about infrastructure (social, economical, educational etc.) available to different segments of the women and social freedom and opportunities in rural and urban areas. Thus, the objectives are:

- To assess ICT infrastructure for women empowerment.
- To assess the impact of economic/ social/academic background of women workforce in ICT.
- To assess the status of ICT in education in terms of policies of scholarships, reservations, business development programmes for self-employment for women.

- To assess social and health implication of ICT with reference to women workers.

4.0 METHODOLOGY

The study has been conducted in all the districts of the Karnataka State selecting the areas randomly to identify the women folks as respondents. The total sample size was 500. The women include working women, house wife who have exposure in information and communication technology and work as part time, women employees who work in the area of information technology in Government and private organizations, members of self help group who also has exposure in the field of information technology and communication. The sampling units were selected using stratified random sampling scheme.

The study was based on secondary as well as primary data. The secondary data was collected from different offices of Government, semi-Government and other NGOs about the government sponsored schemes for promoting women participation in ICT based services and jobs. The information about different schemes related to ICTs was also collected through personal interviews with planners, implementations and beneficiaries of these programmes. The primary data was collected using structured questionnaire. The questionnaire includes all aspects of socio-economic background of the respondent, their educating, trading, income generation activities, constraints, benefits etc.

After collecting the data from the field, it was processed in computer through the use of statistical packages excel and other software packages. These packages are used in order to make the analysis easy and clear which were also helpful in cross tabulation of the data.

5.0 RESULTS AND DISCUSSIONS

With the barriers to engendering knowledge networking processes with the inception of ICT and convergence technologies, it is possible to bring up a significant fraction of women communities in a more symbiotic digital network which focuses on localized information and customized solutions and works on the theme of global technologies for local use. Rural women, however, are still very much in a minority among the beneficiaries of knowledge networking. They still face huge imbalances in the ownership, control and regulation of these new information technologies, similar to those faced in other areas.

5.1 ICT & Rural Women's Life in Karnataka

The information communication technologies have made life easier for both women and men. Though men enjoyed this few decades before, but, a substantial number of rural women has stepped into this sector and enjoy the fruits now-a-days. It is found that more than half of the respondents (284) viewed they are strongly agree, followed by 169 some what agree with regard to the view that ICT has made their life easier. Only 24 and 19 respondents said that they do not know or can not say, respectively, whereas only 3 respondents said they have not agreed with the idea. In all the area, the research found that the respondents are equally divided with any of the idea. The trend shows that this sector helped the women to increase their awareness about the world and it also allowed them to participate in all the affairs of their work as presented in Table No.1.

Table No.1: Role of ICT in Making Life Easier

Location	Strongly Agree (1)	Somewhat agree (2)	Do not know (3)	Disagree (4)	Can't say (5)
Bagalkot	8	5	1	0	0
Bangalore	12	5	0	0	0
Bangalore (Rural)	10	6	0	0	0
Ramanagara	9	6	1	0	0
Belgaum	10	5	0	0	1
Bellary	8	6	1	0	1
Bidar	9	5	1	0	1
Bijapur	9	7	2	0	0
Chamarajanagar	10	5	1	0	1
Chikmagalur	9	6	1	0	1
Chitradurga	10	5	1	0	0
Dakshina Kannada	10	5	2	0	1
Davanagere	9	7	1	0	1
Dharwad	10	5	1	0	0
Gadag	9	6	1	0	1
Gulbarga	9	5	1	0	1
Yadgiri	8	7	1	1	1
Hassan	8	7	1	0	1
Haveri	9	5	0	0	1
Kodagu	9	6	1	0	1
Kolar	10	5	0	0	0
Chikkaballapur	10	5	1	0	1
Koppal	8	6	1	1	1
Mandya	10	5	0	0	1
Mysore	11	6	1	0	1
Raichur	9	5	0	1	1
Shimoga	10	6	1	0	0
Tumkur	10	7	0	0	0
Udupi	11	5	1	0	0
Uttara Kannada	10	6	1	0	1
Total	**284**	**170**	**24**	**3**	**19**

Sources: Data compiled from Field Survey.

The rapid expansion of IT has reached to all sections and almost all area of India. Though, rural and remote areas still lagged behind that of the urban areas, still IT marked a remarkable presence in all areas. Table No.2 shows that 224 respondents opined that the information and communication technology is available easily in their area. But, at the same time, near about the same number (200) somewhat agree that it is available easily. A few of them disagree with availability of ICT in their area. The highest being in district places and the lowest being from rural and under-developed areas.

Table No.2: Availability of Proper Facility of ICT in Your Locality

Location	Strongly Agree (1)	Somewhat agree (2)	Do not know (3)	Disagree (4)	Can't say (5)
Bagalkot	6	6	1	1	0
Bangalore	10	6	1	1	0
Bangalore (Rural)	8	7	1	1	0
Ramanagara	7	7	1	0	0
Belgaum	8	6	1	2	1
Bellary	6	7	1	0	0
Bidar	7	6	1	1	1
Bijapur	5	8	3	1	0
Chamarajanagar	8	6	1	1	1
Chikmagalur	7	7	1	1	0
Chitradurga	8	6	1	1	0
Dakshina Kannada	8	6	3	1	1
Davanagere	7	8	1	0	0
Dharwad	8	6	2	1	0
Gadag	7	7	1	0	1
Gulbarga	7	6	2	1	1
Yadgiri	6	8	1	1	0
Hassan	6	8	2	1	0
Haveri	7	6	0	1	1
Kodagu	7	7	2	0	0
Kolar	8	6	1	1	0
Chikkaballapur	8	6	1	0	1
Koppal	6	7	2	1	1
Mandya	8	6	2	0	1
Mysore	9	7	2	1	1
Raichur	7	6	1	1	1
Shimoga	9	7	1	1	0
Tumkur	8	8	1	1	0
Udupi	10	6	1	1	0
Uttara Kannada	8	7	1	0	1
Total	224	200	40	23	13

Sources: Data compiled from Field Survey.

The ICT is not limited to a particular purpose. It enabled its users for the variety of purposes. Out of the six options presented to the rural women entrepreneurs, 416 respondents said they use it for the communication purpose. It is revealed that only 30 respondents said they use for the information, 12 for the booking of tickets, 27 to get information in different aspects of life and 5 persons said they use it for the purpose of banking and insurance. In the study areas, the women entrepreneurs gave the same opinion about the purpose of use of the ICT as presented in Table No.3.

