IMPROVING LABOUR PRODUCTIVITY: CHALLENGES AND SOLUTIONS IN INDIAN CONTEXT

Ph.D. THESIS

by

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DEPARTMENT OF MANAGEMENT STUDIES
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ROORKEE- 247 667, (INDIA)
DECEMBER, 2018

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A THESIS

*Submitted in partial fulfilment of the
requirements for the award of the degree*

of

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in

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INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE

<u>CANDIDATE'S DECLARATION</u>

I hereby certify that the work which is being presented in the thesis entitled **"IMPROVING LABOUR PRODUCTIVITY: CHALLENGES AND SOLUTIONS IN INDIAN CONTEXT"** in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy and submitted in the Department of Management Studies of the   Indian Institute of Technology Roorkee, Roorkee is an authentic record of my own work carried out during the period from January, 2014 to December, 2018 under the supervision of Dr. Rajat Agrawal, Associate Professor, Department of Management Studies, Indian Institute of Technology Roorkee, Roorkee.

The matter presented in the thesis has not been submitted by me for the award of any other degree of this or any other Institute.

(VARUN GOEL)

This is to certify that the above statement made by the candidate is correct to the best of my knowledge.

(Rajat Agrawal)
Supervisor

Date: /   /2018

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(Rajat Agrawal)
Supervisor

The Ph. D. Viva-Voce Examination of Mr Varun Goel, Research Scholar, has been held on
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Chairman, SRC   **Signature of External Examiner**

This is to certify that the student has made all the corrections in the thesis.

Signature of Supervisor (s)   **Head of the Department**

Date: _____

ABSTRACT

The importance of productivity especially, labour productivity has evolved in terms of both scope (breadth) and impact (depth) in today's era of global supply chains, distributed and networked workforce and ever increasing technology penetration. Moreover, the labour productivity in manufacturing sector especially in developing countries has attained huge significance as manufacturing not only has the potential to employ a huge number of people but also has a multiplier effect on number of jobs created in related supply chain and services industries. Thus, manufacturing contributes to significant portion in building the GDP of any developing country. Poor labour productivity is one of the root causes of cost inefficiency, quality defects, time overruns and service ineffectiveness. This research integrates the literature available on labour productivity to propose a new model, that is, FLOPACE model, which addresses the challenges of labour productivity in Indian manufacturing organisations.

This research has been carried out in four stages:

Stage1: Exploratory research design: This phase involved the following steps. First, using the extensive literature review and keywords, several dimensions of labour productivity were identified and a working definition in Indian context is arrived upon. Secondly, extensive literature review was carried out to explore the potential enablers and measures of labour productivity in manufacturing enterprises. This led to identification of 108 factors that impact labour productivity. Then, using a panel of 3 industry experts and 3 academia experts, these variables were grouped together into 20 enablers which included health, education, attitude, motivation, work environment and conditions, pay, organization structure and culture, training & development, HR policies, technology adoption, communication, focus on improving productivity, sharing of best practices, number of competitors and presence of regulatory body in the industry, government policy, macroeconomics of the country, migration of skilled labour and macroeconomics of the world. The third step was to identify barriers to labour productivity. Two Focus Group Discussions (FGD) were conducted. First FGD was conducted in a Maharatna Public Sector Unit in Uttarakhand with 10 participants. The participants were in the age group of 28 to 38 years with average experience of 8.4 years. The FGD lasted two hours and seven barriers were identified from this group. The second FGD was conducted with 10 participants from public and private sector companies in the age group of 27 to 38 years with average experience of 9.8 years for 2 hours. This group identified

9 barriers out of which 5 barriers were common as identified by group 1. The barriers included Rigid Environment, Lack of learning and training opportunities with new technology adoption, Improper work distribution, Lack of cohesiveness, Poor Incentive System, Lack of Motivation, Lack of Job Recognition, Improper Postings, Lack of Multiskilling, absence of Ownership, Physical and Mental Health. In the next stage, using Interpretive Structural Modelling (ISM) and a panel of 3 industry and 3 academia experts, a multilevel hierarchal structure was created and factors were classified into 5 levels which were Employee Related, Organisation Related, Industry Related, Nation Related and International factors.

Stage 2: Scale Development: The enablers so developed in the first phase were used as measures of scales for our research. The scale items were finalized using the expert opinion of 2 academicians and 10 industry specialists and 20 item scale was finalized and preliminary questionnaire was developed. We conducted pretest mechanism with 35 practitioners to access the face validity of the questionnaire and based upon the suggestions gathered, changes were made including altering and rephrasing certain ambiguous words and phrases which led to further refinement of the scale items. The questionnaire was constructed based on a final list of 20 scale items and a write-up on labour productivity in manufacturing sector was prepared. The scale has been validated in terms of construct, content, criteria and the reliability has been checked.

Stage 3: Descriptive research design: The questionnaire developed was mailed to employees in 14 companies and 640 responses remained after sanitization of data. Exploratory Factor Analysis (EFA) was performed on the sanitized data. Out of 20 scale-items, only 15 loaded on to 3 dimensions. Using the same data, Confirmatory Factor Analysis was performed and a measurement model was obtained with 3 dimensions namely Individual Characteristics (IC), Firm Characteristics (FC) and External Characteristics (EC). The labour productivity measurement model thus obtained has been tested for reliability and validity.

Stage 4: In this phase, the strategies were developed using the findings of the research in first three objectives and another focus group was done to validate the strategies by manufacturing firms for bringing about improvement in labour productivity.

For the purpose of clarity, coherence and generating wider interest, the thesis has been organized as follows:

The first chapter "Introduction" presents the background of the study. It briefly discusses about the Indian manufacturing sector, the focus of our study and discusses the importance and need of

measurement and improvement of labour productivity in Indian manufacturing organisations. The chapter further presents the concept of labour, the research problem, research objective, research questions and thesis structure.

The second chapter "Literature Review" elucidates the methodology of the systematic literature review and identify the research articles important for this study. An attempt has been made to cover all the broad definitions of labour productivity which are significantly different from each other. Then, it discusses the evolving nature of labour productivity and how the definition of labour productivity has evolved over time. It further discusses the various models that have been used for measurement of labour productivity. This chapter also highlights the major research areas of labour productivity. It then identifies the factors affecting labour productivity in the form of enablers and barriers and provides a brief discussion of the identified factors.

The third chapter "Research Methodology" presents the detailed research design comprising both qualitative and quantitative methods. This chapter discusses the questionnaire design, target population, sample size, data collection method and tools used for analysis.

The fourth chapter "Data Analysis, Findings and Results" outlines the findings of the researcher and explains the accomplishment of the research. It prioritizes the factors identified in the literature review using ISM technique which provides the relative importance of enablers and classify the enablers into 5 categories. Next, a scale is developed and using factor analysis, a model is built having three dimensions namely Individual Characteristics (IC), Firm Characteristics (FC) and External Characteristics (EC).

The fifth chapter "Discussion and Recommendation" presents the detailed analysis of the research findings and elaborates on key strategies for improving labour productivity. It further provides the key recommendations to managers, policymakers and academicians for improving labour productivity. It then briefly discusses the FLOPACE model which addresses the challenges posed by productivity issues in Indian manufacturing organisations. A brief summary of steps taken by an organisation to improve employee productivity have also been presented as case study.

The sixth chapter "Summary, Conclusions, Limitation and Future Scope" discusses the summary of the findings and conclusions arrived at in this research and examines its limitations along with suggesting the future research directions.

ACKNOWLEDGEMENT

LIST OF PUBLICATIONS

Journal Publications

1. Goel, V. & Agrawal, R. (2017). Factors affecting labour productivity: an integrative synthesis and productivity modelling. *Global Business and Economics Review*, 19(3), 299-322.
2. Goel, V. & Agrawal, R. (Under Review). Role of labour productivity in Sustainable HRM. *Employee Relations*.

Conference Publications

1. Goel, V. & Agrawal R. (2016), 'New Productivity Dimensions in Indian manufacturing sector', *International Conference on Global Trends in Business Sustainability and Research* organized by IIT Roorkee.

International Conferences and Proceedings

1. Goel, V. & Agrawal R. (2015), 'Improving Productivity using HRIS in Indian Manufacturing Firms', presented at *International Conference on Technology Management* organised by NIT Hamirpur.
2. Goel, V. & Agrawal R. (2016), 'New Productivity Dimensions in Indian Manufacturing sector with special reference to PSU', presented at *4th PAN IIM conference* organized by IIM Ahmedabad.

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1.1 Background of the study

Beginning of formal management in the form of scientific management is attributed to efficiency and productivity. At the beginning of the Industrial Revolution in early 18th century in Britain followed by Western Europe, this necessitated the need for and development of the theory of formal management practice. This also triggered a new era of economic development, i.e. industrial revolution. This brought about history's first significant sustained rise in economic growth and expansion of national economies. It had a profound impact on the social, economic and cultural way of life of human civilization. Prior to industrial revolution, agriculture was the primary way of living of the people across the globe. People were involved in occupations like handicrafts, handmade products and cottage industries. The scale of business was small and home based. There was a direct relationship between the owner of the business and the people working under him. With the setting up of factories which were into mass production, ordinary working people found an increasing number of opportunities for employment in the mills and factories. There was migration of workers from rural and agrarian communities to cities in search of employment (Qin, 2010).

Per capita GDP was broadly stable before the first industrial revolution (Maddison, 2001). The industrial revolution resulted in transition from hand production processes and methods to machines, mainly in the area of textiles, chemical manufacturing and iron production processes primarily using steam power during the period from 1760 to 1830 (Hobsbawm, 1969; Ashton, 1997; Khan, 2008). The major impact of the industrial revolution was that "the standard of living for the general population began to increase consistently for the first time in history." (Hartwell, 1961; Lucas, 2002).

Later, it resurged at the turn of 20th century in the form of mass production. Technological developments and automation brought about "Second Industrial Revolution". This period (1870-1914) was characterized with a new group of innovations in manufacturing industry which included large-scale manufacturing of steel, machine tools and the use of advanced equipment in steam-powered factories (Chandler, 1994; Mokyr, 1998).

With large scale production and industrialization, the need for formal management education was also felt which led to the development and implementation of various theories in industrial and business management. All this resulted in the better management of resources leading in improvement of productivity. Further, over the time, competition developed in such a way that it moved from developing and manufacturing product in large numbers to being customer centric and this led to customization for which there was a requirement of skilled labour. This was followed by development of several concepts in various fields including concepts in marketing and customer relationship management (Wren and Bedeian, 1994).

During the Second Industrial revolution, F.W. Taylor published his legendry work in the year 1911 called "The principles of Scientific Management". He argued on the necessity of training rather than finding the right man stating "In the past the man has been first; in the future the system must be first". He advocated to develop a science for each element of a man's work, which should replace the old rule-of-thumb method. Then, scientifically select, teach, train and develop the workman instead of letting him train himself. He argued co-operation and equal division of work between managers and workers to ensure that the goals of the organization are being met (Taylor, 1911).

Later, two individuals, Henry Fayol, a French manager-engineer and Max Weber, a German economist-sociologist contributed to the evolution of management thought with the aim to drive more productivity from the worker. Both individuals sought to combine theory with practice (Wren and Bedeian, 1994). Henry Fayol introduced 14 "Principles of Management" in his book "General and Industrial Management" (1916). He also introduced the five primary functions of management; namely, planning, organizing, staffing, directing and controlling. Max Weber looked at ways to eliminate managerial inconsistencies due to abuse of power which contributed to ineffectiveness by providing 9 principles of bureaucratic model of organisation theory. Large scale production would not have been possible without adherence to the principles of division of labour and specialization, relationship between man and the machine, managing people. Fayol stressed management education rather than technical training. Weber sought to replace traditional authority with legal authority and to prescribe an impersonal and merit basis for selecting, hiring and promoting employees.

The neoclassical perspective began with Hawthrone Studies conducted by Elton Mayo and his colleagues in the Hawthorne plant of the Western Electric Company between 1927 and 1932. The team conducted four separate experimental and behavioural studies over a seven-year period. These were:

1. "Illumination Experiments (1924–27): - to find out the effect of illumination on worker's productivity.
2. Relay Assembly Test Room Experiment (1927–28): - to find out the effect of changes in number of work hour and related working condition on worker productivity.
3. Experiment in interviewing workers: - Around 20,000 workers were interviewed over a period of two years. The interviews enabled the researchers to discover the informal organisation and its relationship to the formal organization. These experiment led to a richer understanding of the social, interpersonal dynamics of people at work.
4. Bank wiring Room Experiments (1931–32): - to find out social system of an organization."

The Hawthrone studies helped in establishing the fact that there exists a social element in the workplace. The studies also concluded that although financial motives were important, social factors are just as important in defining the worker-productivity.

Later, organisational scientists like Chris Argyris, Douglas McGregor, Abraham Maslow and Fredrick Herzberg used the knowledge of various domains like psychology, sociology and anthropology to develop Behavioural Science Approach. The underlying philosophy of organisational humanism was developed which stated that individuals need to use all of their capacities and creative skills at work as well as at home.

Table 1.1 Levels of World GDP Per Capita, World GDP and World Population

Year→	1000	1500	1820	1870	1913	1950	1973	1998
World GDP per Capita (in 1990 USD)	435	565	667	867	1510	2114	4104	5709
World GDP (in billion 1990 USD)	116.8	247.1	694.4	1101.4	2704.8	5336.1	16059	33726
World Population (in million)	268.3	437.8	1041.1	1270	1791	2525	3914	5908

Source: Maddison (2001), World per Capita GDP – page 264, World GDP – page 261, World Population – page 241.

If we study the evolution of management theories and their implementation along with the advent of industrial revolution, we can easily derive a strong correlation between the progressive implementation of these theories and improved labour productivity in various industries.

Economic growth involves a process of structural change (Lee et al., 2015). Development involves productive transformation. The 2014 report of ILO states "Productive transformation is a process of change into higher value added products. It typically involves shifting resources between sectors (e.g., relocating labour from low-productivity activities, such as subsistence farming, to higher productivity ones) as well as within them." It is argued that development is not only achieved by trade and economic liberalization or exploitation of natural resources. Also, for development to be sustainable, it shouldn't be based on 'grow now, clean up later'. In many developing countries, extraction of non-renewable natural resources such as oil, gas and minerals is seen as an opportunity to expand and prosper. However, such industries typically create limited number of jobs with specific skills. Thus, the need is to translate the revenues from the natural resources into decent work opportunities that trigger new economic activity by generating decent job opportunities (ILO, 2014).

The ILO report of 2014 further states that "In developing countries with surplus labour, it is essential to use the resources at least in significant part to build a broad-based productive foundation and enhance productive capabilities. Agriculture often represents the largest source of employment in developing countries. Many of these countries are characterized by low-productivity subsistence agriculture and a high-productivity nascent modern sector consisting of mines, plantations, manufacturing or high-end services." Productivity transformation involves maximizing the rate at which labour can be absorbed from agriculture to modern sector. Many studies show that countries which were able to shift production from agriculture to industrial products to diversify their manufacturing and export base were able to achieve high productivity growth rates. Thus, manufacturing has been historically identified as a leading sector as it triggers transformation with significant economic and knowledge spillovers to the rest of the economy. Manufacturing has the potential to generate quality jobs both directly and indirectly through linkages to other sectors and income-induced effects (Lavopa and Szirmai, 2012). Because of the rise of consumerism, there will be a huge demand of manufactured goods and thus manufacturing industry will see the growth in near future.

"For developing countries, three propositions have been found to be true, 1) GDP growth is more consistently led by manufacturing growth than by growth in other sectors, 2) The share of manufacturing in GDP increases going up the per capita GDP ladder and 3) product of 1) and 2) i.e. higher per capita income countries with higher manufacturing shares will have higher GDP growth" (ILO, 2014). Upon sector analysis of the past three decades (1980-2010) considered decade wise for the developing countries, the leading role of manufacturing has been found.