Table No.3: Purpose of the use of ICT in Karnataka

Location	Communication	Information	Booking Tickets	Information in different aspects	Banking & Insurance purpose
Bagalkot	6	1	0	1	0
Bangalore	16	1	0	1	1
Bangalore	14	1	0	2	0
Ramanagara	13	1	0	1	0
Belgaum	14	1	1	2	1
Bellary	12	1	0	1	0
Bidar	13	1	1	1	0
Bijapur	13	3	0	0	0
Chamarajanagar	12	2	1	1	0
Chikmagalur	13	1	0	1	0
Chitradurga	15	1	0	0	0
Dakshina	15	2	1	1	0
Davanagere	14	1	0	1	0
Dharwad	14	2	0	0	0
Gadag	13	1	1	1	0
Gulbarga	15	1	1	1	1
Yadgiri	13	1	0	1	0
Hassan	14	1	0	0	0
Haveri	15	1	0	1	1
Kodagu	14	1	0	1	0
Kolar	15	1	0	0	1
Chikkaballapur	16	1	1	1	0
Koppal	13	1	1	1	1
Mandya	15	1	1	1	1
Mysore	16	1	1	1	0
Raichur	14	1	1	1	0
Shimoga	12	2	1	1	0
Tumkur	15	1	1	1	0
Udupi	17	1	0	1	0
Uttara Kannada	15	1	1	1	0
Total	**416**	**36**	**14**	**27**	**7**

Sources: Data compiled from Field Survey.

5.2 Source of Information

In the age of advanced technology, people get the information through various sources like television, internet, radio, print media, etc. It is found in Karnataka that more than half (262) of the respondents said the best source of getting information is television. Out of the 500 respondents, 111 opined that they get information from the internet which shows that it is accessible in their locality. It also revealed that it is easier for them to get a wide variety of information from the internet which is not possible to get from other sources. A total of 90 respondents said print media, 33 said radio, which shows that radio is popular among the small section of population. Those who opted for radio, they revealed that it is economical and also it is easier to carry with them and also useful for the entertainment as presented in Table No.4. They said, after the office work, they have to work in house; they don't get time to watch television or read paper, but radio they listen even if they busy.

Table No.4: Source of Information

Location	TV (1)	Internet (2)	Print media (3)	Radio (4)	Other (5)
Bagalkot	1	3	4	1	0
Bangalore	11	3	4	1	1
Bangalore (Rural)	9	4	3	2	0
Ramanagara	8	4	4	1	0
Belgaum	9	3	4	2	0
Bellary	7	4	3	1	0
Bidar	8	3	5	1	0
Bijapur	6	5	6	1	0
Chamarajanagar	7	3	5	1	0
Chikmagalur	8	4	4	1	0
Chitradurga	9	3	2	1	0
Dakshina Kannada	10	3	3	1	0
Davanagere	8	4	3	1	0
Dharwad	9	3	2	2	0
Gadag	8	4	2	1	0
Gulbarga	9	3	2	1	1
Yadgiri	8	3	3	1	0
Hassan	8	6	2	1	0
Haveri	9	4	3	1	1
Kodagu	9	4	2	1	0
Kolar	10	3	3	1	0
Chikkaballapur	10	4	2	1	0
Koppal	8	4	3	2	0
Mandya	10	3	3	1	0
Mysore	11	5	3	1	0
Raichur	9	4	2	1	0
Shimoga	11	4	3	1	0
Tumkur	10	4	2	1	0
Udupi	12	3	2	1	0
Uttara Kannada	10	4	1	1	0
Total	262	111	90	34	3

Sources: Data compiled from Field Survey.

5.3 Non-availability of ICT Infrastructure to Rural Women

The ICT has made a global impact across the world. Like any other sector, rural women are the sufferers in this sector. Though ICT has impacted in the rural sector, but still it is insignificant in compare to their counterparts in cities. This is the area where the Government, NGOs working in the rural areas and civil society should work appropriately. It is also found from the survey that they are deprived sections of the society. As presented in Table No.5, 218 respondents opined that they are deprived of the technologies compared to their counterparts in the urban areas. It is also found that a few number of women entrepreneurs (35) belief that they are not deprived of the technologies.

Table No.5: Rural Women Folk Deprived of ICT Infrastructure

Location	Strongly Agree (1)	Somewhat agree (2)	Do not know (3)	Disagree (4)	Can't say (5)
Bagalkot	6	3	2	1	2
Bangalore	6	3	2	1	1
Bangalore (Rural)	8	4	2	2	2
Ramanagara	9	4	2	0	2
Belgaum	8	3	2	2	1
Bellary	6	4	2	0	2
Bidar	7	3	2	2	2
Bijapur	7	5	3	1	2
Chamarajanagar	8	3	3	2	2
Chikmagalur	7	4	2	2	2
Chitradurga	8	3	3	1	2
Dakshina Kannada	8	4	3	1	1
Davanagere	7	4	2	1	2
Dharwad	9	4	3	1	3
Gadag	8	4	2	1	2
Gulbarga	7	3	3	1	2
Yadgiri	6	3	2	1	2
Hassan	8	4	3	2	2
Haveri	6	4	2	1	2
Kodagu	7	4	2	1	2
Kolar	8	3	2	1	2
Chikkaballapur	7	3	3	1	3
Koppal	8	4	2	1	2
Mandya	8	3	3	1	3
Mysore	9	2	3	2	2
Raichur	7	3	2	1	2
Shimoga	8	4	2	2	2
Tumkur	8	4	3	1	2
Udupi	8	3	3	1	2
Uttara Kannada	8	4	3	1	2
Total	**225**	**106**	**73**	**36**	**60**

Sources: Data compiled from Field Survey.

Thus, the choice of appropriate communication channels should not be reduced to computer and the internet. The high rate of illiteracy, the popularity of television and radio, and the rich oral tradition of the villagers underline the opportunities of an integrative multimedia approach, whenever possible.

6.0 CONCLUSION

Thus, entrepreneurship and women could always be crucial, because of the socially sanctioned gender stereotyping and socio-cultural background of gender relationship. Entrepreneurship is the medium through which women can become economically independent, gain empowerment, social recognition, and status and gain equality. One of the most important things that a woman needed, in order to be a successful entrepreneur, was society's commitment to become empowered. It is important for the creation of competent entrepreneurs who catalyze local resources to establish and manage viable ventures in the rural areas, for financial empowerment of rural youth.

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Sustainable Development Through Organic Farming: A Case Study of Belagavi District

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Abstract : Sustainable Development has become the buzz world in the 21st century as economic development is expected to be viable, bearable, and sustainable. Since the Rio Conference of 1992, sustainable development has been interpreted in a number of ways with different dimensions like economic , social and environment . There is a close and causal relationship between sustainable agriculture and sustainable development. Organic farming has emerged as the viable to sustainable agriculture. It has been realized that organic farming would overcome the problems of conventional agriculture food contamination, environmental degradation etc. The study concludes that organic farming is sustainable method of agriculture by comparing it with conventional method of agriculture in the study area.

Key Words: Sustainable Development, Sustainable Agricultural Development, Conventional Farming, Organic Farming.

1.0 INTRODUCTION:

This paper consists of five parts viz.,; Part 1, is an introduction which consists of the objectives, hypothesis, study area, data collection, meaning of sustainable development and sustainable agriculture. It also brings out the importance of agriculture in the national economy. Part 2, explains the problems of modern agriculture and makes the planners to think of alternative modes of agriculture. Part 3, discuss the measuring of agricultural sustainability and explains the close relation between organic farming and agricultural sustainability. Part 4, is the conclusion. Part 5, is the list of references.

1.1 Methodology:

(A)Objectives: The study has the following objectives:

(i) To understand the meaning of sustainable development and sustainable agriculture.

(ii)To know the relation between organic farming and sustainable agriculture.

(iii) To bring out the adverse effects of modern agriculture necessitating organic farming in India.

(iv) To measure the agricultural sustainability in the study area.

(B) Hypothesis: The study attempts to test the following hypothesis:
Null Hypothesis (Ho): Both conventional farming and organic farming are sustainable methods of agriculture.
Alternative Hypothesis (H1): Organic farming is sustainable method of agriculture where as Conventional farming is not sustainable.

(C) Study Area: The conventional and organic farms are selected from the Khanapur Taluka of Belagavi district in Karnataka State.

(D) Data Collection : One conventional farm and one organic farm are selected randomly for the study purpose. Data is collected by using well structured interview schedule. Data is processed and analyzed by using the SPSS package.

2.0 CONCEPT OF SUSTAINABLE DEVELOPMENT:

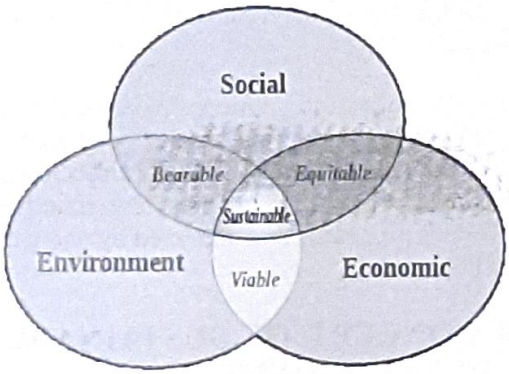
'Sustainable Development' is the term coined by Brundtland Commission. Sustainable Development aims at the optimum use of economy's resources not only to meet the present human needs but also the needs of future generation while preserving the environment. The Brundtland Commission defines the Sustainable Development as "development that meets the needs of the present without compromising the ability of the

future generations to meet their own needs [WCED Report 1987]. Sustainable Development characterized by four general dimensions viz., social, economic, environmental and institutional. The first three dimensions are considered as key principles of sustainability while the fourth one emphasizes the key institutional policy and capacity issues. The 1992 Rio conference has provided a framework of sustainable development indicators with the following four categories: social aspects of sustainable development, economic aspects of sustainable development, environmental aspects of sustainable development -further divided into water, land, atmosphere and waste, institutional aspects of social development.

2.1 Scheme of Sustainable Development:

The sustainable development encompasses social, environmental and economic aspects. These are interrelated and mutually interdependent. These are not only sustainable but also viable, bearable and equitable. The following fig;1 explains the scheme of sustainable development.

Fig 1: Scheme of Sustainable Development



Source: Barbier. E (1987)

2.2 Sustainable Agriculture :

Agriculture has been at the centre of the sustainability issue for two main reasons: Firstly, agriculture systems occupy large areas of land. Secondly, the product of agriculture is often food and we all eat!.Agriculture is therefore is one of the foundation s of human society (Lele,1991).

Sustainable agriculture is understood as "the ability of a farm to produce fertile soil for crops and produce along with livestock and fish from managed ponds without causing severe and irreversible damage to ecosystem health". The biophysical key issues related to sustainable agriculture are the long term effects of various practices on soil properties and processes essential for crop productivity and the long term ability of farmers to obtain inputs and manage resources like labor. The main goals of sustainable agriculture are; environmental health, economic profitability and socio-economic equity. The FAO (2007) defines sustainable agriculture as "the successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of environment and conserving natural resources". For a firm to be sustainable, it must produce adequate amounts of high quality food, protect its resources and be both environmentally safe and profitable. Instead of depending on purchased materials such as fertilizers, a sustainable farm relies as much as possible on beneficial natural processes and renewable resources drawn from the farm itself (Papendic and Parr, 1990). Sustainable agriculture is" capable of maintaining its productivity and usefulness to society over the long run....it must be environmentally sound, resource conserving, economically viable and socially supportive, commercially competitive and environmentally sound. Sustainability cannot be associated with any particular set of farming practices or methods. Sustainability of a technology mostly depends on the peculiarities of the context in which it is used. Systems sustainable for one farmer or farm at one point may not sustainable for another farmer or farm at another point of time. The sustainable technique will vary both temporally and spatially (Ikerd, 1993).