Table 1.2 Growth rates for developing countries by sector, period annual averages (per cent per annum)

Agriculture			Industry (including manufacturing)			Manufacturing			Services		
1980–89	1990-99	2000-11	1980–89	1990-99	2000-11	1980–89	1990-99	2000-11	1980–89	1990-99	2000-11
3.6	2.8	3.5	3.5	5.8	6.8	4.7	7	7.2	3.7	4.9	6.4

Source: ILO World of Work Report, 2014

The beginning of modern industrialisation in India lagged Europe by around fifty to sixty years as the British established first modern cotton and paper mills and jute factories in 1851 (Maddison, 2001) when the first railway line became operational. Then came phases with the rise of the coal industry in last quarter of the 19th century and the first iron and steel plants in late 1890s and 1900s. The first Indian steel mill was built by the Tata Company at Jamshedpur in Bihar in 1911. (Maddison, 2001). But it was the first and the second world war that expanded Indian industry considerably compared to the intervening periods due to massive demand for raw materials and semi-finished goods used in the war effort.

The first sustained period of broad based industrialisation occurred during the first three five year plans (1951-1966) whose successful implementation was based on significant legislation like the Industrial Disputes Act 1947, Factories Act 1948, Minimum Wages Act 1948, Companies Act 1956, EPF and Miscellaneous Provisions Act 1952 etc. Also massive public expenditure in major infrastructure projects and setting up of many of India's public sector undertakings (now almost all are publicly listed but still major shareholding remains with the federal government) resulted in sustained increases in labour productivity yet total factor productivity was low.

However, the 1970s was a period of negligible economic growth and there was a disturbing negative growth in total factor productivity from 1971-74 and a less than 1 percent productivity growth from 1975-80. Labour productivity also grew less than 1 percent from 1971-1974 while it grew for 2.73 percent from 1975-1980 largely due to the lower base in previous four years. But it declined to 1.15 percent during the period 1981-91 due to the first introduction of modern computer and information technology based machinery in Indian manufacturing.

The biggest gains in labour productivity have occurred since the opening up of the Indian economy to private and foreign capital owing to the implementation of the new Industrial Policy in 1991 coinciding with the large scale adoption of modern ICT technologies.

Further, because of an ever growing size of the middle income section of population, sustained growth in foreign investment in manufacturing owing to a gradual evolution of a favourable regulatory environment, nuclear family households and rising aspirations of youth due to continuous lifestyle comparisons with counterparts in industrialised societies will all make India the center point of this economic growth as the disposable income of the population rise. Global corporations view India as emerging market where future growth is likely to increase at a higher pace. The growth in India's consumer market would be primarily driven by a favourable population composition and increasing disposable incomes. There would be rapid urbanisation and the rising middle class income will generate employment opportunities in sub-sectors like infrastructure and high end manufacturing. The next few paragraphs show the promising nature of Indian manufacturing sector.

We focused on Indian manufacturing sector in our study particularly because it is one of the key contributors to the economy of India contributing about 15% of GDP. India is the 5th largest manufacturer in the world with a total manufacturing value added of over USD 420 billion in 2016. It has grown by over 7 per cent per year on average in the past three decades (1980-2010). National Manufacturing Policy targets increasing manufacturing's share of GDP to 25% by 2025 and creating 100 million new jobs on the basis of strong consumer demand.

Table 1.3 Increase in manufacturing output of India in last 50 years (in billions constant USD 2010), 1970-2010

Year →	1970	1980	1990	2000	2010
Manufacturing, value added	25.36	37.60	68.64	122.62	268.48

Source: World Bank website (https://data.worldbank.org/indicator/NV.IND.MANF.KD?locations=IN)

Table 1.4 Annual NIC-2 digit and sectoral growth rates as per IIP (%) calculated w.r.t. previous year, FY2013-FY2018

NIC 2008	Description	Wgts	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	4.98	8.1	5.7	2.3	13.0	30.4	23.1	13.8
26	Manufacture of computer, electronic and optical products	1.57	0.6	14.5	2.1	5.1	2.5	17.2	7.0
14	Manufacture of wearing apparel	1.32	-1.0	16.0	-0.3	14.5	15.8	-9.4	5.9
24	Manufacture of basic metals	12.80	7.8	4.4	9.8	0.6	5.1	5.7	5.6
30	Manufacture of other transport equipment	1.78	-0.8	4.3	6.3	2.3	4.4	14.0	5.1
19	Manufacture of coke and refined petroleum products	11.77	5.9	2.0	0.6	4.7	4.7	3.7	3.6
28	Manufacture of machinery and equipment n.e.c.	4.77	2.9	0.4	-0.7	3.2	7.7	5.6	3.2
13	Manufacture of textiles	3.29	8.0	4.3	3.8	2.1	-1.7	-0.3	2.7
20	Manufacture of chemicals and chemical products	7.87	3.9	4.7	0.4	4.1	2.5	-0.3	2.6
29	Manufacture of motor vehicles, trailers and semi-trailers	4.86	0.1	-1.0	3.5	-1.5	0.6	12.6	2.4
23	Manufacture of other non-metallic mineral products	4.09	2.9	0.2	4.9	2.0	-0.5	3.6	2.2
22	Manufacture of rubber and plastics products	2.42	1.0	11.3	4.7	0.5	1.9	-8.2	1.9
27	Manufacture of electrical equipment	3.00	13.0	3.9	3.9	5.2	-4.5	-12.4	1.5
10	Manufacture of food products	5.30	3.3	1.3	6.0	-5.6	-5.5	9.3	1.5
25	Manufacture of fabricated metal products, except machinery and equipment	2.65	-3.0	4.6	4.3	-2.4	2.0	2.3	1.3
11	Manufacture of beverages	1.04	6.7	-1.8	3.2	1.4	-3.1	-0.8	0.9
32	Other manufacturing	0.94	13.1	-7.0	0.5	13.4	4.8	-15.4	1.6

17	Manufacture of paper and paper products	0.87	3.3	10.6	0.8	1.2	-2.1	-4.5	1.6
12	Manufacture of tobacco products	0.80	7.5	8.3	12.6	4.0	-15.0	-17.9	-0.1
18	Printing and reproduction of recorded media	0.68	-3.2	9.3	-5.5	3.8	2.1	-5.9	0.1
15	Manufacture of leather and related products	0.50	10.6	2.2	8.8	0.5	-1.1	1.3	3.7
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.19	-3.0	-2.5	0.7	2.3	-4.5	-0.8	-1.3
31	Manufacture of furniture	0.13	12.9	11.1	-7.8	41.8	7.5	11.6	12.9
Manufacturing		77.63	4.8	3.6	3.8	2.8	4.4	4.6	4.0
Mining		14.37	-5.3	-0.1	-1.4	4.3	5.3	2.3	0.9
Electricity		7.99	4.0	6.1	14.8	5.7	5.8	5.4	7.0
General		100.00	3.3	3.3	4.0	3.3	4.6	4.4	3.8

Source: The Ministry of Statistics and Programme Implementation, Government of India (http://www.mospi.gov.in/iip-2011-12-series)

Several sectors in Indian manufacturing are indicating the rapid growth. Consider automobile sector for example. India is the world's fourth largest automobile market and the fifth largest automobile manufacturer (when excluding two wheelers) with production and sales of automobiles (excluding two wheelers) in India in financial year ending March 31, 2018 (FY18) being 4.8 and 4 million respectively. It is the world's largest two wheeler production and sales market. Two-wheelers are by far the most popular form of vehicle in India, taking an 80 per cent share in 2015-16. In total, 25.3 million automobiles produced in FY17.
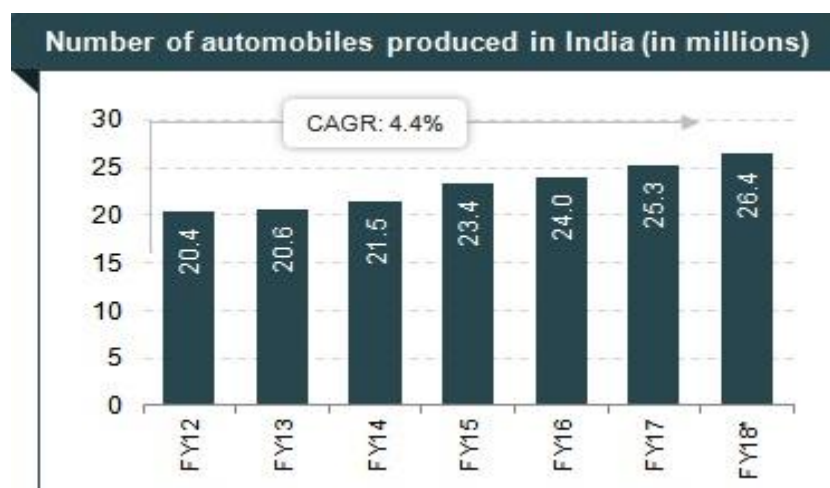
Figure 1.1 Number of automobiles produced in India (in Millions)

Source: IBEF (India Brand Equity Foundation), India

The two wheeler segment dominates the market in terms of volume owing to a growing middle class and young population. Moreover, the growing investment of automobile makers in rural markets owing to increased penetration of paved roads and better availability of automobile finance further aided the growth of the sector. This has been made possible because of support of various factors such as availability of skilled labour at low cost, robust R&D centres and low cost steel production. The industry also provides great opportunities for investment and direct and indirect employment to skilled and unskilled labour.

As per Automobile Component Manufacturers Association (ACMA) forecasts, automobile component industry is expected to post a 12-14 per cent growth rate in FY19, on the back of robust growth in domestic passenger vehicle, commercial vehicle, tractor and two-wheeler segments. The auto-components industry accounts for 2.3 per cent of India's Gross Domestic Product (GDP) and employs as many as 1.5 million people directly and indirectly each.

Figure 1.2 Aggregate turnover of automobile component industry (in US$ billion)

Source: Automobile Component Manufacturers Association (ACMA), India

Another large industry is cement, where India is world's 2nd largest cement market, both in production and consumption. This has been enhanced by high activity in real estate and high government spending on smart cities and urban infrastructure. After deregulation in 1982, the cement industry has attracted huge investments, from Indian and foreign investors. IBEF website states that "India's cement industry is a vital part of its economy, providing employment to more than a million people, directly or indirectly".
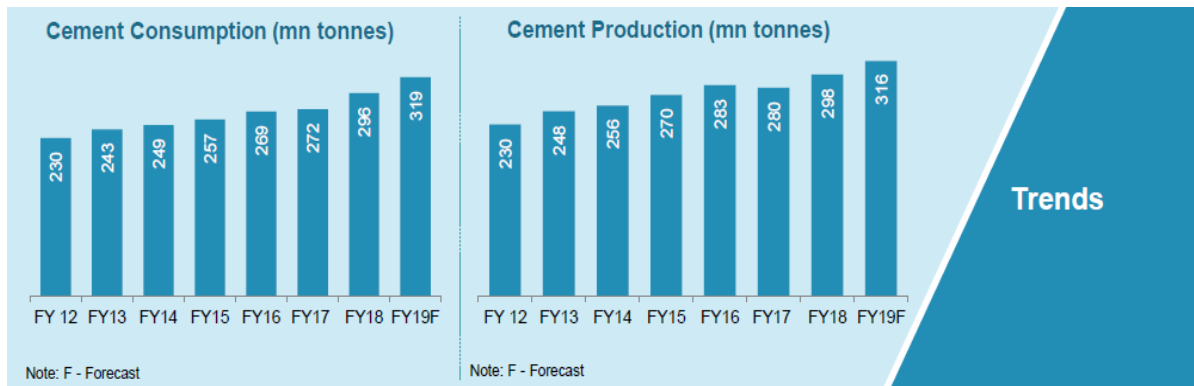
Figure 1.3 Cement consumption and production in India (in million tonnes)

Source: Production Performance of Eight Core Industries : Base Year 2011-12, Centre for Monitoring Indian Economy Pvt. Ltd. (https://economicoutlook.cmie.com)

Further, because of higher population and growing demand in the market, the consumer durables market in India is estimated to have reached Rs 1 trillion (US$ 15.5 billion) in 2017 which is expected to grow by three times to reach Rs 3 trillion (US$ 46.54 billion) by 2020. The higher purchasing power has led the Indian electronics market to grow at expected 41 per cent CAGR between 2017-20 to reach US$ 400 billion.
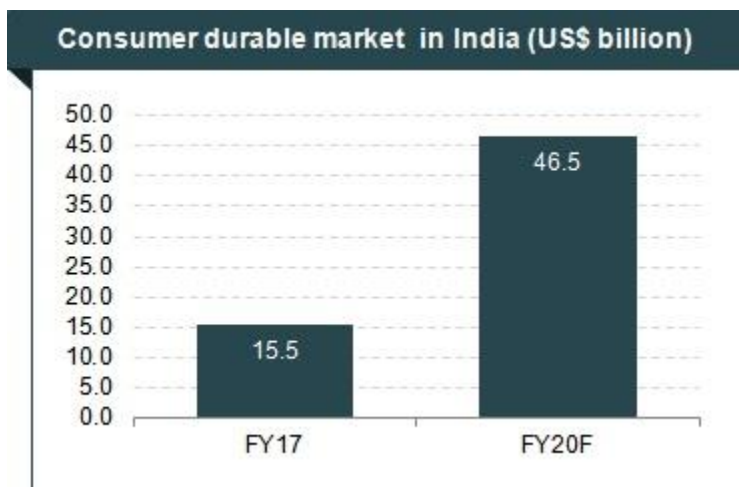
Figure 1.4 Consumer durable market in India (in US$ billion)

Source: IBEF, India

Under the make in India initiative, India Brand Equity Foundation (IBEF), a trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India

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published a fact book in August 2018 titled "50 Reasons To Partner with India" which presented the 50 strong facts about Indian economy and business. These are some of the highlights of various industries in Indian manufacturing sector and their potential position in international markets which show promising growth in near future.

However, above facts and figures only provide a glimpse of growth in sales and volumes and future potential based on a growing consumer market size. Long term growth and profitability is also dependent on sustaining a productive workforce. Due to large scale of young population and easy availability of labour, developing countries like India would remain labour-intensive rather than capital intensive unlike developed western countries where availability of labour is not so abundant. Government of India is committed to increase the productivity of workforce through various measures. The National Skill Development Mission is the biggest among them. There is overwhelming amount of empirical evidence based literature across the globe concluding and highlighting how increased skill sets have a direct correlation with not only increased employability but also enhanced labour productivity. Thus, it is important to understand how to make the workforce more competitive in the market and thus, this study was undertaken.

Further, lack of a system of comprehensive, flexible and evolving labour productivity practices in most Indian manufacturing enterprises affects their long term growth and profitability. It is very imperative to identify entrepreneur's inclination towards productivity and how they understand the benefit of best labour productivity practices in their firms. Labour productivity is one of the keys to maintain competitive advantage in a market and gain leadership. In spite of increasing interest in labour productivity in developing countries, discussion about the concept and its potential application to the manufacturing sector has been excluded from mainstream literature. There is not much evidence available in literature on use of productivity enhancing practices in manufacturing enterprises. However, given that the argument about the effect of size of enterprise on the effectiveness of labour productivity practices is still ongoing, it is worth addressing the issue from perspective of manufacturing enterprises.

Thus, measuring and enhancing the labour productivity of manufacturing enterprises is a field of detailed study especially in developing economies where there are large numbers of manufacturing enterprises. There is ample scope of research in the area of improvement of labour productivity of manufacturing enterprises in the developing economies as identified by numbers of gaps during

an extensive literature review. Due to these facts, a strong motivation for research on the relevance and impact of labour productivity on the growth and development of Indian manufacturing enterprises exists and this endeavour is aimed at that.

1.1.1 Why labour productivity?

Indian manufacturing sector has grown almost at the same pace as the country's overall economy and the contribution of manufacturing sector to overall economy has hovered in the range of 15-18 percent in last 15 years. Many developing economies have been able to increase the contribution of manufacturing sector in their overall economies like China (29.34%), Indonesia (20.16%), Malaysia (22.31%), Myanmar (23.66%), Philippines (19.46%) and Thailand (27.07%). Government aims to achieve 25 per cent GDP share and 100 million new jobs in the sector by 2022. The number of jobs in the sector has also grown at low pace in last 10 years from 20.62% of the total workforce in the year 2007 to 23.79% of the total workforce in the year 2017. While the jobs in services sector have grown from 25.7% of the total workforce in the year 2007 to 33.48% of the total workforce in the year 2017. This indicates that the supply of industry ready and productive workforce to the manufacturing industry is less.

As per the WEF global competitiveness report of 2017-2018, India ranks 58 behind China (28) and Indonesia (45). Out of 140 economies studied, it ranks 96 on skills pillar and 108 on health pillar besides ranking 117 on adoption of ICT and 136 on trade openness. Another WEF report on Inclusive Development Index ranks India 62 out of 74 emerging economies for the year 2018 much behind Russia (19), China (26) and Brazil (37) among BRICS economies. This indicates that there is a strong need to focus on improving productivity of labour in Indian manufacturing companies.

The importance of productivity especially, labour productivity cannot be ignored in today's time of cut throat global competition. Moreover, the labour productivity in manufacturing sector especially in developing countries is even more important as the manufacturing sector contributes to significant portion in building the GDP of any developing country. Poor labour productivity is one of the root causes of cost inefficiency, quality defects, time overruns and service ineffectiveness. Also, a key component of the input costs in any industry is the labour cost. Businesses are struggling hard to remain competitive. A workforce which is not only productive but is also aware about reducing the other costs like energy costs and fuel costs is a source of

sustained competitive advantage. With the start of the 'Make in India' campaign, improved labour productivity is also necessary if growth has to be sustainable. With the demographics in favour of India where more than 50% of the employed workforce is young, it is high time to fully utilise the potential of this young workforce or else India may get behind in the competitive race.

1.1.2 Dimensions of labour productivity

Productivity has several sub-concepts. These are total productivity, total factor productivity and partial productivity (Hannula, 2002). Productivity is generally defined as output per unit of input. There is no universally accepted definition of labour productivity, different countries and many authors have offered various criteria for defining the concept. Generally, labour productivity is defined by the partial productivity ratio of output to input labour. However, this definition is quite narrow as it assumes that different inputs like labour, material, technology, capital are independent of each other and act in isolation to create or alter the output. It considers that productivity follows stimulus-response model of causality. However, all these inputs are not isolated and increase or decrease in productivity of one factor may alter the productivity of another factors. For example, use of technology may also increase labour productivity apart from increasing capital productivity. Another definition that exists in literature of labour productivity is given by Sauian et al. (2013),

$$P = (total\ income\ generated)/(total\ labor\ input).$$

This definition is more suited to measure national labour productivity. Mahmood (2008) has defined labour productivity as output per person employed or per hour worked. Subrahmanya (2010) has defined it as gross value added per person employed.

At industry level, labour productivity is given by,

$$Pi = (total\ income\ generated\ by\ industry\ i)/(total\ labor\ force\ in\ industry\ i).$$

But this definition is unable to tell whether the increase in productivity is due to increase in speed and skill of labour or is it due to increase in usage of ICT (Information and Communication Technology) in the operations of the organizations involved in the industry (Sauian et al., 2013). Whether or not productivity and business efficiency increase as a result of IT investment has been the subject of considerable debate (Badescu and Ayerbe, 2009). If an innovative enterprise adopts more and more capital intensive techniques, it might experience growth of only sales turnover and investment but not employment. Rather, employment might decline resulting in increase of labour productivity. But if the innovative enterprise aims at expansion of scale by employing more of

both capital and labour, growth might occur in terms of not only sales turnover but also investment and employment. The ideal situation would be increase in employment along with labour productivity (Subrahmanya, 2010). Thus, the definition of labour productivity is incomplete if holistic view is not taken into account.

1.1.3 Labour productivity measurement and improvement – Need and importance

Improving labour productivity "is a major concern for any profit-oriented organization, as it represents the effective and efficient conversion of resources into marketable products and determines business profitability" (Sandbhor and Botre, 2014). Also, labour costs form a key component of the total input cost in any manufacturing process. Each unit of cost saving is directly reflected in the profit of any organization. Measuring productivity of employees through a reliable methodology is essential as it provides a fairly accurate and comparable information on the performance levels of employees in different units (verticals, teams, business units, geographies) of the organisation. Without measurement, the managers will have little to no idea how to reward employees who are excelling in their jobs, neither they will have sufficient useful information on whom to assist or fire from the job. Measuring labour productivity also helps in adequately and if legally possible, proportionately compensating the employees based on a gamut of factors ranging from motivation and initiative to innovation and leadership. Employees compare themselves with peers who consistently receive pay increases and they strive to follow their peers. It also helps in identifying the areas where employees require training and coaching.

Being productive can help the organization in deriving the maximum benefit out of its human resources. Productive workplaces are able to focus on customer needs and produce improved products satisfying customer needs. Productive employees are foresighted to the external environment and change their behavior accordingly. Such foresightedness can save the businesses from external competition as well as damage from sudden accidents or unforeseen events like natural disaster. Each employee has its own set of competencies. A good manager notices, identifies and measures these competencies and uses the same to increase the competencies of other employees in the team. At the same time, he also uses this information to allocate different jobs to different employees. It is a general notion that productivity improvements are carried out by top management. But sometimes, the lower level productive employees are able to notice and implement the product or process improvements. Thus, problems exist at every level of the

organisations. For small businesses, owners are not able to pay attention to all the problems. As said in a proverb, "a lone gram cannot bust the oven", owners must focus in development of their team and this may happen only by measuring and improving productivity of the team. Team is a group of people working together to achieve a common goal. Improved employee productivity also results in increased customer satisfaction by providing better customer experience with improved quality products and reduced rework. Thus, it is important to measure, evaluate, plan, improve and continuously monitor the labour productivity of any organization. For the same, the organisations need to keep in mind the productivity management cycle as formulated by Sink (1985) which consists of four phases Measurement, Evaluation, Planning and Improvement.

Public sector productivity is as important to economic performance of a country as that of the private sector. Thornhill (2006) provides "three main reasons for why public sector productivity is crucial. First, the public sector is a major employer. Second, the public sector is a major provider of services in the economy, particularly business services (affecting cost of inputs) and social services (affecting labour quality). Third, the public sector is a consumer of tax resources. Changes in public sector productivity may have significant implications for the economy." With respect to Indian perspective as well, Public Sector Units are very important element in industrialization of Independent India. If these units learn the art of being competitive while providing quality goods and services, then they can significantly contribute to the Indian economy.

1.2 Research Problem

Manufacturing has been considered as a main growth engine for the economic development in terms of GDP and employment generation (ILO, 2014). With the turn of 20th century, labour productivity growth rates in developing countries have been higher than developed countries. However, accelerating labour productivity growth rates poses a crucial challenge for many developing countries in the years ahead. As per ILO World of Work report of 2014, it would take 40 years for South Asia and 55 years for South-East Asia to achieve the current level of productivity growth rates in developed economies. Further, with the current levels of productivity growth rates, African economies will not be able to catch up with the developed economies for the next 100 years.

Issues related to labour productivity and efficiency are more prominent in technologically advanced industries where low unemployment rates and capital intensive nature of industries make

long term firm profitability strongly dependent on technical innovation and enhanced labour productivity. In India, labour productivity is a less discussed area because of large number of population and availability of abundant labour resources. Indian manufacturing sector is facing tough challenges from low cost manufacturers particularly from China and Vietnam. Average productivity growth rate between 1991 to 2013 in China is an impressive 9% and that of Vietnam is 5% (ILO, 2014). These countries are able to reduce the cost of manufacturing because of superior productivity of employees. Labour cost is one of the key component in any product's price or lifetime cost. Thus, to compete in the global manufacturing market, it is important to reduce the cost of products and therefore, it is important to study issues, challenges and solutions related to productivity of workforce employed in Indian manufacturing sector.

Table 1.5 Labour Productivity (GDP Per Hour Worked), 1870–1998

(In 1990 international $ per hour)

Year➔	1870	1913	1950	1973	1990	1998
USA	2.25	5.12	12.65	23.72	30.10	34.55
Japan	0.46	1.08	2.08	11.57	19.04	22.54
United Kingdom	2.55	4.31	7.93	15.97	21.42	27.45
Australia	3.48	5.48	9.64	17.28	22.30	26.93
Brazil			2.48	5.78	7.05	7.87

Source: Maddison (2001), page 351.

Before beginning with literature review, the next section discusses the term labour and provides the background on the characteristics of labour, the concept of labour market, the determinants of demand for labour and the determinants of supply of labour.

1.3 Definition of Labour

Labour is a measure of the work done by human beings. Labour is also referred to as human capital which refers to the skills that the workers possess and not necessarily their actual work. All human exertion in the production of wealth and services is labour. Mental toil is labour as well as muscular effort. All who participate in production by their mental and physical effort are labourers in the economic sense. Labour has some unique characteristics that differentiate it from other sectors of

production. Dr Alfred Marshall (Marshall, 2009) in his work, 'The Principles of Economics', has defined labour as "any exertion of mind or body underground partly or wholly with a view to have some good other than the pleasure drive directly from the work". Professor Richard Lipsey has given a wider meaning to the term 'labour'. According to him, "all human resources, mental and physical, of both inherited and acquired sort is called Labour". In economics the production function is defined as the relationship between the different inputs of production and the resultant output. Land, Labour, Capital and Entrepreneurship are fundamentals factors of production. Labour is conventionally contrasted with the other factors of production as it is the only factor of production which is living and feeling, other than the entrepreneur who may be a team of individuals managing the business.

The importance of labour is laid down as: "Labour is the source of all wealth the political economist assert. And it really is the source - next to nature, which supplies it with the material that it converts into wealth. But it is infinitely more than this. It is the prime basic condition for all human existence and this to such an extent that, in a sense, we have to say that labour created man himself."

In India, the Factories Act, 1948 defines a worker as "a person [employed directly or by or through any agency (including a contractor) with or without the knowledge of the principal employer, whether for remuneration or not], in any manufacturing process, or in cleaning any part of the machinery or premises used for a manufacturing process, or in any other kind of work incidental to, or connected with, the manufacturing process, or the subject of the manufacturing process [but does not include any member of the armed forces of the Union]."

1.3.1 Characteristics of Labour

The following are the characteristics of labour:

i. Labour cannot be separated from the person who offers the labour. In other words, we can see that labour cannot be separated from labourer. When a worker is hired, he and his services come as a package. The environment and the working conditions in which the worker has to work are of utmost importance in determining the supply of labour.

ii. The worker sells his services but he himself remains the owner of this property. In the words of Marshall, "The worker sells his work but he himself remains his own property". Labour is inseparable from labourer. Sale is transfer of ownership. After sale, it is the buyer that becomes the owner of the property. But in case of labour, one can only hire the services of a labourer. One can never own them because labour cannot be detached from the labourer.

iii. Labour is a perishable commodity. Labour cannot be stored as a day's work, once lost it is lost forever. This is the reason why industrial disputes are not healthy for the economy. There are a lot of mandays lost when there are strikes and lockouts.

iv. Of all the factors of production, labour is the most heterogeneous. No two workers are the same because they are basically two different human beings. They differ in physical and mental attributes. It is not only the means of production but also the end. The goods that are produced by labour or somewhere consumed by them. Increase in the wages benefits the workers but it also adds to the cost of production increasing the prices of commodities.

1.3.2 The concept of labour market

The market is any place where buyers and sellers interact. The labour market is like other markets where a commodity that is labour service is demanded and supplied. It differs from most product market in several important ways.

i. In a labour market, the services of a labourer are only rented and never sold. A sale is a transfer of ownership where the buyer, after the sale becomes the owner. But the employer can only hire the services of the worker and not own them.

ii. As labour is a human resource, he has needs, perceptions and expectations. The productivity of labour is affected by not only the wage but also the working conditions, future growth and prospects. One needs human relation skills in order to deal with people at work.

iii. The suppliers of labour care about the way in which the labour is used, unlike a commodity whose transformation is entirely at the disposal of the person who bought the commodity.

iv. In a regular commodity market, it is the producers that supply those goods that are demanded by the households and in the labour market, it is the producers demanding the labour. So there is

a role reversal in case of labour market. This role reversal has an important dimension in determining the returns to the factors of production.

v. unlike raw materials that depreciate with increased usage, labour appreciates in value because of increased practice and experience. An experienced worker is preferred over a fresher.

1.3.3 Demand for labour and its determinants

The number of workers that are demanded for the purpose of recruitment decides the demand for labour. The demand for all factors of production including labour is a derived demand, that is, the demand for factors of production depends on the demand for the products they produce or the services they render. For example, there has been an increased demand for skilled technicians because of the growth of the manufacturing industries. When the economy is prospering, there is a rise in the aggregate demand for labour as there is a greater demand for the goods. In contrast, during an economic recession or slowdown in the market, the aggregate demand for labour will decline as businesses want to cut their cost and scale back on production. The reason why layoffs occur during a recessionary period is because the firms are unable to give employment to the workers due to shortage of demand for the products that the labour produces. Thus, the factors which determine the demand for labour are:

i. Wage rate: every factor of production commands a price. While land commands rent, raw materials command a price, labour commands wage. More is the wage, lesser is the demand for labour.

ii. Demand for the goods manufactured by the labour: the labour is used in the manufacture of goods or rendering of the service. Hence the labour is demanded for its ability to produce something else which is demanded by the people. This is called as the derived demand quality of labour. When the goods manufactured by the labourers are demanded more in the market, naturally these workers are demanded more.

iii. Change in the prices of other inputs: labour is a factor of production but there are also other factors of production like land, raw materials whose prices also determine the cost of production. When the prices of other factors are relatively cheaper and they constitute a large portion in the cost of production, the demand for labour is not affected much by its wage rate. When the

percentage share of labour cost in the total cost of production is less, the labour will still be demanded even though the wages have increased.

iv. Technique of production: There are broadly two different production techniques. One in which the method of production involves lot of machines which is capital intensive and one in which the production is happening with lot of labour, which is labour intensive. Agriculture in our country is labour intensive.

v. Type of market structure: The labour market may be operational under a perfectly competitive market or an imperfectly competitive market. In perfect competition there are a large number of buyers and sellers and there is perfect knowledge of market condition. In such a market structure, the demand for labour depends on the number of firms dependent on the market. Monopsony, which is a market structure where there is only one buyer but many sellers. In the context of labour market it means there are many workers seeking employment but there is a single firm offering employment. An example can be of a government service where there are limited posts or a coal mine in a remote location.

vi. Marginal productivity of labour: A company's decision about how much labour to recruit in production is driven by the firm's desire to maximize profits. Every worker produces a certain amount to output per hour which generates a lot of revenue for the company. If revenue generated by the worker is greater than the wage, then it is profitable for the firm to hire the worker.

vii. Minimum Wages fixed by the government: Government fixes the minimum wage which has to be followed by all the firms demanding labour. They cannot change the minimum wage because it is fixed by the government. They can always pay more than the minimum wage which is called as the fair wage which depends on the affordability of the firm. When the marginal productivity of the labour is less than the minimum wage, then the firm's demand for the labour decreases. The below diagram depicts the lost to the firm when the minimum wage is more than the wage determined by the market.
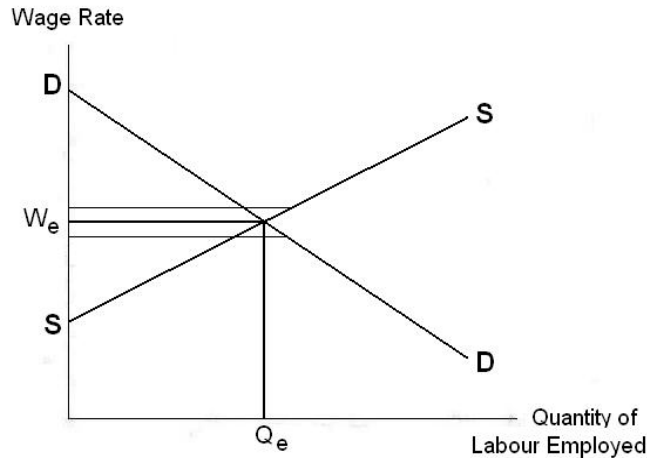
Figure 1.5 Demand and Supply of Labour

In the above figure, the minimum wage fixed by the government is higher than the wages by the forces of demand and supply. As a result, the demand for labour has reduced. As the firms have to pay the minimum wage which increases their cost of labour, the demand reduces.