Larry Harrington et, al. ILEIA (1992) categories the numerous definitions of sustainability and sustainable agriculture into three concepts: the agro-ecological, the resource and the growth. In the agro-ecological concept, agriculture can be made more sustainable by increasing system diversity and

fostering nutrient energy by reducing the use of external inputs through the development of suitable new farming systems. Monitoring trends in system diversity and in the internal cycling of nutrients and energy is perceived as fundamental when measuring the sustainability of an agricultural system. The resource concept is expressed in those definitions focusing on the continuing availability of resources over time, especially with regard to future generations and the rights of non human species. The emphasis is on stewardship, the proper care and protection of resources. The growth concept focuses on the need for continued growth in agricultural productivity while maintaining the quality and the quantity of the resources in agriculture. It implies using renewable resources at rates lower than at which they can be generated, emitting wastes at rates lower than those at which they can be absorbed by the environment and optimizing the efficiency with which renewable resources are being used. The quality of natural resources should be maintained and the vitality of the entire agro economic system –humans, animals and crops to micro organisms should be enhanced in a sustainable agricultural system (Reijntjes C,et al ,1992).

2.3 Sustainable Agriculture and Organic Farming:

Many alternative approaches to sustainable agriculture have been developed and these include integrated pest management(Caroll and Risch,1990),integrated crop management (LEAF,1991),low input sustainable agriculture (Edwards,1987),low external input sustainable agriculture(Reijntjes et al,1992), agro-ecology (Altieri,1995), perma- culture (Mollison and Slay, 2000), biodynamic farming (Steiner,1924) and organic farming (Scofield,1986).

There is need to explore the relationship between organic farming and sustainability. Because, firstly, organic farming predates al other approaches to "environmentally friendly "agriculture, (Scofield, 1986); secondly organic farming is rapidly expanding across the countries. Consumer has grown in response to repeated food safety scares, animal welfare concerns and concern about the impact of industrial agriculture on environment (D.Rigby and D. Caceres, 2001). Organic farming aims at creating integrated, humane, environmentally and economically sustainable production systems, which maximize reliance on farm derived renewable resources and the management of ecological and biological processes and interactions so as to provide acceptable levels of crop, livestock and human nutrition, protection from pests and disease and an appropriate return to the human and other resources. Often sustainable agriculture and organic farming are considered synonymous. However, equating both may be misleading. Sustainability lies at the heart of the organic farming and is one of the major factors determining the acceptability or otherwise of specific production practices (Lampkin1994).

Organic farming emphasize the use of organic matter for enhancing soil properties, minimizing food chain associated health hazards and attaining chosen nutrient cycles the key factors for sustainable agriculture (Cardelli, et al,2004). Organic arms although yield 10-15% less than conventional farms, the lower yields are balanced by lower input costs and higher margins. For rain fed systems organic agriculture outperforms its conventional counterpart(Ramesh et al,2015). Despite reduction crop productivity by 9.25% , organic agriculture produce provided a 22.o% higher net profit to farmers due to coupled effect of 11.7% reduction in cost of production and 20-40% greater premium price of certified organic produce (Ramesh et,al,2010).

A study based on 120 farmers of six villages of Shimoga and Bhadravati talukas of Karnataka State, compared the cost benefit components of organic rice production. The study indicated that in organic farm, although the average cost of cultivation per acre of paddy was lower only marginally, the net return increased by over 40% suggesting that a properly planned organic farming is beneficial not only from environmental point but also from economic margin (Suresh and Kunnal,2004).

3.0 PROBLEMS OF MODERN AGRICULTURE

3.1 General Problems:

The modern agriculture yielded several problems besides creating a very unsustainable system for mankind (Worthington, 1980). Pretty(1995) brings out the adverse environmental and social impacts of modern agriculture as: Contamination of water by pesticides, nitrates, soil and livestock wastes causing harm to wildlife, disruption to ecosystems and possible health problems in drinking water; Contamination of food and fodder by residues of pesticides, nitrates and antibiotics; Contamination of atmosphere by ammonia, nitrous oxide, methane and the products of burning which deplete ozone; Water logging and increased salinity; new health hazards for workers in the agrochemical and food processing industries. The cultivation of crops became more dependent on the inputs purchased from the market and farmers began to sell a greater share of the crop in the market. The increasing cost of cultivation and uncertain output prices made the modern agricultural system non viable. The Green Revolution made India not only self sufficient but surplus in food production. But it brought Indian agriculture resource base under heavy pressure due to the use of HYV's, heavy doses of chemical fertilizers, pesticides and heavy farm mechanization. The Green Revolution changed the mode of agriculture. As it concentrated only on wheat and rice it nearly destroyed other crops mainly coarse cereals and pulses. Cattle disappeared from farms and thus reduced biological productivity and nutrient recycling which created a crisis of non sustainability both economical and ecological. When soil productivity declined farmers increased dosage of fertilizers to sustain farm production. It resulted in soil toxicity, disturbed the soil micro environment and impeded organic matter recycling in the soil.

3.2 Food Contamination:

The incessant application of chemical fertilizers and pesticides not only polluted the grains but also the food we consume (Rup Lal et al.,1989, ICMR Bulletin, 2001). There are three important and related issues that need serious concern for Indian agriculture: (i) although the cereal production increased over 4-5 folds in the past, the expected food demand of 300 million tons cereals by 2050 from continuously shrinking land resources (ii) there is a rapid degradation of water and land resources leading to reduction of use efficiency of fertilizer, irrigation, tillage etc, along with rising emission of pollutants and green house gases, and (iii) agricultural release of toxic chemicals, contamination of food stuff and associated health problems (Lal,2004). Pesticide application also contaminates agricultural produce. In Indian average dietary intake of pesticide residue is 32.5 mg per day per person for vegetarians and 356-5 mg for non vegetarians (Ghosh, et al, 2004). These problems are more acute in high yielding farmlands of Punjab (Nagarajan, 2003a). Presently India is the largest producer of pesticides in Asia, and ranks twelfth in the world for the use of pesticides with an annual production of 90,000 tons (Jitendra Pandey and Ashima Singh, 2012).

3.3 Environmental Degradation:

Anthroprogenic activities such as fuel combustion, fertilizer production and land use changes have led to the increase in global CO_2 concentration which is expected to reach 600 ppm before the middle of this century (Wuebbles and Jain, 2001). Increasing concentration of greenhouse gases (CHG), particularly CO_2 in the atmosphere could lead to a rise in the average earth surface temperature by 0.17 c per decade (IPCC, 2001) and 0.5 - 1% of precipitation per decade in most of the Northern Hemisphere and 0.3% in tropics and sub-tropics (Wang, et al, 2010).These activities negatively affect land productivity, biomass accumulation and biodiversity. Fossil fuel combustion is the prime cause of rising CO_2 level followed by changes in land use pattern. Deforestation accounts for an annual release of carbon between $0.9x10^{12}$ and $2.5x10^{12}$ kg, about one third of which comes from oxidation of soil carbon in the tropics mainly linked with changes in land use pattern (Lal, 2010).A substantial amount of global CO_2 comes from soil through decomposition, mineralization and soil respiration (Jabro, et al,2008).