1.3.4 Supply of labour and its determinants

Supply of labour at any given point of time is the number of workers willing to offer their work at a given rate. While there is an inverse relationship between the wages and the demand for labour, there is a direct relationship between the wages and the supply of labour. This is because an increase in the wage rate will invite more workers to offer their services. There will be workers engaged in other occupations who would like to shift to this occupation. There might also be new workers like fresh graduates or housewives who will be eager to join the occupation. This leads to an increase in the supply. The supply curve is upward sloping indicating a direct relationship between the wage rate and the supply of labour. When wages increase, the existing workers are willing for work for more hours and new workers will come forward to offer work encouraged by the increase in wages. Supply of labour is measured in the number of hours that the workers work. There is normally a trade-off between work and leisure. If workers are not working, it means that they are idle enjoying leisure time. An increase in wages will encourage a worker to supply more worker as work seems to be favourable option than staying idle. When leisure has a higher opportunity cost work is substituted for leisure. This is called as substitution effect. On the other hand, with an increase in wages other things remain constant, means that for the same amount of work, the worker is earning more. In such a case, a worker expecting a fixed income will now offer

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less hours of work preferring leisure to work. The modern theory of wages envisages that the demand and supply of labour determines the wages. The factors affecting the supply of labour are:

i. Size of population and its composition: The supply of labour depends on the size of population. In some countries which are more popular than the others, they have a good supply of labour. Such countries go in for labour intensive technique of production. The larger the population, the more will be the supply of labour. The compositions of population, male and female, skilled, unskilled all have a bearing on the supply of labour. The age factor of the population is also very important. Countries whose population comprises of young people will have more supply of labour. The most densely populated cities in India will have more supply of labour.

ii. Wage rate: Wages or salary is one of the chief motivator for the working population. There is a direct relationship between the wage rate and the supply of labour. A reasonably high wage rate linked with the cost of living index will bring more supply of labour. In industries where the wages are high, people are willing to offer their services. The best talent can be hired at only a higher wage. The proverb "if we throw peanuts, we can get only monkey" holds well in this context.

iii. Conditions of work: The productivity of labour is an essential condition for the prosperity of enterprises and the workers well-being. While the production facilities at workplace and the remuneration are important, attitude for work, and the value placed by the society on dignity of labour are equally important in influencing the productivity of labour. A comfortable working place and satisfactory conditions will improve labour supply.

iv. Attitude of labour: Labour is the only factor of production where output can sometimes exceed input. Well motivated worker can deliver double his normal level of output. If people are ambitious and hardworking, labour supply will be more. Social and cultural factors also have an impact on the supply of labour.

v. Education and related skills: The work of a labourer may be manual or skilled. While due to excess population, the supply of manual labour is readily available, it is difficult to get skilled workers. Education plays an important role in increasing people's skills. The increase in number of people attending high schools, colleges and technical institutes or management colleges contribute to the increase in the supply of skilled labour. With education and technical training, there is a shift from manual workers to skilled workers. This shift from unskilled to skilled labour

can be attributed to increase in human capital, or in other words in increasing the efficiency of humans through investment in knowledge. Human capital also increases productivity. With introduction of computers, there has been a revolution in the way of functioning of companies. This is information technology revolution. With the advent of globalisation, there has been an increase in the supply of labour. With the removal of barriers between countries and the easing out of the restrictions on work permits, workers have now become internationally mobile.

vi. Cost of education and training: If education and technical training are very expensive, the supply of skilled labour will be less. If it is provided by the government at a reasonable price, skilled labour will be more.

vii. Migration and immigration: Due to migration of workers to other countries, labour supply will reduce and immigration of workers from other countries will push up the supply of labour. The migration of workers from rural areas to urban areas has also made available lot of industrial labour. Besides, government policies and incentives that are able to attract foreigners to work in the country can affect the size of the labour force. If the country has a stable Government and offers better job prospects to foreigners, foreigners may immigrate and work in that country increasing the size of the country's labour force.

viii. General Health and wellbeing of the population: The quality of workers in terms of health and life expectancy will have a bearing on the productivity and the supply of labour and this will improve labour supply. Health of workers depends upon their living conditions and the climate of the place. Workers in developed countries are more productive simply because of their superior physique and sporty attitude.

ix. Mobility of labour: Of all the factors of production, the one factor that is less mobile is labour. Being a human resource, relocation of a worker from one place to another is not very smooth. When labour becomes mobile, it is able to relocate to different parts depending on the demand, thereby increasing the supply in those areas.

x. Non-Monetary factors: conditions of work, job satisfaction, prospects for future growth and progress, worker's participation in management and schemes for social security also determine the supply of labour.

xi. Barriers to entry: In some cases, there are minimum entry restrictions, for example in professional fields like Chartered Accountancy or medical professionals, where there is a cap on the number of selected people. This is done to restrict the supply of qualified people. Due to this there is a controlled supply of labour.

xii. Social Prestige and status: Some professions are liked because they enjoy a superior social status in terms of Charisma or Power as in case of civil services. Being in demand, such professions always have a good supply of labour.

In summary, this section discussed the definition, characteristics of labour and the concept and characteristics of labour market. The next two sections list down the research objectives and research questions to give a brief overview of the work that is contained by subsequent chapters of the thesis. However, the research objectives and research questions are further discussed in detail in Chapter-2.

1.4 Research Objective

The increasing number of enterprises in manufacturing sector in India and growing importance of labour productivity in the current rapidly changing business, the assessment of labour productivity and identifying the various enablers and challenges for labour productivity in these enterprises has been identified as an important issue that needs to be studied. To enable organisations to measure the labour productivity, a scale needs to be developed using enablers of labour productivity. Further, strategies need to be formulated for enhancing the labour productivity of manufacturing enterprises in India. So this research is based on four primary objectives listed below:

RO-1 - To explore the dimensions of labour productivity with special reference to Indian manufacturing organisations.

RO-2 - To identify various factors (enablers and barriers) of labour productivity for enterprises in manufacturing sector in India.

RO-3 - To develop a scale for measuring labour productivity of enterprises by exploring the state of perception of various enablers.

RO-4 - To formulate the strategies and develop a model for enhancing labour productivity of enterprises in India.

1.5 Research Questions

To achieve these objectives, following research questions have been formulated. These research questions provide the proper direction to attain the objectives of the study. These research questions are:

RQ-1 - What are the dimensions of labour productivity with special reference to Indian manufacturing organisations?

RQ-2 - What are the enablers and barriers of labour productivity?

RQ-3 - What is the weightage of different factors identified as enablers and how do the enablers interact to form a scale that can measure labour productivity?

RQ-4 - What are the strategies and the model that can be applied to Indian manufacturing enterprises for enhancing labour productivity?

1.6 Organization of thesis

The thesis has six chapters which include introduction, review of related literature, research methodology, data collection, discussion and recommendation, and summary, conclusion, limitation and future scope. The first chapter has introduced the concept of labour productivity and also provides the structure of the thesis. This chapter presents the outline of research which includes research backdrop, research problem, research objective, research questions and thesis structure. The second chapter provides the methodology of the systematic literature review and identify the research articles important for this study. Then, it discusses the evolving nature of labour productivity and how the definition of labour productivity has evolved over time. It further discusses the various models that have been used for measurement of labour productivity. It then identifies the factors affecting labour productivity in the form of enablers and barriers and provides a brief discussion of the identified factors. The third chapter outlines the methodology adopted by the researcher for conducting study on the subject matter. The fourth chapter outlines the findings of the researcher and explains the accomplishment of the research. It prioritizes the factors

identified in the literature review using ISM technique which identifies and explains the relative importance of enablers and classify the enablers into 5 categories. Next, a scale is developed and using factor analysis, a model is built having three dimensions namely Individual Characteristics (IC), Firm Characteristics (FC) and External Characteristics (EC). The fifth chapter presents the detailed outcome of the research and elaborates on key strategies for improving labour productivity. It further provides the key recommendations to managers, policymakers and academicians for improving labour productivity. It then briefly discusses the FLOPACE model (Goel and Agrawal, 2017) which addresses the challenges posed by productivity issues in Indian manufacturing organisations. A brief summary of steps taken by an organisation to improve employee productivity have also been presented as case study. And the last chapter discusses the summary of the findings and conclusions arrived at in this research and examines its limitations along with suggesting the future research directions. The steps involved in research process are shown in Figure.

Problem Identification	Chapter 1
Review of lierature and framing of objectives	Chapter 2
Development of research design	Chapter 3
Data analysis, findings and results	Chapter 4
Discussion and recommendation	Chapter 5
Summary, Conclusion, Limitation and Future Scope	Chapter 6
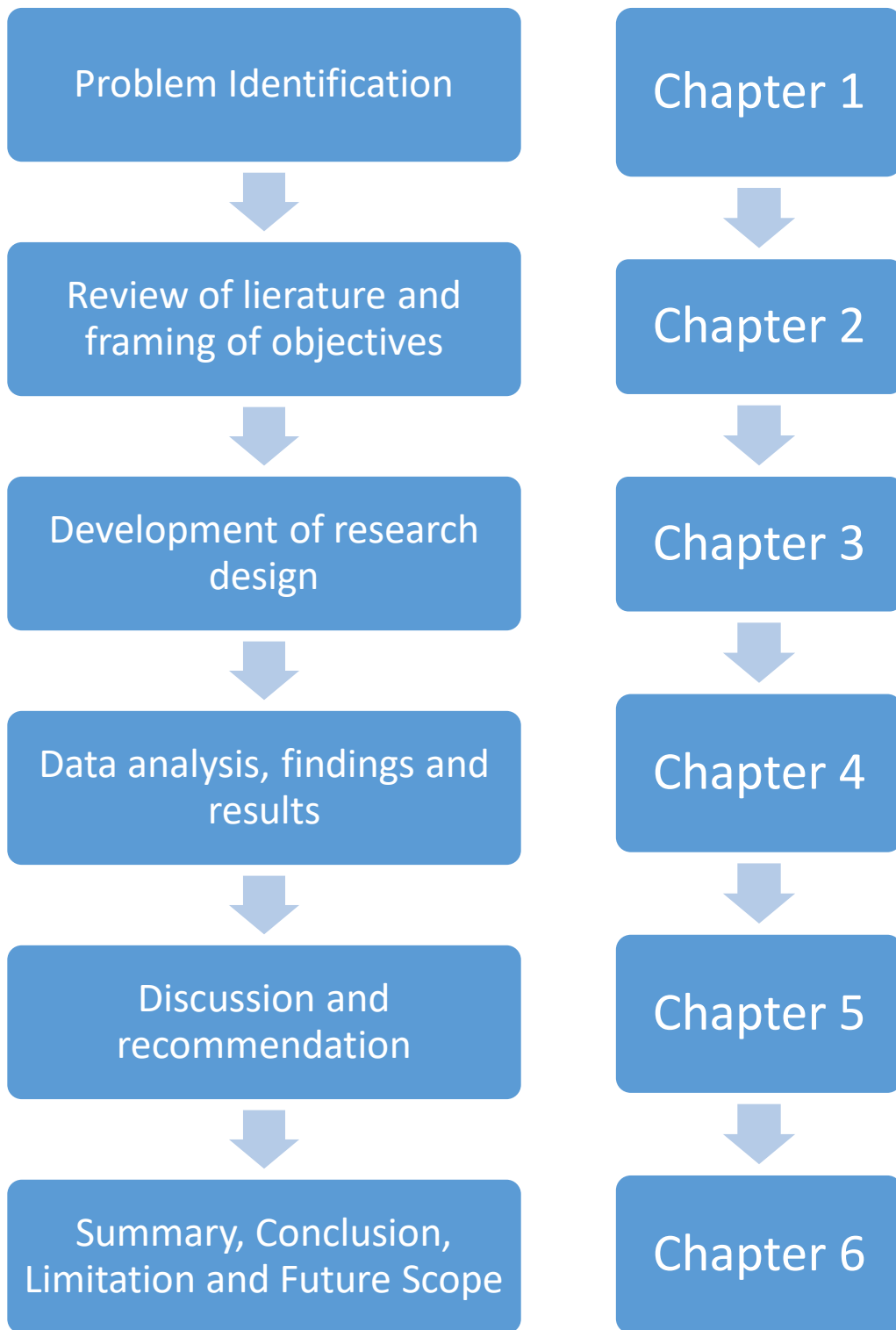
Figure 1.6 Steps involved in research process

2.1 Introduction

This chapter is based on systematic literature review. It further discusses the evolving nature of labour productivity and how the definition of labour productivity has evolved over time. It then identifies the factors affecting labour productivity in the form of enablers and barriers and provides a brief discussion of the identified factors.

With the global competition between firms within and across nations and between industries of different nations on rise, the importance of productivity and its measurement is well recognized. It is argued that "increase in productivity will generate more funds, increase the revenue of the state, which in turn can help in providing better services so as to improve the standard of living" (Bureš and Stropková, 2014; Vrat et al., 1998). Productivity is the core factor of economic growth (OECD, 2001). Productivity is one of the most important aspect which can make or break any organisation, especially a for profit organisation in manufacturing sector. Irrespective of the size of the organisation and the industry an organisation is, improvement in productivity is the need of the hour. Not only does it help in managing increasing costs, it also leads to improved product quality and enhanced customer satisfaction. Improved productivity also helps in reduced rework leading to less frustration and happier employees. Also, a key component of the input costs in any industry is the labour cost. Businesses are struggling hard to remain competitive. A workforce which is not only productive but is also aware about reducing the other costs like energy costs and fuel costs is a source of sustained competitive advantage (Porter, 1980).

This study aims to systematically undergo a review of literature available in scholarly journals and identify the relevant factors and dimensions which affect labour productivity. The main purpose is to integrate the various factors identified in multiple studies into one single study so that this study can help in better understanding of the concept of productivity and further advancement of future research in the area of productivity improvement. This chapter comprises a detailed discussion on the research trends in the field of labour productivity, identification of the potential areas of research pertaining to labour productivity, identification of various definitions and models of

labour productivity and how the concept has evolved over time and development of research questions based on the gaps identified.

2.2 Methodology of Systematic Review

Systematic review helps in bridging the gap that traditional narrative reviews create due to use of personal, subjective and biased methodology by authors. Tranfield et al. (2003) propose "to apply the specific principles of the systematic review methodology usually used in the medical sciences. The main purpose of a systematic review is to identify key scientific contributions to a field of question and its results are often descriptively presented and discussed". The application of concepts and principals of systematic review strengthens the legitimacy, credibility and impact of the ensuing evidence through limiting bias (systematic errors) and reducing chance effects. This increases the reliability of achieved results and helps in drawing the most logical and rational conclusions as well as in making the most effective decisions.

Further, the strategy of searching and locating target research papers and then deciding on the criteria of selecting the relevant and important research papers is also important in a systematic review. We identified three databases – Science Direct of Elsevier, ABI/Inform of Proquest and Business Source Premier (BSP) of EBSCO for finding the potential studies for our systematic review.

As known, the term "labour productivity" can have many synonyms like "productivity", "employee productivity", "worker productivity", "staff efficiency", "personnel productivity", "workforce productivity", "human resource productivity" etc. In all these terms, the word productivity or efficiency is common. Thus, all major management journals were searched with keywords "productivity" or "productivity management". Papers were searched using Scopus tool and through websites of major journals that publish work in the area of labour productivity. Google Scholar was also used to search the relevant papers in the area. The literature surveyed was pertaining to the time period 1980-2014. The search conducted in the month of August 2014 with above keyword resulted in close to 4500 papers in all three databases.