4.0 MEASURING AGRICULTURAL SUSTAINABILITY

4.1 Total Factor Productivity (TFP):

Total Factor Productivity (TFP) is a measure of the physical and biological sustainability of an agricultural system. TFP is an index that relates changes in all outputs to changes in all inputs.

$$TFP = O/I$$

Where 'O' is total value of all outputs and 'I' is total value of all inputs. A non –negative trend in TFP over the period of interest implies sustainability. According to Lynam and Herdt , (19 88) TFP measure sustainability in terms of trends in TFP.A sustainable system would feature a positive trend in TFP (Harrington, 1992).However, TFP does not account of environmental externalities which are important in defining biophysical sustainability. This method do not consider the diverse components whose relative value may be hard to assess. The value of the land is not taken as an input since the study is restricted to cultivation costs returns. Considering the complexity of the organic farms, the absence of account keeping by the farmers, lack of farming plan, inability to assess the value of capital assets, reluctance in revealing the financial status etc, limit the viability of the TFP method (Balchandran, V. 2004).

4.2 Total Factor Productivity in the Study Area:

The data collected is for a period of five years i.e., 2010-11, 2011-12, 2012-13,2013-14 and 2014-15. The data is collected in the year 2014-15 from the respondent farmers viz, farmers using conventional method of agriculture and organic farmers. The period of initial three years i.e., 2010-11, 2011-12, and 2012-13 is considered as conversional stage for organic farmers. While estimating the cost of cultivation fixed costs like the land value, capital assets etc, are not considered because of substantial variations. Hence, only the variable costs are considered. Sugarcane is the most common commercial crop in the study area.

The prominent cost of cultivation under organic farming is the labour cost. The value of output decreases marginally in the second and third years. Once, the conversional stage is over the value of output increased substantially in the fourth and fifth years. The loss in the first three years is compensated by the gain in the latter two years due to the increased output and the premium price received by the organic farmers. Another important input of sugarcane cultivation is the electricity used for irrigation, However the Government of Karnataka Is providing free electricity to all irrigation pump sets since many years. Hence, the cost of electricity is excluded.

The following table shows the value of inputs and the outputs:

Table 1 : The value of inputs and output of the conventional farm (in Rs.)

S.No	Year	Input Value	Output Value	TFP Trend value
1	2010-11	22486	60280	2.68
2	2011-12	23220	61100	2.63
3	2012-13	24850	61850	2.49
4	2013-14	28680	62450	2.18
5	2014-15	32240	62950	1.95

Source : Primary Data

Both the values of inputs and the outputs goes on increasing in the conventional farm. However, the trend value of the TFP has decreased from 2.68 in 2010-11 to 1.95 in 2014-15.

The following table shows the value of inputs and the outputs:

Table 2: The value of inputs and output of the organic farm (in Rs)

S.No	Year	Input Value	Output Value	TFP Trend Value
1	2010-11	3280	50550	15.41
2	2011-12	4700	50300	10.70
3	2012-13	4960	54870	11.06
4	2013-14	3850	63800	16.57
5	2014-15	3540	66760	18.86

Source : Primary Data

In the organic farm, the TFP Trend Value has increased from 15.41 in 2010-11 to 18.86 in 2014-15.

This clearly indicates that the cultivation in conventional farm is non-sustainable whereas cultivation in organic farm is sustainable.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Conventional Farming	5	2.386217	.3118712	.1394730
Organic Farming	5	14.521280	3.5481877	1.5867978

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Conventional Farming	17.109	4	.000	2.3862168	1.998978	2.773456
Organic Farming	9.151	4	.001	14.5212797	10.115623	18.926937

From the above table p-value is less than 0.05, hence we reject the null hypothesis and conclude that the trend value of output in the Organic farming is positive and the trend value of the output under the conventional farming is non-positive. Hence, it is concluded that the Organic farming is sustainable agriculture.

5.0 CONCLUSION:

Sustainable Development has become the buzz world in the 21st century as economic development is expected to be viable, bearable, and sustainable. Since the Rio Conference of 1992, sustainable development has been interpreted in a number of ways with different dimensions like economic , social and environment. There is a close and causal relationship between sustainable agriculture and sustainable development. Organic farming has emerged as the viable to sustainable agriculture. It has been realized that organic farming would overcome the problems of conventional agriculture food contamination, environmental degradation etc. The study concludes that organic farming is sustainable method of agriculture by comparing it with conventional method of agriculture in the study area.

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CASE STUDY
Precifab Engineers, Kolhapur : Challenges of Transformation

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1.0 HISTORY OF PRECIFAB:

Formed in October 1985, in Kolhapur by a young entrepreneur Precifab is a privately owned company which began working for reputed clients like Alfa Laval (I) Ltd. since inception. The Technical expertise and quality standards along with good engineering practices of its founder Preci-Fab soon become popular among its clients.

Preci-Fab Engineers have manufactured numerous equipment for variety of industries such as, sugar, Distillery, Paper, Cement, Dairy, Petrochemical, Pharmaceuticals, Nuclear Power, Naval Aviation, Defense, Raw water handling pump, equipments, spares using different types and grades of Carbon, Steel, Stainless Steel, Duplex, Super Duplex, Aluminum and Copper as well as the project work for all types of conveyer systems, supply and Installation.

Today Preci-Fab Engineers have grown into a group of three associate companies with complementary manufacturing capabilities.

The dynamic young directors of the company Nr. Yogesh Kulkarni and Mr. Prasad Saundalgikar are having big dreams they want to develop world class facility which the country does not have as of now. "Big dreams Big challenges". The team has travelled to this far by enriching quality at every stage. The directors' are confident about their Quality Promise.

2.0 STRENGTHS OF PRECIFAB:

With, a strong foundation, and a track record of 25 years, PRECIFAB ENGINEERS has been preferred business partner for many organizations. The emphasis in PRECIFAB has always been on Technology and Quality which the company considers as the pillars of customer satisfaction. Highly groomed manpower committed to customer needs has been a major factor in their success.

PRECIFAB is approved by esteemed private and Government organizations like Nuclear Power Corporation of India Ltd, Oil & Natural Gas Corporation, and other Govt. Departments etc.

ISO 9001 from TUV strengthens our systems. It has the certifications from various agencies and clients. In December 1995 L&T got into Missile Launcher manufacturing and the Agni Missile Launcher was made by them. PRECIFAB has been the important partner of the execution of this project.

PRECIFAB has worked in accordance with World Standards such as ASME (The American Society of Mechanical Engineers (ASME) is a professional association that, in its own words, "promotes the art, science, and practice of multidisciplinary engineering and allied sciences around the globe" via "continuing education, training and professional development, codes and standards, research.), ASTM (American Society for Testing and Materials, is an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.), BS (British Standards), TEMA(Tubular Exchanger Manufacturers Association (TEMA) is an association of manufacturers of shell and tube heat exchangers) and IS standards till now, and is

conversant with most of the applicable standards from world over. Apart from this CCOE: Chief Controller of Explosives, a certification required for the fabrication of pressure vessels and ONGC: For fabrication of pressure vessel & Heat exchangers are also taken by the company.

The above Certification indicates company's capacity to meet the quality norms of various international and national clients. This not only reflects directly on quality but all these certifications require investment in the form of registration fees, infrastructure and human capital. The forward looking companies are willing to spend on these heads.

It is a real challenge for a SME to work in the area of Defense related Equipments manufacturing and nuclear supplies. The company is in the class of those very few vendors qualified for nuclear supplies. It has worked under the Inspection Agencies like,

- EIL-Engineers India Limited.
- NPCIL-Nuclear Power Corporation of India Ltd.
- Lloyd –a Foreign Bank
- BV- Bureau VERITAS
- TUV-TUV SUD is a leading testing, certification & training company in India dedicated to providing customers with solutions based on reliability, safety ...
- SGS- a multinational company headquartered in Geneva, Switzerland which provides inspection, verification, testing and certification services
- TCS-an International multinational information technology service, consulting and business solutions company.

Over the years, the product range in fabricated equipments took a quantum leap, and now PRECIFAB caters to almost all industry segments like

- Nuclear,
- Defense Structural equipments.
- Petrochemicals / Refinery,
- Pulp & Paper,
- Marine & Potable Water Handling,
- Pharmaceuticals /Chemicals,
- Rubber Industry,
- Dairy / Processing,
- Distillery, Sugar Industry,

PRECIFAB's expertise in handling different grades of material as:

- SS 304,304LN,316,317,321,
- Duplex 2205,Super Duplex 2209,
- Al, Cu, Ti,
- Weldox 700 & 1100,
- SA 516, S355, S235, A333, A106 etc.
- Maximum Thickness SS up 100mm CS up to 200mm

The Technical Strength of the company is backed by the human strength of its qualified and hard working employees. The leadership of the company is in the capable hands of its Director – Commercial Operations, Mr. Yogesh Kulkarni and Director- Technical Operations, Mr. Prasad Saundalgikar.

3.0 AREA OF TRANSFORMATION MANAGEMENT:

There will be two major areas of development going forward in the

1. Civil domestic sector which comprises of water handling solutions, Waste management, Infrastructure development up gradation of old process plants Viz; Oil & Gas, Steel, Mining, end to end. There is minimal or no infrastructure to take care of water for all sectors, Irrigation Process, Potable water and others, but the after treatment is almost absent, therefore the

2. The other sector will be high rick high reward, like Nuclear power, defense, Aerospace Special purpose vehicles, transmission etc.

   The overall picture of the market and the matching capabilities of the organization bring us to observe following things.

a. Precifab has a vast & rich experience specific to all the fields, and has qualifications along with experience of working in niche areas with credentials, size also matters beyond has certain levels.

b. Precifab has worked directly with all the top agencies, but had to work with partners on large projects because of certain norms

deliverables as regards financial capabilities & limitations.

c. The major requisite for any work to be awarded is the qualifications and expertise of handling different materials, where as the organization has a wide range of qualifications certifications which are not only difficult to get but more difficult to maintain, it is the most important & expensive part of the entire process, it involves men, machine, Metal & process experience which does not come cheap.

d. Competitors are very few when it comes to quality and international requirements. The majors like L&T, WIL, Alfalaval, Godrej but are also providers of work, hence very few industries are competition specific in sectors and not in all range, as there are fabricators in pump industry, some domestic competition is in stainless steel fabrication, some vendors do boiler pressure parts for ages, likewise the spread is commensurate to the mother industry nearby.

e. The league Precifab is trying to pitch is beyond this range, where not only certifications matter but size also, & this is available only with the large players at present, they are either involved in Carbon steel or Structural fabrication, or piping or skid, tanks or silos, all generally involved routine work, they are only service providers to nearby industry/ies as the case maybe.

f. Precifab looking at total integrated facility with minimum fixed costs, but complete solutions under one roof, with adherence to international standards.

Continuous up gradation, desire to develop integrated world class manufacturing facility and to supply variety of products from Kolhapur to different parts of the world has created the need for Transformation in PRECIFAB.

The transformation to Robotic Operations and Finished machining is the challenge for an ambitious entrepreneurs located in an area like Kolhapur. The challenges of transformation are first understood by the owners and they are systematically trying address one by one each of them. The proactive approach and interactions of the owner at all levels Local, national and International has given them an outlook which is game changer for a small enterprise started in Kolhapur. The dream to be ahead of Indian Industries by 10 years, adding new skill sets, trying to retain trained and talented manpower and accepting and satisfying the financial needs of a growing business, are challenges of transformation. The dynamic partners are looking forward to set up a world class manufacturing facility in Kolhapur in spite of all challenges.