Those papers were then filtered on the basis of title and abstract using the search results. This filtration helped in reducing the search results to manageable limit of 760 articles. A next round of filtration was done to segregate those papers which had the term productivity discussed as a

management concept (Tranfield et al., 2003). Only 300 potential articles were found that had discussed productivity as a management concept. Further, only those papers in which productivity was dependent variable and some other factors were independent variables were selected for further study. This revealed that very limited studies (only 74 studies) have been done on taking productivity as dependent variable. Still, these shortlisted papers contained the use of quite a few independent variables. These articles were considered significant as they dealt directly with labour productivity and its improvement.
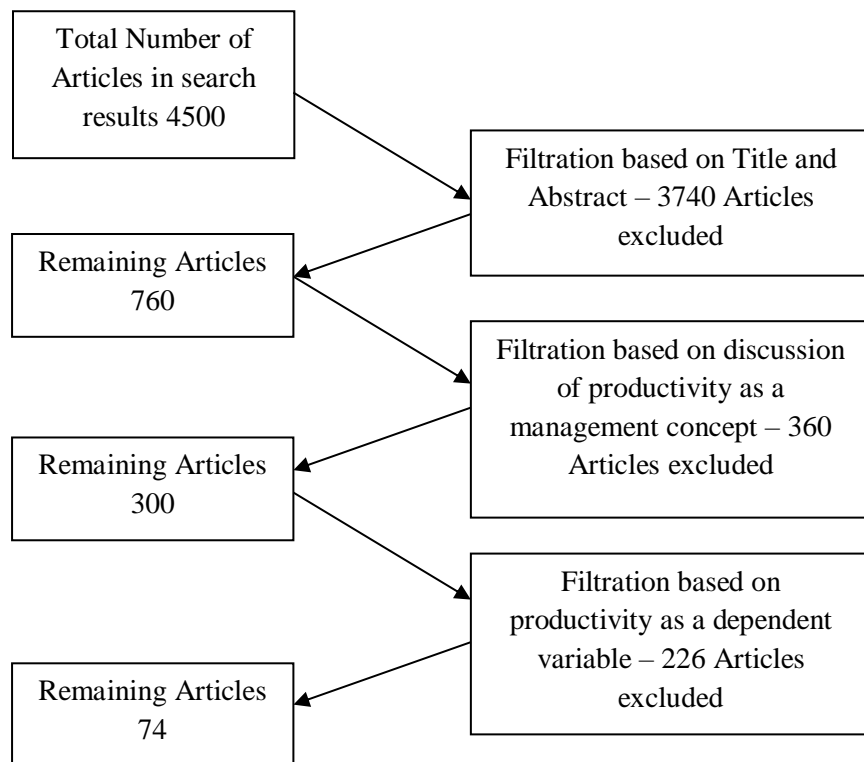
Figure 2.1 Systematic review flowchart

The distribution of the reviewed studies has been presented year wise, country wise, industry wise and journal wise in the tables below. The trend shows an increasing number of studies in the field of interest with highest studies in the year 2013. Further, geographical location wise, 27 studies were from US and Europe, 3 from Countries belonging to Arabia and Central Asia, 1 from Africa and 17 from South Asia. 14 studies were multinational involving more than one country. 12 studies were generic in nature without mention of any geographic location. Since the study was focused on manufacturing sector, 36 studies were from manufacturing (28 studies) and construction

30

industry (8 studies). 8 studies were from services sector with majority from hospitality and banking industry. 30 studies were general with no mention of any industry. Further, about thirty percent of the identified studies were from the renowned seven journals namely, Academy of Management Journal, Economic Modelling, Human Resource Management Review, International Journal of Production Economics, International Journal of Manpower, International Journal of Hospitality Management and International Journal of Management Science.

Table 2.1 Year wise summary of reviewed studies

Timeline	Number of Studies
1980-1989	7
1990-1999	13
2000-2009	33
2010-2014	21
Total	**74**

Table 2.2 Country wise summary of reviewed studies

Country	Number of studies
US	12
UK	5
Germany	3
Spain	3
Italy	1
Ireland	1
Dutch	1
Czech Republic	1
Egypt	1
Jordan	1
Gaza Strip	1

Turkmenistan	1
India	10
China	3
Nepal	1
Pakistan	1
Lao	1
Malaysia	1
Multinational	14
General	12
Total	**74**

Table 2.3 Industry wise summary of reviewed studies

Name of Industry	Number of Studies
Construction	8
Manufacturing	28
Services/Finance	8
General	30
Total	**74**

The methodology followed for the literature review has been illustrated in the flowchart in Figure below.

Definition of labour
- Characteristics of labour
- Concept of labour market
- Demand determinants
- Supply determinants

Characteristics emerged from selected studies
- Background and Evolution of labour productivity
- Research trends in labour productivity
- Research Gaps

Definition of labour productivity/labour productivity dimensions in Indian manufacturing organisations

Factors affecting Labour productivity

Labour productivity metrics - Existing scales and models to measure labour productivity

Figure 2.2 Methodology of Literature Review

To begin with literature review, the next section discusses the characteristics that have emerged from the 74 articles selected for this research. It briefly discusses the background and evolution of labour productivity, the research trends in labour productivity and research gaps in labour productivity.

2.3 Characteristics emerged from selected studies

2.3.1 Background literature and evolving nature of Labour Productivity

Since the industrial era, the entire business environment has changed and the strategies that worked during the industrial era are outdated today. During the industrial revolution, the trick to success rested on the attainment of highly efficient systems of mass production that would bring the most products into the marketplace at the lowest cost. During these times, Productivity Improvement was earlier thought to come from physical application of energy, use of better materials, implementation of faster production lines.

In the recent times, the efforts for productivity improvement have become complex and difficult to resolve than the prior quantity solutions. Today, the productivity improvement efforts must begin by addressing a host of interrelated issues, which include technology, organizational structure, organizational culture, the changing nature of work and the worker, the need for greater production flexibility and a shift in managerial power and authority. Another important factor overlaying all of these issues is the urgent need to restore and maintain the element of quality in the production process.

Industrial revolution made a major departure for society by taking out dependence from agricultural economy. Man and machine began to coexist. Initially production from man became a major concern in an industrial setup. The foundations of industrial revolution were laid on the concept of how to increase output from a workman. F. W. Taylor brought in philosophy of work design in terms of division of labour and specialization. The concept implied that production from labour constituted the largest task in any industrial setup. Measurement of production in terms of standard hours produced with reference to hours of labour put in, became the measures of efforts, effectiveness, performance and efficiency and came to be referred as productivity. Taylor's work continued to be advanced by many other behavioral scientists in the same directions but with

varying techniques. Their focus shifted to the working conditions and satisfaction of worker in order to increase the output.

The twentieth century and the years of world war brought the rapid technological advancement. Machine tools with higher work parameters brought an increase in production and the rate of production. Shortage of man power during the war years shifted focus on one man multi machine concept besides machine tools getting designed with multi work stations and incorporated with advanced technology to increase output. Thus, the emphasis shifted from productivity from man to productivity from machine along with man. Production per man-hour alone was not sufficient and production per machine hour also became significant. Capital became a factor of increasing importance in a production function, as the machines became advanced in technology and hence costlier. As a percentage of cost of production, materials also formed an important factor. It was suggested that production could be increased by installing semiautomatic/automatic machines. Production function came to be considered as function of labour, capital and material. This resulted in partial productivity measures of labour, capital and material.

The definitions and models of measurement of productivity have been basically evolved in an overwhelming volume of available literature on productivity and its measurement. One of the earliest formal definitions of productivity dates back to 1950 when the Organisation of European Economic Cooperation proposed "Productivity is the quotient obtained by dividing output by one of the factors of production. In this way, it is possible to speak of the productivity of capital, investment or raw-materials according to whether the output is being considered in relation to capital, investment or raw-material". It further stated "When the word productivity is used without further qualification, the productivity of labour is understood." Ernst (1956) has raised questions as to "how productivity changes could be accounted for from the input factors of man, machines and materials and has suggested a methodology for integrating these inputs". Ernst also maintains that "effect of individual factor like labour, technology on productivity can be studied". Tsujimura (1963) also considers productivity as "the ratio of the quantity of production to the quantity of labour or the output per unit of labour input". He recommends productivity to be classified as labour productivity, physical productivity and value productivity. Kendrick and Creamer (1965) are credited to have provided one of the earliest models on productivity measurement and remained a leading concept for reasons of its clarity. As per Kendrick and Creamer, "The term 'Productivity'

has been used loosely to describe the relationship, usually in ratio form, between output and any or all of the associated inputs in real terms". This concept has left a profound impact and much of the further efforts for measurement of productivity have been to identifying the manner in which outputs and inputs are quantified. International Labour Organisation (1967) has proposed a formal definition of Productivity as "the ratio between the output of wealth produced and input resources used up in the process of production". Ramsay (1973) also contributes a notable definition of Productivity, "Productivity is the optimization (or maximization of economic utilization) of all available resources, investigation into the nest known resources and generation of new resources through creative thinking, research and development, and by the use of all possible improvement techniques and methods". It considers productivity as a science to optimize all resources. Smith (1973) has recommended productivity as a ratio of output to technology input besides labour, materials and machine utilization. Sumanth (1980) also considers productivity as a ratio of outputs and inputs. 'Output' has been recommended to include income from securities, bonds and other income apart from finished and partially produced products. Similarly, input includes labour, capital, materials, energy and other income. Stewart (1983) has recommended productivity to be considered as "the ratio of performance toward organizational objectives to the totality of input parameters". Stewart, further explains, "thus, if the organization has the generation of profit as an objective, the level of profit related to all of the relevant efforts expended by the organization defines the level of productivity". Gold (1983) examines the concept of productivity and proposes that "productivity analysis should help in appraising the effects of changes in various physical input-output relationships on specified performance objectives subject to managerial control. Three specific dimensions are emphasized viz. specified performance objectives, effect of changes in input-output relationships and productivity improvement programmes". In the next paragraph, we provide the detailed literature review undertaken to study the existing scales and models that measure labour productivity. This would help us in developing an effective scale to measure labour productivity which is the third research objective of this study.

The concepts of productivity have been challenged by many researchers and a number of models proposed, each projecting a new methodology. While the interest in productivity is decades old, interest in the measurement of productivity is a recent phenomenon. Initially, it was measured with the help of financial ratios which were quick and easy to calculate and served as ready reckoners of productivity. Some of these ratios included profit per employee, return on investment per

employee, sales per employee are still widely used for calculation and comparison measures. However, financial ratios do not represent the productivity as they project only the financial performance of the company which is again a combination of several other factors apart from labour productivity. As described in the following paragraphs, the financial ratio based models were followed by Production based models, Product oriented models, surrogate models, Economic utility models and models based on systems approach. Each of the models has its own merits and usefulness for an application. Various models available can be categorized on the basis of approaches on which these have been developed and are shown as below:

i. **Production function models:** consider the econometric concept of production function and usually follow Cobb-Douglas production function. These models usually are independent of prices of outputs and inputs.

ii. **Financial Ratios as measures of productivity:** consider the school of thought that the performance of a company is essentially determined in terms of various ratios like growth as total capital employed, in fixed assets, in sales and in profits. The models propose measures such as revenue per employee, operating income per employee, net earnings per employee and value added per employee.

iii. **Production based models:** consider productivity related to production of goods and services and postulate quantification of output and inputs related to production. Productivity Indices are classified in these type of models. Kendrick and Creamer (1965) have proposed Total Productivity Index (ration of real gross output to all associated inputs), Total Factor Productivity Index (ratio of real net output to sum of labour and capital inputs) and Partial Productivity Index (ratio of gross or net output to one class of input with major inputs being labour, capital and material). Other researchers have also proposed models based on value addition which consider value addition as the real output and only the 'net value added' is considered as the result from the production function.

iv. **Product oriented models:** measure the total earnings contributed by each of the products and recommend arriving at total productivity indices for each product. These type of models are useful to rank products by this index so as to identify areas of improvement.

v.   **Surrogate models:** recommend use of such measures which can be considered as valid in place of measures which are either difficult to define and measure or are unobtainable because of inherent problems in data collection. The surrogate measures become representative of productivity indices.

vi.   **Economic utility models:** Several authors have agreed with the view that productivity is essentially related to the economic activity of an organization. Productivity unrelated to utility has no significance. Economic activity as well as utility function in an organization can be in several directions like to achieve maximized profit, to achieve growth in output or to achieve one or several performance objectives. These models recommend use of multi-ratios, each ratio reflecting on a particular economic activity or utility function. The models included in this classification have the distinctive features such as inclusion of unconventional and tangible inputs and outputs which can be converted to monetary units and advocate multifactor approach. National Productivity Council of India uses "quantitative and qualitative Partial Productivity Factors (PPF)" as a measure while deciding productivity awards for the industry. It considers "quantitative PPFs as Value Added, Capacity Utilisation, Material Productivity, Energy Productivity and manpower utilization. The Qualitative PPFs used are Productivity Consciousness, Participative Culture, Quality Improvement, Productivity Planning Mechanisms, Training and Manpower development efforts, Import substitution/indigenization, R&D Thrust, Modernisation and Technology Upgradation and Social Obligation".

vii.   **Models based on Systems Approach:** which considers an organization in totality with the sub-systems interacting with each other. This concept has been used to develop models where rationale is to consider performance of a system or its sub-systems. These type of models have attributes like tangible and intangible inputs and outputs, commensurate and non-commensurate outputs and the thrust is on holistic performance of the system or its sub-systems. In these models, productivity is viewed in its broader perspective.

This classification is not mutually exclusive, since many of the models could fit into more than one category. For example, some of the models included under category of surrogate models could as well be included in the category of systems approach or even economic utility. Most of these

models are output-input models where several measurement problems occur such as inadequate identification and measurement of inputs and outputs, assumption of causality among output and input, relationship and interaction between various outputs and inputs and multiple interpretation related problems.

2.3.2 Research areas in labour productivity

We found a number of studies in the economics discipline in which productivity as a phenomenon was examined. Calcagnini and Travaglini (2014) have done time series analysis on a 60-year data of 4 countries and have analyzed labour productivity per hour worked in the manufacturing industries. Pandey and Dong (2009) have undertaken a "comparative study of productivity in the manufacturing sector for China and India using data from survey of manufacturing industries for the two countries" and have found that policy and institutional changes can explain about 30% of the growth in TFP of manufacturing industries. Addessi (2014) has studied "the effect of permanent and temporary labour contracts on both labour-augmenting and TFP augmenting technological factors using a panel dataset of Italian manufacturing firms". Sharma and Dash (2006) examine the structure and composition of small scale industry (SSI) sector in India. Analysis reveals that a large number of enterprises in this sector are technologically backward and a substantial number of workers underemployed. The study finds that the existence of sub-contracting phenomenon does not have much impact on labour productivity; and therefore it is only a short-term measure to raise employment and number of enterprises. Hence, a sustainable level of employment and productivity could be achieved if the state initiates policies to provide social security, marketing facility, technological upgradation, training and skills to workers and above all the infrastructural support to the millions of tiny enterprises in the SSI sector.

Several studies have been done to identify the factors affecting construction labour productivity (Enshassi et al., 2007; Shehata and El-Gohary, 2011). They have been classified as industry related factors, management related factors and labour related factors (Shehata and El-Gohary, 2011). Nasirzadeh and Nojedehi (2013) have identified several minute factors such as weather conditions, impact of overtime or over employability, impact of shift work, job-satisfaction and organisational commitment, level of IT implementation and integration, changes in technology and suggest a system dynamics (SD) based approach to model labour productivity. Doloi et al. (2012) have

analysed factors affecting delays in construction projects in Indian context. Abdel-razek (1997) suggests the performance measurement system to be used for construction managers.

Further, several studies have been found in the banking sector which provide the branch level analysis by using Data Envelopment Analysis (DEA) technique (Paradi and Zhu, 2013). Analysis of Das et al. (2009) identifies bank branches that operate at very low levels of labor-use efficiency and possible candidates for increased supervision and control. Further, Samoilenko and Osei-Bryson (2013) show the use of DEA technique to construct the Decision Support System (DSS) "that provides facilities for assessing and managing the relative performance of productivity driven organizations that operate in unstable environments". Reynolds and Thompson (2007) assess productivity of a multiunit restaurant having a chain of 62 full-service restaurants by using three phase DEA.