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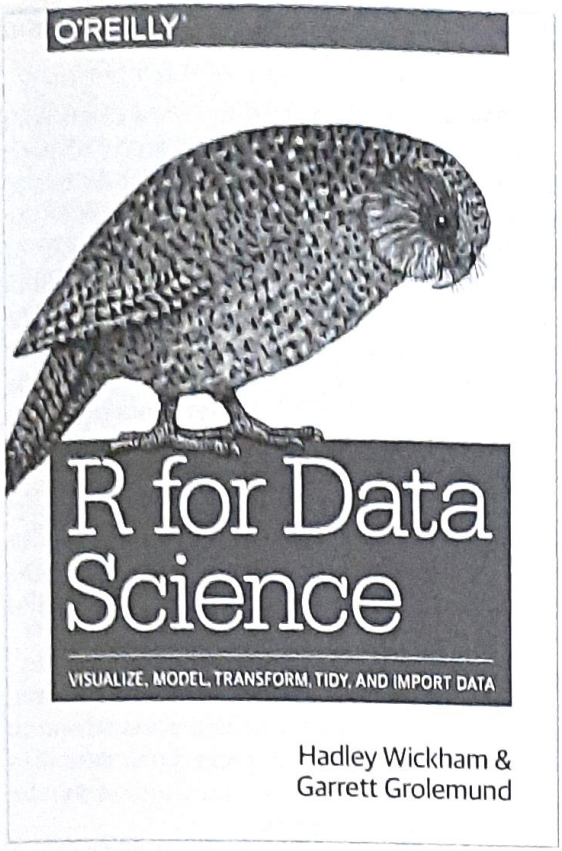
BOOK REVIEW



Book Title:
R for Data Science: Visualize, Model, Transform, Tidy, and Import Data

Authors:
Garrett Grolemund, Hadley Wickham

Publisher:
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Publication date:
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Paperback: 518 pages

This book gives clear understanding of discovering natural laws in the structure of data, and how to use the versatile R programming language for data analysis.

After reading this book, You'll learn about:

- Data Wrangling—how to manipulate datasets to reveal new information
- Data Visualization—how to create graphs and other visualizations
- Exploratory Data Analysis—how to find evidence of relationships in your measurements
- Modeling—how to derive insights and predictions from your data
- Inference—how to avoid being fooled by data analyses that cannot provide foolproof results

Through the course of the book, you'll also learn about the statistical worldview, a way of seeing the world that permits understanding in the face of uncertainty, and simplicity in the face of complexity.

The first chapter is Introduction where the authors give clear idea about what readers can learn from the book?, then they discuss about how the book is organized?, and also they discuss about what readers won't learn from the book?. The first chapter gives clear idea about what are the prerequisite for reading the book?. Here they discuss R and RStudio, how the code is executed? How to get help for problems encountered? At the end they acknowledge the persons who helped them in writing the book.

The book is divided in to four parts namely Explore, Wrangle, Program and Communicate.The first part Explore has 7 points Introduction, Data Visualization, Workflow Basics, Data Transformation, Workflow scripts, Exploratory Data Analysis and Workflow Projects.

The first part starts with, Data Visualization, this chapter focusses on ggplot2, one of the core

members of the tidyverse that helps to access datasets. Here they discuss how to load tidyverse. The plotting of the graphs is discussed in detail here. As a first step mpg dataframe is discussed, which is a rectangular collection of variables (in the columns) and observations (in the rows), from the dataset a graph is plotted using ggplot, itcreates a coordinate system that you can add layers to. Then adding of aesthetics is explained to visualize the data points that lie outside the normal range. The concepts are discussed with example, the common problems that may be encountered by users is discussed with solutions. The rest of the chapter is devoted to plotting the graph from numerical data, position adjustments, coordinate system and layered grammar of graphics.

The fourth chapter Workflow: basics the authors discuss coding in R, where basic of coding for graph plotting is discussed with example. The rules for defining variable names are discussed. A function is a small code the can perform a specific activity. Here the built in functions and calling mechanism is discussed.

Data transformation which is fifth chapter, which will teach you how to transform your data using the dplyr package and a new dataset on flights departing New York City in 2013. The discussion starts with prerequisite, To explore the basic data manipulation verbs of dplyr. Here data collected for flights from New York city in year 2013 is considered as case study. The data contains year, month, day, departure time, scheduled departure time, departure delay and arrival time.The size of data is 3.368e+05 rows, and in addition to data discussed above 12 more data variables are considered. In order to make it simple they start discussing about the data types available in R, the discussion continues with some basic functions provided by dplyr package. The functions discussed are

- filter()-Pick observations by their values using comparison operators and the finding out missing values.
- arrange() - Reorder the rows in ascending or descending order.
- select() - Pick variables by their names by considering the subset of original data set.
- mutate() - Create new variables with functions of existing variables.
- summarise() - Collapse many values down to a single summary.

These can all be used in conjunction with group_by() which changes the scope of each function from operating on the entire dataset to operating on it group-by-group. All the functions are discussed with the example of data set selected. At the end of chapter authors discuss how to combine multiple operations with the pipe. As all these functions are discussed with appropriate examples this chapter provides total insight about dplyr package.

The sixth chapter Workflow: scripts, is devoted to script editor, where authors give idea about look and usage of script editor. It contains information about running the scripts and finding out errors in the scripts.

Seventh chapter Exploratory Data Analysis, gives clear idea about how to use visualisation and transformation to explore your data in a systematic way? This question may be answered using questions

- What type of variation occurs within my variables?
- What type of covariation occurs between my variables?

After this they discuss variation that is the tendency of the values of a variable to change from measurement to measurement the best way to understand this by using visualization. Where two types of visualization are possible such categorical or continuous are discussed with example. The discussion continues with typical values, unusual values and missing values with visualization. When behavior between two variables is to be described covariation comes in to picture. This concept is discussed with the help of examples. If we want to find out relationship between values, pattern and models concept is used, this concept is explained with example. At the end of chapter links are given for further reading.

The eighth chapter gives idea about how to create a new project for new analysis?

The Second part of the book is wrangle; it is an art of getting your data into R in a useful form for visualisation and modeling. The first chapter is second part is Tribble (data frames). As a part of this chapter discussion starts with creation of tribble, after this tribbles are compared with data frames where difference between these two is explained. The discussion ends with some exercises.

In the second chapter of second part you'll learn how to read plain-text rectangular files into R. Here parsing of single value of various types is discussed with readymade functions in R. After this, parsing of entire file is discussed with example. Parsing process may not always provide a success, what basic problems user may face? is discussed after this. The general strategies for parsing file are discussed. Only parsing may not be sufficient sometimes we may need to write data to file the functions used to write data to file are given with example. Chapter concludes with the discussion of other data type.