Benavides-Chicón and Ortega (2014) have tried to determine the relationship between quality and productivity in the hospitality sector and have found that "the implementation of Total Quality Management (TQM) systems, or the adoption of TQM principles, have a positive impact on hotel labour productivity". Chapman and Al-Khawaldeh (2002) have found significantly higher labour productivity in high TQM implemented companies rather than low TQM implemented companies. Improving quality and improving productivity seem to represent conflicting objectives. Mohanty (1992) attempts to explain some of the areas of consensus and conflicts in understanding productivity.

Mačiulytė-Šniukienė and Gaile-Sarkane (2014) have evaluated the impact of development of ICT on labour productivity in EU-27 states using the data of 2000 to 2011. "Whether or not productivity and business efficiency increase as a result of IT investment has been the subject of considerable debate" (Badescu and Garcés-Ayerbe, 2009). If an innovative enterprise adopts more and more capital intensive techniques, it might experience growth of only sales turnover and investment but not employment. Rather, employment might decline resulting in increase of labour productivity. But if the innovative enterprise aims at expansion of scale by employing more of both capital and labour, growth might occur in terms of not only sales turnover but also investment and employment. The ideal situation would be increase in employment along with labour productivity (Subrahmanya, 2010).

Adler et al. (2009) study the impact of choosing organisation hierarchy, administrative procedures, reward structure and demography of senior leadership on deciding the choice of whether an organisation wants to be exploitation-type (leveraging existing knowledge and capacities resulting in stable and efficient performance) or exploration-type (creating new knowledge enabling firms to innovate). Adler argues "bureaucracies designed to extract profits from the production process may hinder exploration".

Increasing productivity won't do much if the market/economy is not doing well or if there is no demand in the market. Jackson and Victor (2011) defines the 'productivity trap' that arises from the systematic pursuit of labour productivity. They argue that "it also means fewer people are needed to produce the same goods from one year to next. If the economy is not growing fast enough to offset this increase in labour productivity, then increased labour productivity means there is less work available in the economy. In other words, of other things do not change, labour productivity improvements mean that someone somewhere loses their job". Rada and von Arnim (2012) have argued that "higher labour productivity and economic growth do not necessarily reduce poverty. If output expansion is not accompanied by transfer of labour to more productive and better paid jobs, problems of underdevelopment remain unresolved". Ocampo et al. (2013) and Easterly (2001) have discussed these themes and have called such growth as "growth without development" and "jobless growth".

Impact of foreign firms in domestic market also affects productivity (Koirala and Koshal, 1999; Abor, 2010; Parthasarathy et al., 2016). Numerous studies have found that foreign firms use more capital-intensive techniques than domestic firms do in developing markets. Demeter et al. (2011) and Noruzy et al. (2011) focus on the operational drivers of labour productivity changes. The study identifies the influence of industry- and country-specific factors on the effectiveness of various productivity drivers.

"Improving productivity is a major concern for any profit-oriented organization, as it represents the effective and efficient conversion of resources into marketable products and determines business profitability" (Sandbhor and Botre, 2014). Thus, apart from applying efforts to increase productivity, the efforts of an organization should be in such a way which shall result in inclusion of goals of profitability, sustainability, increased customer satisfaction, employee satisfaction and societal and environmental goals.

Hong and Kirk (1995) have assessed labour productivity in 12 conventional hospital food service systems in the U.K. and have found that "as the full time ratio (proportion of full-time staff) and supervisor ratio (proportion of supervisors) increases, the level of productivity decreases because of reduced flexibility in the scheduling of staff. Wage rates might affect productivity because a better paid labour force is likely to be happier and to work more effectively (Opsahl and Dunnette, 1970). Employee satisfaction with pay and promotion may be expected to increase quality, productivity and hence customer satisfaction". Ultimately, it is to be seen whether the time and/or energy in producing one unit of output with given number of labour input is decreasing or not.

Based on the broad themes covered by the research papers studied in the literature review, the research gaps that emerged for the purpose of this study are presented in the next section.

2.3.3 Research Gaps identified from Literature Review

From the literature review, there are many gaps in the research related to the field of labour productivity which have been identified. Due to this, it has become clearly evident that there is abundant scope for research in labour productivity of organizations in Indian context. The following gaps have emerged after the literature review.

- While investigating the factors that enhance labour productivity in enterprises, it has been found that there are very scant studies in the area of labour productivity in India. Therefore, a clear gap of identification of factors that affect labour productivity in enterprises is seen and valuable scholarly work is required to be done.
- Researches have been done with very limited number of independent variables and there is a lack of comprehensive measures and models which can be applied to Indian manufacturing organisations.
- Although many articles are available on performances of manufacturing organisations, no study identifies the efficient labour productivity practices in manufacturing enterprises. Further, no prior study has recommended any strategy that manufacturing organisations can apply in order to improve their productivity.

Thus, based on the above gaps, the following points emerged as a need and formed the rationale of the current study.

- There is need to identify the factors which act as enablers for labour productivity as no prior study has clearly indicated the factors that significantly enhance the labour productivity.

- There was no specific scale available to measure exclusively labour productivity. There is specific need to develop the measurement scale to measure labour productivity.

- Because of increasing number of manufacturing enterprises in India, there is need to find out efficient labour productivity practices in manufacturing enterprises.

- Since many authors develop various conceptual model on labour productivity, there is a need to develop a model for labour productivity in Indian Context that can clearly suggest the steps to be taken in order to improve labour productivity.

Thus, the following research objectives and research questions were formulated to carry out the research process further:

RO-1 To explore the dimensions of labour productivity with special reference to Indian manufacturing organisations.

RQ-1 What are the dimensions of labour productivity with special reference to Indian manufacturing organisations.

RO-2 To identify various factors (enablers and barriers) of labour productivity for enterprises in manufacturing sector in India.

RQ-2 What are the enablers and barriers of labour productivity?

RO-3 To develop a scale for measuring labour productivity of enterprises by exploring the state of perception of various enablers.

RQ-3 What is the weightage of different factors identified as enablers and how do the enablers interact to form a scale that can measure labour productivity?

RO-4 To formulate the strategies and develop a model for enhancing labour productivity of enterprises in India.

RQ-4 What are the strategies and the model that can be applied to Indian manufacturing enterprises for enhancing labour productivity?

To start with Research Objective-1, in the next section, the several dimensions of labour productivity that have evolved with time have been discussed.

2.4 Dimensions of Labour Productivity

The importance of productivity in modern times cannot be denied. However, literature review suggests availability of a vast number of papers on the topic but in different directions resulting in different definitions of productivity and different dimensions of study on the topic. There is no universally accepted definition of labour productivity, different countries and many authors have offered various criteria for defining the concept. Every field or industry sector uses its own modifications, specification or level of details focused on their particular needs to come up with the new measures of labour productivity (Bureš and Stropková, 2014).

Hannula (2002) has stated several sub-concepts of productivity. These are total productivity, total factor productivity and partial productivity. Labour productivity is defined by the partial productivity ratio of output to input labour. However, this definition is quite narrow as it assumes that different inputs like labour, material, technology, capital are independent of each other and act in isolation to alter the output. It considers that productivity follows stimulus-response model of causality. However, all these inputs are not isolated and increase or decrease in productivity of one factor may alter the productivity of another factors. For example, use of information technology may also increase labour productivity apart from increasing capital productivity by increasing the knowledge of the employee, improving communication and facilitating higher team size (Hartley et al., 2001; Badescu and Garcés-Ayerbe, 2009; Demeter et al., 2011). Thus, the definition of labour productivity is incomplete if holistic view is not taken into account.

Mohanty (1992) has provided 12 different definitions of productivity with classification of definitions as macro-level and micro-level. Bernolak (1997) and Hannula (2002) discuss at length the use and applicability of various methods. The list of definitions along with the authors is presented below in Table:

Table 2.4 List of definitions of productivity identified by various authors

Definition	Author	Definition Focuses on (Macro / Industry Level / Firm Level)
GDP per worker	Key Indicators of the Labour Market (KILM), table 16a	Macro
GDP per person engaged and GDP per hour worked	Key Indicators of the Labour Market (KILM), table 16b	Macro
The ratio of value added to man-hours or total cost to sales. "Financial measures reveal the results of the actions already taken, and non-financial operational measures tell us more about the drivers of future performance". According to literature review, new methods for total productivity measurement are reported every now and then.	(Hannula, 2002)	Firm-level
Value added per worker	(Subrahmanya, 2006)	Industry Level
"Consequently, considerable effort has been directed to understanding the productivity concept, with the different approaches taken by researchers resulting in a wide variety of definitions of productivity (Lema, 1995; Pilcher, 1997; Oglesby, 2002). Productivity	(Enshassi et al., 2007)	Firm Level

has been generally defined as the ratio of outputs to inputs".		
The quantity of work produced per man-hour, equipment-hour, or crew-hour worked	(Durdyev et al., 2012)	Firm Level
Labor productivity is defined as the ratio between completed work and expended work hours to execute the project.	(Nasirzadeh and Nojedehi, 2013)	Firm Level
Sales divided by employees	(Abad et al., 2013)	Firm Level
Labor productivity is defined as real output per hour worked.	(Calcagnini and Travaglini, 2014)	Macro
"Labour productivity determines amount of goods produced within a labour unit. However, every field or industry sector uses its own modifications, specification or level of details focused on their particular needs (Song & AbouRizk, 2008). For instance, project managers and construction professionals define productivity as a ratio between earned work hours and expended work hours, or work hours used (Hanna et al., 2005)".	(Bureš and Stropková, 2014)	Industry Level / Firm Level

Productivity can also be defined as the ratio of output generated to the inputs employed. European Cooperation defines productivity as "the quotient obtained by dividing output by one of the factors of production". One of the factors of production apart from material and capital is labour. It further states that "While there are several input resources in a transformation process, labour productivity plays a particular role. Deeper understanding of the term labour productivity can help managers to more effectively allocate limited resources".

Broadly, we define productivity as an *effective* utilization of the *resources* to achieve set *objectives*. Few points need to be highlighted with respect to the above definition:

1. Effective and efficient utilization of resources: Focus should be on useful and quality output by doing smart work instead of hard work.

2. Objectives must be set, defined and should be clear. It is the joint responsibility of manager and the individual. It further necessitates the recognition of individual competency by the manager and allocation of work accordingly. This means division of tasks to accomplish the objectives should be done as per the individual competencies.

3. Resources must exist and shall put their dedicated services in achievement of the desired objectives. With growing dynamism, team sizes are getting large. Further, the teams and assignments are changing rapidly. Thus, the focus is more on team effort rather than individual effort.

The next section discusses the factors affecting labour productivity (Research Objective-2).

2.5 Factors affecting labour productivity

2.5.1 Identification of enablers

Thus, it is obvious that with so many definitions available in literature, there is no one single variable available for an organisation which it can study and improve to achieve high productivity. Many researchers have tested the affect to various variables which were quite similar to the others in different studies but have shown differing degree of associations (Feldstein, 2008; Mohanty, 1992). For example, Millea & Fuess (2005) show that incentives can be the drivers of productivity in one country while they may seem to be the result of productivity in other country.

It is important to understand that which factors act as enablers or antecedents and which factors act as barriers. For identification of enablers, literature review was done and for identification of barriers, 2 Focus Group Discussions were done with a panel of experts which could give us the barriers relevant to Indian context. First group of expert participants of focus group were from a public sector company and the second group of expert participants were from both public sector and private sector companies. Detailed findings of focus group discussions can be read in subsequent chapters.

Extensive literature review was carried out to explore the possible enablers and measures used for measuring labour productivity in manufacturing enterprises. This led to identification of various

(108) factors that enable labour productivity. Then, using a panel of 3 industry experts and 3 academia experts (listed in table below), these variables were grouped together into 20 enablers.

Table 2.5 List of Expert Panel for classification of Enablers

S. No.	Description	Industry/Academia
1	DGM (Planning)	Industry
2	Sr. Manager – HR	Industry
3	Manager – Production	Industry
4	Professor (HR)	Academia
5	Associate Professor (Marketing and Strategy)	Academia
6	Associate Professor (Operations)	Academia

Thus, the enablers specific to Indian continent were identified through extensive literature survey and expert panel and the final list of 20 enablers was identified for the research and are summarised in Table below and are briefly discussed next.

Table 2.6 List of enablers showing identified factors covered under the enabler with references in literature

Ena-bler	Description and Code	Country	Relevant Literature	What this enabler covers?
E1	Working conditions (WC)	USA	(Abad et al., 2013)	ventilation, proper lighting, cleanliness, proper temperature, availability of drinking water and toilets, latest equipment and tools, modern furniture, provision of safety equipments, knowledge of working of safety equipments, mock drills, periodic safety audits

		USA	(Wygant, 1987)	
E2	Pay (PY)	USA	(Feldstein, 2008; Millea & Fuess, 2005)	regular pay, incentive pay through appraisal system, perks & allowances
		China	(Zhang & Liu, 2013)	
E3	Work environment (WE)	India	(Mohanty, 1992)	peer relationship, sense of mutual trust and respect, support of seniors, subordinates and colleagues, teamwork, clarity of work related guidelines received from superiors, empowerment (commensurate with strengths and abilities): authority & freedom of decision making, responsibility & accountability to authority holders, supports encouragement & adaptability of new ideas, suggestions and process improvement
E4	Organisation structure, strategy and culture (OSC)	USA	(Roberge & van Dick, 2010)	flat & lean organisation structure, size of the firm, age of the firm, location of the firm, ownership structure, leadership: Inspiration as role models, access to discuss problems, involvement in guiding interface issues, grooming provided for taking higher responsibilities, corporate strategy of the firm,
		Taiwan	(Sheu & Yang, 2005)	
		India	(Mathew, 2007)	

				business strategy of the firm, functional strategy of the firm, technological strategy of the firm, power distribution and control, clear vision, mission and values, past performance and culture of the firm, supports cultural diversity, existence of strong communication and feedback channels (upward, downward and sideways), freedom to express opinion with no fear of embarrassment and conflict, organisation effort to the maintenance of clean environment, development of neighbourhood and society
E5	Training, learning and development (TM)	USA USA UK	(Bower & Hilgard, 1981) (MacDuffie & Kochan, 1991) (Schonewille, 2001)	identification of training needs, effective training helping in individual's career and personal development, aligned with organisation goals, disseminate best practices of organisation and industry, continuous learning, anywhere everywhere learning with the help of e-learning tools,
E6	HR policies of organisation (HRM)	USA UK Netherland USA	(Koch & McGrath, 1996) (Beauregard & Henry, 2009) (Künn-Nelen *et al.*, 2013) (Arthur, 1994;	selection, performance appraisal (target setting, process of performance appraisal, feedback and suggestions for performance improvement with two objectives - differentiation and performance improvement),

				incentive compensation,
		Canada	Huselid, 1995; Lado & Wilson, 1994) (Gruman & Saks, 2011)	job design, grievance procedure, information sharing, attitude assessment, labour management participation, promotion criteria, extent of various benefits provided by organisation: the number of shifts, freedom to work from home, medical benefits, leave benefits, pension benefits, free accommodation, free/low cost meals, guest house/ holiday home, free telephone/mobile/internet/laptop, work life balance, part time/full time worker ratio (method of employment)
E7	Technology adoption level of the organisation vis-a-vis the industry (TAL)	China Ireland India	(Kwong *et al.*, 2003) (Haller & Lyons, 2014) (Hasan, 2002)	technology inclusiveness
E8	Focus on clear business goals/objectives (through regular	India	(Mohanty, 1992)	understanding of organisational objectives among employees, any change must be thoroughly communicated from top to bottom

				total productivity management approach - improving productivity responsibility of each employee,
	communication) (CBO)			
E9	Conscious focus on improving productivity (FIP)	USA	(Mefford, 2009)	total productivity management approach - improving productivity responsibility of each employee, development of standard process maps and their improvement, understanding of productivity improvement initiatives like Kaizen, lean management, Six Sigma, 5S, TQM, Quality Circles and Suggestion Schemes, support of productivity oriented IT systems, classification of core and non-core activities and reaping benefits of outsourcing, Interaction with universities, research centres, competitors, industrial and professional associations, consultants and service providers, suppliers, customers
E10	Physical and mental well-being of employee (PMW)	Europe	(Conen, 2012)	good health and mind, aging effect on productivity
E11	Motivation and enthusiasm (MEN)	Canada USA Germany	(Gruman & Saks, 2011) (Macey & Schneider, 2008) (Zwick, 2004)	motivation to understand organisational goals and objectives, motivation to understand the work and bring about improvements, employee engagement techniques: non-monetary modes of recognition, career growth,

				job rotation and job enlargement, job satisfaction w.r.t. challenges of the job, presence of work councils like shop council and plant council
E12	Education , knowledge, skills and abilities of employee (EDU)	UK	(Schonewille, 2001)	education relevant to the nature of job, education that opens mind and helps in seeing the broader picture, skills to get new dimension of the problem
E13	Employee's attitude, belief, values (ABV)	USA	(Yuda, 2011)	positive attitude, strong & persistent belief, values matching with that of firm
E14	Number of competitors in the industry (NCI)	Germany	(Wagner, 2001)	demand growth in the industry, number of competitors in the industry, healthy competition can result in: advancement and evolution of technology, advancement and evolution of best practices, presence of regulatory body in the industry
E15	Presence of regulatory body in the industry (RBI)	India India	(Doloi et al., 2012) (Gunasekaran *et al.*, 1994)	Efforts of regulators in the direction of creating awareness of: best practices, quality standards, maintenance programmes, R&D opportunities, productivity statistics, ideal production processes and systems

				GDP/GNP of country,
E16	Macroeconomics of the country (MEC)	India	(Mohanty, 1992)	level of unemployment, level of Inflation, demography of country, cost of labour
E17	Government regulation environment and policy changes (GRP)	India India India	(Pattnayak & Thangavelu, 2005) (Pandey & Dong, 2009) (Nataraj, 2011)	govt policy reforms by bring new policies or alter current policies
E18	Cross country migration of skilled labour (MSL)	USA	(Wacker *et al.*, 2006)	impact of cost of labour due to cross country migration resulting change in wage structure
E19	Evolution of world class best practices and technological developments (WCP)	India	(Hasan, 2002)	new science & technology developments, new best practices, sharing of best practices among countries
E20	Macroeconomics of the world (MEW)	India	(Mohanty, 1992)	recession, change in oil prices, events of terrorism and war, natural calamities

Brief explanation of enablers:

1. **Working conditions:-** The conditions of work have a direct bearing on the efficiency of the worker. In manufacturing enterprises, the conditions of work are typical. Workers work amidst loud noises, poisonous fumes and dangerous conditions. The industrialization history is marked with industrial accidents. Also, working conditions have an effect on the morale of the worker. Workers perform better under safe conditions of work. The

workplace should have the basic amenities like proper lighting, clean floor, proper temperature, availability of drinking water and toilets, latest equipment and tools, modern furniture. Abad et al. (2013) argue that performance improvements follow on adoption of safety system such as OHSAS 18001. Where lot of physical strain is involved in the work, the efficiency of the worker reduces unless he or she is given adequate rest. The efficiency of the worker working in the mines, oil fields, firework factories and other potentially hazardous occupations is less while compared to working in comfortable work stations and favourable conditions. In Indian context, The Factories Act, 1948 contains provisions for the health, safety and welfare of the workers.

2. **Pay:-** This is a very important factor that has an effect on employee productivity. Discussions at length have been found in literature on what should be the right pay for the work being done by the employee (Wygant, 1987). Should it be same as market average, whether it should be composed of high incentives and high variable pay? Further, discussions have also been found whether the pay affects productivity or reacts to it (Feldstein, 2008; Millea and Fuess, 2005). Zhang and Liu (2013) analyze "the evolving pattern of the correlation and spread between wages and labor productivity in China's manufacturing sector and its influence factors". The regression estimates in the study show that "the ownership structure of capital, the capital–labor ratio, firm size, and the export to sales ratio of enterprises all matter in deciding the wage rates". When output per worker increases, workers' contribution to firm revenue increase causing demand for workers to increase also. Overall, remuneration is the chief motivator for the labourer. Along with salary or wage, allowances, perquisites also increase job satisfaction.

3. **Work Environment:-** The support of seniors, subordinates and colleagues is required. Leadership should be right and level of commitment among top managers should be high. Disproportionate power distribution should not exist. Organisation objectives should be properly understood and teamwork must exist so that those objectives can be achieved. An organisation where too much consensus or compromise exists fails to understand the dynamic change in business environment and is not able to grow. Freedom of decision making, responsibility, accountability and authority must be given to the employees so that an environment of innovation fosters and a culture of entrepreneurialism develops (Jha et al., 2010; Momaya & Gupta, 2013). The right work environment would help in focusing

on core competency of the organisation. Employees shall be free to express themselves and fear of embarrassment and conflict should not exist. Job rotation and Job enlargement shall be a part of work environment so that multi skilling occurs, knowledge gap reduces and new improvements can be brought upon (Rantakyro, 2005). Incompetence shall not be tolerated which shall help the organisation to keep its workforce at its optimum level.

4. **Organisation Structure and Culture:-** Outdated organisation structure is another characteristic of less productivity. The structure should be flat and lean so as to avoid bureaucracy and tight administrative procedures. The organisation culture should ably support employees of various countries having different cultural background. Roberge and van Dick (2010) have argued on recognizing the benefits on account of cultural diversity in team in spite of acknowledging the negative consequences. The organisation vision, mission and values statement shall connect with the value system and personal goal of employees. The firm ownership structure can affect the leadership of the organisation (Sheu and Yang, 2005), in turn affecting the productivity and performance of the firm. Mathew (2007) highlights the relationship of organisational culture with quality and productivity with special reference to software firms in India.

5. **Training and learning & development:-** Bower and Hilgard (1981) have stated that "Learning takes place when for a given work related stimulus, employees respond in different and qualitatively better ways from their responses to similar stimuli in the past". The organisation shall train and motivate its employees in a manner that it should help attain organisational goals as well as help in individual career and personal development of the employee. With the advancement in technologies, employees can easily continue to learn lifelong with comfort whether they are at home or at office. The organisation shall understand the best practices within the organisation and industry and shall be able disseminate it among its employees. MacDuffie and Kochan (1995) found that "firms with high levels of investment in employee training exhibited higher productivity levels compared to firms with low levels of such investments". Schonewille (2001) measures the impact of training on improving labour productivity.

6. **HR Policies of Organisation:-** The extent of various benefits/flexibilities provided by the organisation is also a very important factor that affects employee productivity. Koch and McGrath (1996) present results from the study of 319 business units that HR policies do

matter in improving labour productivity. The number of shifts, freedom to work from home, medical and leave benefits, pension benefits, accommodation and free/low cost meals, work life balance (Beauregard and Henry, 2009), these all play a very important role in attracting talented young employees which results in increased productivity of the organisation. As per Beauregard, making use of available work-life balance practices may incur cost savings for organisation as employees may work for longer hours due to reduced commuting time and increased availability for work or may work during their peak hours in terms of personal productivity. Employees may also choose to increase their effort towards work to avoid losing a job that offers them the flexibility they desire. Künn-Nelen et al. (2013) argues that "firms with a large part-time employment share are more productive than firms with a large share of full-time workers". Several in depth researches have been done by various authors (Arthur, 1994; Huselid, 1995; Lado and Wilson, 1994) on the effect of HR policies and systems on manufacturing performance. Arthur (1994) studied steel minimills having control and commitment human resource systems and found mills with commitment systems having higher productivity than those with control systems. As per Huselid (1995), "High Performance Work Practices in the area of personnel selection, performance appraisal, incentive compensation, job design, grievance procedure, information sharing, attitude assessment, labour management participation, training and development and promotion criteria represent the broad domain that should be covered by HR Policies". Gruman and Saks (2011) suggest that "producing performance increments may be best achieved by orienting the performance management system to promote employee engagement". Further, the extent of benefits that can be provided to the employees also depends upon the government policies of the industry to which the organisation belong. Social security is the foundation of a welfare program. The earnings of a worker can get effected due to sickness, disability or even death. This puts a lot of burden on the workers and his family. When social security measures in terms of insurance, compensation benefits are provided for the worker, then it improves his morale and his productivity.

7. **Technology adoption level of the organisation vis-a-vis the industry:-** Productivity also depends upon the level of latest available technology adoption that is present in that industry market by the organisation. Kwong et al. (2003) describe "a series of industry-

based projects involving simulation, scheduling and monitoring of the Flexible Manufacturing System (FMS) facilities in a distributed environment based on World Wide Web (WWW) technologies so that its operations located in geographically distant regions can be integrated". Haller and Lyons (2015) estimate the effects of adopting DSL broad band on firm productivity. Hasan (2002) has provided "the impact of imported and domestic technologies on the productivity of firms using the panel data evidence from Indian manufacturing firms".

8. **Focus on clear business goals/objectives (through regular communication):-** The organisation should be well aware of its present state in the market and where it is going in future. The business goals and objectives should be clear to all employees and everyone shall work together to achieve them (Mohanty, 1992). Any change in business goal or objective should be thoroughly communicated from top to bottom so that necessary steps can be taken to achieve the desired result.

9. **Conscious focus on improving productivity:-** Productivity improvement should not be the responsibility of only one department or section but each and every employee shall make a conscious effort towards improving it. For the same, process maps belonging to various work being done shall be made and documented. The process maps can then be improved and standardized as per best practices in the industry. To bring about the desired improvement, employees shall be well aware of the modern industry standard techniques and terms like 5S, six sigma, lean management, kaizen, TQM, quality circles, suggestion schemes etc (Petridis and Dey, 2018). Support of productivity oriented strategy based IT systems can also be taken to achieve the same. Classification of core and non-core activities shall be done and appropriately benefits of outsourcing shall be reaped.

10. **Physical and mental well-being of employee:-** The employee shall be physically fit and mentally strong to take on the challenges of the work only then can he/she attain his/her full potential. Consequence of aging workforce on labour productivity of European employers has been examined by Conen (2012).

11. **Motivation and enthusiasm:-** The employee shall feel motivated enough towards understanding of organisation goals and objectives and shall show enthusiasm towards taking responsibility and ownership of any new challenging work that come across. The same enthusiasm and individual's focus towards Productivity Improvement can also bring

about huge improvements. Employee engagement is the term that "has received a great deal of attention in the last few years" (Gruman and Saks 2011). Macey and Schneider (2008) note that "there are numerous definitions of the construct, but that they all agree that employee engagement is desirable, has an organizational purpose, and has both psychological and behavioural facets in that it involves energy, enthusiasm, and focused effort". Zwick (2004) has shown that the productivity effect of shop-floor employee involvement is stronger in establishments with works councils.

12. **Education of employee:-** Education shapes the mindset. The employee shall be educated enough to understand the nuances of the work being allocated to him and shall be able to apply the skill to bring any improvements in quality or to reduce the cost of the product. Literature is full of evidences that higher education results in higher productivity of the employee. Razzak and Timmins (2007) show that "an increase in the share of university qualified workers in employment is highly positively correlated with the average GDP per person". They also found that "the product of private R&D stock with university qualified labour has a positive effect on GDP per capita". Nelson and Phelps (1966) hypothesized that "educated people make good innovators so that the education speeds the process of technological diffusion which leads to a higher growth." Acemoglu (1998) argues that "the direction of technical change is determined by the size of the market of different inventions, which increases with more skilled labour". Hence skill complimentary technology and endogenous skill-bias technical change.

13. **Employee's attitude, belief, values and skills:-** Positive attitude gives birth to risk taking ability. The core belief of employee shapes the responses to various stimuli. Values are shaped by an employee's upbringing. One has truly said actions make habit, habit makes character, character reflects values. Yuda (2011) studies the effect of habitual smoking on labour productivity. Skills can help in problem solving by giving a totally new dimension to a problem.

14. **Number of competitors in the industry:-** The productivity can also improve by the healthy competition between industry players which can result in technology improvement and advancement. The level of competition can decide technology advancement level in the industry and the level of evolution of industry best practices. Wagner (2001) argues how organisations in export business facing external competition may be more productive

than others due to two reasons: "serving a larger market might allow a firm to take advantage of any economies of scale in production or to provide some reduction in domestic variations in demand; and firms active on foreign markets are exposed to more intense competition and must improve faster than firms who sell their products domestically only".

15. **Presence of regulatory body in the industry:-** The presence of industry level regulators and their various efforts can increase productivity by generating awareness about best practices, quality standards, maintenance programmes, R&D opportunities, productivity statistics, ideal production processes and systems (Gunasekaran et al., 1994).

16. **Macroeconomics of the country:-** The productivity of an organisation also depends upon the macroeconomic environment that firm is playing in. The cost of material and labour is hugely dependent upon the level of inflation and unemployment in that country which is further dependent upon the GDP and GNP of the country (Mohanty, 1992). The demographics also play a key role in the availability of the key resources (Barki and Parente, 2014).

17. **Government regulation environment and policy changes:-** The reforms introduced by the government whether by bringing new policies or by increasing the level of technology acquisition and technology transfer play a key role in increasing the productivity. Pattnayak and Thangavelu (2005) study the effects of the economic reforms of 1991 on the Indian manufacturing industries. The study observes "total factor productivity (TFP) improvements for most of the industries after the 1991 reform initiatives, which support the evidence of improvements in economic efficiency in key Indian manufacturing industries". Pandey and Dong (2009) conclude that "institutional changes in China can account for a significant part of the gains in productivity of manufacturing industries in China relative to that in India over the 1998–2003 period". Nataraj (2011) has studied the impact of tariff liberalisation on firm's productivity. The study shows "India's unilateral reduction in final goods tariffs increased the average productivity of small, informal firms. In contrast, the increase in productivity among larger, formal firms was driven primarily by the concurrent reduction in input tariffs".

18. **Cross country migration of skilled labour:-** Migration can result in brain drain in one country and at the same time can make another country rich in labour resource. This can

have an impact on the cost of labour and hence the productivity. Wacker et al. (2006) have done an international study to understand the effect of input resources like production labour, non-production labour and capital on plant productivity.

19. **Evolution of world class best practices and technological developments:-** Sharing of world class best practices and techniques can bring about a huge improvement in productivity levels of an organization (Hasan, 2002).

20. **Macroeconomics of the world:-** Any dynamic change in the macroeconomics of the world has the potential to alter the productivity of a firm. International events like recession, change in oil prices, events of terrorism and war, natural calamities can dramatically change market demand and can impact the firm's productivity (Mohanty, 1992).

2.5.2 Identification of barriers

There have been a large number of studies available in literature related to the factors affecting productivity. Most of the studies are from western countries or from Japanese or Chinese countries. There has been very little work done in the field of productivity in Indian context. To fill this gap to identify the barriers in Indian context, 2 Focus Group Discussions were done with a panel of experts. Here, we briefly list the factors identified as barriers after the outcome of the focus group. All the barriers were mapped with enablers. However, detailed findings of focus groups would be presented in subsequent chapters.

Rigid Environment – Participants were of the view that Employees cannot be productive in an environment that has very limited flexibility.

Lack of Learning and training opportunities with new technology adoption – It was noted by the participants of the group that if learning opportunities exists in the organization, employees will try to work harder and may induce others to work hard as well.

Improper work distribution – The group noted that the work allocation in Indian context is not proper.

Lack of cohesiveness – Participants were of the view that it is extremely relevant to develop a better understanding of the relation of cohesiveness with the kind of groups, because cohesiveness is heavily correlated with effectiveness.

Lack of Proper Incentive System – The participants agreed to the point that if limited incentives exist in the organization, then it may hamper productivity to a large extent. For e.g. if for same work, somebody is getting higher pay and other is not getting that kind of pay, productivity may also be affected.

Lack of Motivation - Motivation is something which drives an individual. Motivation has both the factors, internal motivation and motivation because of the external factors which may hamper him internally. The participants agreed to the point that motivation affects productivity in a huge manner but the constituents of motivation were not gathered.

Lack of Job Recognition – The group noted that in Indian manufacturing organisations, production department is given more preference than other departments. Employees working in production department feel more important and privileged than employees working in support or service departments.