The third chapter in second part is about Tidy data which is organization of data, where authors explain the operation to be performed on data. Operations such as spreading and gathering, separating and uniting are discussed with examples. Also how to handle missing values from the data is discussed. At the end of chapter a case study is presented containing data about Tuberculosis from various countries. This case study provides total insight about functions and their usage.

Fourth chapter in second part presents idea about how to handle relational data in R, where data from multiple tables is called as relational data. To explain operations such as join the data about New York city fights for year 2013 is used. To establish relationship between tables the concept of Primary Key and Foreign Key is explained. The Primary Key concept requires key values to be unique, the chapter also explains how to handle duplicate values. Operations such as inner join, outer join, left join, right join and full join are explained with examples. The last part of this chapter explains problems with join. Chapter concludes with explanation of set operations such as intersection, union, and difference.

Next chapter explains string concept where package stringr is useful. Here the basic operations such as length, substring etc. are discussed, then the matching of strings is discussed. Tools part explains stringr functions that let you:

- Determine which strings match a pattern.
- Find the positions of matches.
- Extract the content of matches.
- Replace matches with new values.
- Split a string based on a match.

Sixth chapter gives idea about factors – that are used to work with categorical variables, variables that have a fixed and known set of possible values. They are also useful when you want to display character vectors in a non-alphabetical order. This chapter explains creation of factors, modifying order of factors and modifying with the help of example.

The last chapter in second part is devoted to date and time functions in R, for which you need to use lubridate package. Various function available in package are explained, also time spans that includes

- durations, which represent an exact number of seconds.
- periods, which represent human units like weeks and months.
- intervals, which represent a starting and ending point.

At the end of chapter the support for time zone concept is explained.

The third part of the book is Program that will help you in improving programming skills in R. The discussion starts with the concept of pipe (magrittr package), is powerful tool for clearly expressing a sequence of multiple operations, the pipe is to help you write code in a way that easier to read and understand. To explain this authors provide alternatives for pipe to prove its significance. They also discuss the limitation of pipe "most useful for rewriting a fairly short linear sequence of operations". At the end they discuss other tolls in package.

Second chapter in third part explains functions, where the importance of user defined functions is explained. The explanation includes when to write your own functions. This chapter is for the programmers it gives idea about conditions, coding style, function arguments, return values and environment. This chapter is very useful for data scientists who can write programming code.

The third chapter in third part gives idea about vectors, which is the collection of values. This chapter explains types of vectors Atomic and Lists. Under atomic vector we can create collection homogeneous values, the chapter gives idea about logical, integer, double, character, complex, and raw vectors, Whereas List vector which is collection of heterogeneous values is also explained with examples. Vectors have attributes and these are explained in chapter. The chapter concludes with augmented vectors, which includes Factors, Date-times, Times, Tibbles.

The last chapter in third part explains iteration which helps you in reducing duplication of code. This chapter gives clear understanding about looping concept in R. The idea of passing a function to another function is extremely powerful idea, and it's one of the behavior's that makes R a functional programming language, this idea is explained with example. The map functions

- map() makes a list.
- map_lgl() makes a logical vector.
- map_int() makes an integer vector.
- map_dbl() makes a double vector.
- map_chr() makes a character vector.

are also explained with example. The concept of mapping over multiple arguments and invoking different function is also explained with example. Walk is an alternative to map that you use when you want to call a function for its side effects, rather than for its return value. You typically do this because you want to render output to the screen or save files to disk - the important thing is the action, not the return value. The last part of chapter explains the concepts predicate-functions that return either a single TRUE or FALSE, reduce and accumulate-educe to a simple list by repeatedly applying a function that reduces a pair to a singleton.

The fourth part of the book is Model (modelr package). The goal of a model is to provide a simple low-dimensional summary of a dataset. The discussion starts with simple model. It contains two continuous variables, x and y. The next topic explains visualization of models; it starts with concept prediction-The predictions tells you the pattern that the model has captured, the second part is residuals-tell you what the model has missed. Formulas and model families section explains general way of getting "special behaviour" , here the concepts categorical variable, interactions both categorical and continuous, transformations, handling of missing values and other model families is explained with example.

The model building, this chapter focuses on real data, showing how you can progressively build up a model to aid your understanding of the data. This concept is explained with sale of poor quality diamond. The concept of building more complex models is explained with diamond sales data. Also the model building is explained with New York City flight data. The focus here is to find out answers for certain questions from the model.

Many Models is the next chapter, this chapter provides powerful ideas that help you to work with large numbers of models with ease:

- Using many simple models to better understand complex datasets.
- Using list-columns to store arbitrary data structures in a data frame. For example, this will allow you to have a column that contains linear models.
- Using the broom package, by David Robinson, to turn models into tidy data. This is a powerful technique for working with large numbers of models because once you have tidy data, you can apply all of the techniques that you've learned about earlier in the book.

To understand this you should know "gapminder" data. The chapter provides total insight about nested data, List-columns, unnesting, simplifying List column. All the

concepts are explained with example in nice manner.

The fifth part of the book is Communication. In first four parts the book explains how to make data convenient for analysis, and then understand your data through transformation, visualisation and modelling. This part deals with communicating your result to others. This part is divided in to four chapters R Markdown, Graphics for communication, R Markdown formats, and R Markdown workflow.

In R Markdown, you will learn about R Markdown, a tool for integrating prose, code, and results. You can use R Markdown in notebook mode for analyst-to-analyst communication, and in report mode for analyst-to-decision-maker communication. Because of features of R Markdown formats, you can even use the same document for both purposes.

In Graphics for communication, you will learn how to take your exploratory graphics and turn them into expository graphics, graphics that help the newcomer to your analysis understand what's going on as quickly and easily as possible.

In R Markdown formats, you'll learn a little about the many other varieties of outputs you can produce using R Markdown, including dashboards, websites, and books.

The book finishes up with R Markdown workflow, where you'll learn about the "analysis notebook" and how to systematically record your successes and failures so that you can learn from them.

Overall the book is the best book for those who want to learn R as well as who want to master it. It is well organized book, with very excellent contents. As approach used here is practical, numerous real life examples will help you understand the concepts. The book is worth for your personal library, if you are interested in data science.

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