Improper Postings – A lot of employees are misfit for the job that they are doing. In public sector enterprise particularly the one in which the FGD was conducted, employees are put in different departments without looking at the abilities and skills of the employees. The participants were of the view that this has resulted in improper job postings.

Lack of Multiskilling - If employees are developed to be multitalented then the same will also help in improving productivity. If an employee has the knowledge of operating different machines, then he can be utilised in a multifunctional manner.

Lack of Ownership towards work – The group participants were of the view that the employees in Indian manufacturing organisations don't take ownership of their work. The individual employee at the lower level is unaware of his/her targets.

Lack of Good Physical and Mental Health – The participants observed that in Indian manufacturing organisations particularly public sectors, there is no provision of mandatory exercise at work place.

2.6 Summary

Organisations are passing through the transitional phase dealing with increased competitiveness by doing product and process innovation for productivity enhancement. This chapter establishes that with industrial revolution, movement of labour from the agricultural sector to the manufacturing sector tends to lead to better quality jobs in turn leading to an increase in overall labour productivity. It then provides the methodology of the systematic literature review and identify the research articles important for this study. This chapter highlights the major research areas of labour productivity. By analyzing the trend and dimensions of the research papers in the literature review, the research gaps that have emerged have been listed. An attempt has been made to cover all the broad definitions of labour productivity which are significantly different from each other. Then, it discusses the evolving nature of labour productivity and how the definition of labour productivity has evolved over time. It further discusses the various models that have been used for measurement of labour productivity. It then identifies the factors affecting labour productivity in the form of enablers and barriers and provides a brief discussion of the identified factors.

3.1 Introduction

In the previous chapter, we have explored the literature pertaining to labour productivity and its importance to the manufacturing organisations of India. In this chapter, the methodology adopted for carrying out the research has been presented and discussed. We have adopted both qualitative and quantitative methods for the research. Qualitative research was carried out in the initial phase. First, extensive literature review was carried out to explore the possible dimensions of labour productivity in manufacturing organisations. In this phase, various enablers were also identified and listed. Next, focus group discussions were carried out to identify the barriers which were mapped with enablers. Next, Interpretive Structural Modelling (ISM) technique has been used to prioritize the enablers. Finally, the insights gained from exploratory research were quantified by conclusive research using a series of quantitative measured and results were then validated.

3.2 Research Design

This research has been carried out in four stages:

Stage 1: Exploratory research design: It is the collection, combination and integration of numerical secondary data and non –numerical primary qualitative data. The primary objective of exploratory research is to provide insights into, and an understanding of, the problem confronting the researcher. It is used in cases where researcher must define the problem more precisely, gain additional insights and identify relevant courses of further study before an approach could be developed. The information needed is loosely defined at this stage, and the research process that is adapted is flexible and unstructured. It helps in establishing the priorities for further research. It is meaningful in the situation where the researcher doesn't have enough understanding to proceed with the research project. Thus, the literature review helped in better understanding of the research problem and specific components of it which are then used to develop research objectives and research questions. In this phase, first, using the extensive literature review and keywords as discussed in previous section, several definitions of labour productivity were identified and a working definition in Indian context is arrived upon. Then, extensive literature review was carried

out to explore the possible enablers and measures used for measuring labour productivity in manufacturing enterprises. This led to identification of various factors that enable labour productivity. Then, using a panel of 3 industry experts and 3 academia experts, these variables were grouped together into 20 enablers. Thus, the enablers specific to Indian continent were identified through extensive literature survey and expert panel and the final list of 20 enablers was shortlisted for the research and listed in Chapter-2. Next, 2 focus group interviews with 10 participants each were carried out with industry experts in order to identify the barriers of labour productivity pertinent to Indian manufacturing industry. The detailed methodology of carrying out focus group discussion is given in next section. The results (description of barriers) are presented in next chapter. Then, the barriers were mapped with enablers. Next, Interpretive Structural Modelling (ISM) Technique has been used to identify the priority order of enablers. The detailed process of application of ISM technique has been given in Chapter-4. Then, the insights gained from exploratory research have been quantified by conclusive research which is more formal and structured than exploratory research.

Stage 2: Scale Development: The enablers so developed, in the first phase along with existing scales, have been used for our research. The scale items were finalized using the expert opinion of 2 academicians and 10 industry specialists and 20 item scale was finalised. We also follow pretest mechanisms with 35 practitioners to access the face validity (Heeler and Ray, 1972) who suggested some changes, including some ambiguous words and phrases that needed to be altered which led to further purification of scale-items. The questionnaire was finalized after deleting, rewording and rephrasing some scale items and the final questionnaire with 20 scale items, along with the writeup on labour productivity and best practices in manufacturing sector was prepared. The scale has been validated in terms of construct, content, criteria and the reliability has been checked.

Stage 3: Descriptive research design: The questionnaire developed was mailed to employees in 14 companies and 640 responses remained after sanitization of data. Exploratory Factor Analysis (EFA) was performed on the sanitized data. Out of 20 scale-items, only 15 loaded on to 3 dimensions. Using the same data, Confirmatory Factor Analysis was performed and a measurement model was obtained with 3 dimensions. The labour productivity measurement model thus obtained has been tested for reliability and validity.

Stage 4: In this phase, another focus group was done with 4 experts from academia and 4 experts from industry to identify the three dimensions of labour productivity. Then, using the findings of the research in first three objectives, the strategies were developed to be adopted by manufacturing firms for bringing about improvement in labour productivity. These strategies were further validated by the focus group.

3.3 Research Design for Qualitative Study

To achieve the Research Objective-2, we have conducted qualitative research in the form of Focus Group Discussion. A qualitative research approach was adopted to identify the barriers of labour productivity in Indian context as no previous study was available from which barriers in Indian context in case of manufacturing enterprises of State Industrial Development Corporation of Uttarakhand Limited (SIDCUL) Uttarakhand can be extracted. In case of emerging research and where no past study has been done, the exploratory approach is the most suitable one (Richardson, 1999).

Normally focus group discussions are organized in such cases where there is not very good literature support to initiate empirical studies. To start research from scratch the initial feedback from experts would be sought and once a model is proposed, quantitative data collection can be done to empirically validate that model. In this step of the research process, data collection was done from middle level managers and experts who are already in manufacturing sector and who already know about the factors that affect the productivity of Indian labour. The interview questionnaires were so designed in order to allow to gain more insight, from a middle level manager perspective, into the various factors emerging from earlier phases of the study and review of the literature.

Powell and Single (1996) defined a focus group as:

"A group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research". (p. 499)

They state that "A focus group is an interview conducted by a trained moderator in a non-structured and natural manner with a small group of respondents. The moderator leads the discussion. The main purpose of focus group is to gain insights by listening to a group of people from the

appropriate population and talk about issues of interest to the researcher. The value of technique lies in the unexpected findings often obtained from a free flowing group discussion".

A focus group should be homogenous in terms of demographic and socioeconomic characteristics. Commonality among group members avoid interactions and conflicts among group members on side issues (Puchta, 2004; Forrest, 2002; Mazella, 1997). Thus, a focus group with industry experts should not combine operational level executives with middle level management executives or top level management executives. Moreover, participants must "be carefully screened to meet certain criteria. The participants must have had adequate experience with the issue being discussed. People who have already participated in numerous focus group should not be included. These so-called professional respondents are atypical and their participation leads to serious validity problems" (MacDougall, 2001). The physical setting of the focus group is also very important. Although a focus group may last from 1 to 3 hours, a duration of 1.5 to 2 hours is typical. This period of time is needed to establish rapport with the participants and explore, in depth their views regarding the topic of concern. The moderator must establish rapport with the participants and explore, in depth, their views regarding the topic of concern. The moderator "plays a key role in the success of a focus group. The moderator must keep the discussion moving forward and probe the respondents to elicit insights. In addition, the moderator may have a central role in the analysis and interpretation of data. Therefore, the moderator should possess skill, experience, knowledge of the discussion topic and an understanding of the nature of group dynamics" (Chase, 1973; Greenbaum, 1999; Hall, 2000; Traulsen et. al., 2004).

"The recommended number of people in a focus group is usually six to ten. This small size is a crucial feature of focus groups in that participants are able to interact, by asking each other questions and by expanding on each other's ideas. Groups of fewer than six are unlikely to generate the momentum and group dynamics necessary for a successful session. Likewise, group of more than 10 may get too crowded and may not be conducive to a cohesive and natural discussion" (Blackburn, 2000). A focus group was selected for this phase of the research in order to draw on the manager's attitudes, beliefs, experiences, feelings, ideas, insights and reactions towards productivity issues "in a way which would not be possible using solely other research methods, such as questionnaires or one-to-one interviewing" (Morgan, 1996; Krueger, 2014). Malhotra and

Dash (2010) state that "Focus group offer several advantages over other data collection techniques which may be summarized by 10 S:

1. Synergism: putting a group of people together will produce a wider range of information, insight and ideas other than individual responses secured privately.

2. Snowballing: A bandwagon effect often operates in a group interview where one-person comment triggers a chain reaction from the other participants.

3. Stimulation: Usually after a brief introductory period, the respondents want to express their ideas and expose their feelings as the general level of excitement over the topic increases in the group.

4. Security: because the participants' feelings are similar to those of other group members, they feel comfortable and are therefore willing to express their ideas and feeling.

5. Spontaneity: Since participants are not required to answer specific questions, there responses can be spontaneous and unconventional and should therefore provide an accurate idea of their views.

6. Serendipity: Ideas are more likely to arise out of the blue in a group than in an individual interview.

7. Specialisation: because a number of participants are involved simultaneously, use of a highly trained, but expensive, interviewer is justified.

8. Scientific Scrutiny: The group interview allows close scrutiny of the data collection process, in that observers can witness the session and it can be recorded for later analysis.

9. Structure: The group interview allows for flexibility in the topics covered and the depth with which they are treated.

10. Speed: Since a number of individuals are being interviewed at the same time, data collection and analysis proceed relatively quickly."

The procedure for planning and conducting focus groups is described in figure below:

```mermaid
flowchart TB
    A[Determine the objectives of the research and define the research problem] --> B[Specify the objectives of qualitative research]
    B --> C[State the objectives/questions to be answered by focus group.]
    C --> D[Write a screening questionnaire]
    D --> E[Develop a moderator's outline]
    E --> F[Conduct the focus group interview]
    F --> G[Review tapes and analyse the data]
    G --> H[Summarise the findings and plan the next action or followup research]
```

Figure 3.1 Procedure for planning and conducting focus group

The objectives must be specified before conducting any qualitative research, be it focus group, depth interviews or projective techniques. The next step is to develop a detailed list of objectives for the focus group. Malhotra and Dash (2010) state that "This may take the form of a list of

questions the researcher would like to be answered. Then a questionnaire to screen potential participants is prepared. Typical information obtained from the questionnaire includes topic familiarity and knowledge, attitudes toward and participation in focus groups, and standard demographic characteristics. A detailed moderator's outline for use during the focus group interview should be constructed. This involves extensive discussions among the researcher and moderator. Because the moderator must be able to pursue important ideas when participants mention them, the moderator must understand the topic well, the focus group objectives, and how the findings will be used. Use of a moderator outline also reduces some of the reliability problems inherent in focus groups, such as those caused by different moderators not covering the same content areas in comparable ways" (Lautman, 1982). For the purpose of this research, the researcher's supervisor acted as moderator in the discussion.

3.3.1. Data collection – Conduction of focus group

A two-hour focus group was facilitated with a goal of exploring main themes that had emerged from the literature as well as earlier phases of research. There were 10 number of participants covering different departments and within the age group of 28 to 38 employed as middle level managers in a public sector enterprise involved in manufacturing of heavy electrical items. All the participants in the Focus Group had a minimum experience of 5 years with average experience of 8.4 years. 7 barriers were identified by this group detail of which is presented in next chapter.

Table 3.1 List of FGD Participants (Group 1)

S. No.	Designation	Department	Age	Exp
1	Sr. Engineer	Planning & Development	30	7
2	Manager	IT Services	38	14
3	Sr. Executive	Human Resource	34	8
4	Sr. Engineer	Production	32	7
5	Sr. Executive	Human Resource	31	7
6	Sr. Engineer	Engineering	31	7
7	Dy. Manager	Material Management	38	10
8	Engineer	Engineering	28	5
9	Engineer	Quality	29	5
10	Manager	Production	38	14

Another FGD was conducted with the participants of SIDCUL covering different departments and industry segments and within the age group of 27 to 38 employed as middle level managers having experience of 5 to 14 years with average experience of 9.8 years. This group identified 9 barriers out of which 5 were common as identified by Group 1. Thus, in total, 11 barriers were identified detail of which are presented in the next chapter.

Table 3.2 List of FGD Participants (Group 2)

S. No.	Designation	Company - Industry	Age Yrs	Exp Yrs	Rev Rs. Billion
1	Manager - Quality	NTPC – Electrical	37	12	880.83
2	Manager – Supply chain operations	Hero Motocorp - Automotive	38	14	328.71
3	Dy. Manager - Marketing	ONGC – Oil & Gas	30	8	104.18
4	Sr. Engineer – Planning	Parle Biscuits - FMCG	32	7	100
5	Sr. Engineer – Material Mgmt	Mother Dairy – Agro	28	6	70
6	Dy. Manager - Operations	M&M Swaraj - Automotive	34	10	30
7	Manager - Sales	Rockman - Automotive	38	12	21.05
8	Dy. Manager - HR	THDC – Electrical	35	10	20.94
9	Engineer - Production	CavinKare - FMCG	27	5	16
10	Sr. Manager – IT services	Genus Power - Electrical and electronics	36	14	8.57

The names of all participants in this study have not been shown to protect their anonymity. A list of 5 questions (with many sub-questions) was sent to the participants through e-mail prior to the discussion and used to guide the discussion (see box below).

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Questionnaire for Qualitative Study to identify the challenges or barriers of labour productivity in Indian manufacturing enterprises

Introduction

We are here to identify the challenges or barriers of productivity. I would like to start by saying there is no right or wrong answers, no disagreement in views. I am interested to get both positive and negative comments; and both can be very useful. I am trying to capture your perspectives on challenges for improving labour productivity in your organization.

Questions

1. What are the top 5 challenges that you think hamper the productivity of you and your organisation?

2. Do you think that these problems or challenges can be resolved?

3. In what ways you think these challenges can be overcome?

4. What are the immediate or long term suggestions you suggest that you or your organisation can adopt to overcome these challenges?

5. Any other comment you would like to make?

Thank you very much for your time.

</div>

Figure 3.2 Questionnaire for Qualitative Study

A relaxed, informal atmosphere was made for encouraging spontaneous comments. A presentation was also made on the idea and was shown to the group prior to the discussion.

The role of moderator "within the focus group was to facilitate the discussion, by encouraging the involvement of all participants and ensuring that it doesn't get dominated with discussion by a few participants. Prompting questions were provided to elicit expansion of interesting subtopics and participants were challenged to share a diversity of perspectives on the topics under discussion. As facilitators, researcher was aware of the drawbacks of focus group research, such as the difficulty of separating individual viewpoints from the collective view point and made every effort to fully explore the diversity of opinions within the group as well as the degree of consensus on given topics" (Morgan, 1996; Krueger, 2014). To ensure reliability and validity, a note taker was present during the focus group session. The session was also recorded and later transcribed. The researcher listened to the tapes and read the transcriptions on multiple occasions with a view of performing a content analysis on the data. The material collected was then reduced by "selecting, focusing,

simplifying, abstracting and transforming the raw data" (Miles & Huberman, 1994). Strauss (1994) refers to this method of organization as the conceptualization of data.

3.3.2. Analysis Procedure

The data analysis involved several steps. As Strauss (1994) suggests, "coding of the data was done in advance and often it was interrupted by the writing of analytical memos. After each discussion, a detailed summary was prepared listing all the factors specified by the respondents during interview. When there were conflicts in the accounts of the individuals, the follow-up were made for clarification. Further, the transcripts and remaining documents pertaining to labour productivity were scrutinized line by line and paragraph by paragraph to suggest initial themes or categories." As per Strauss (1994), "these are called as 'open coding'. Based on these themes, a series of analytical memos were recorded. Next step, which Strauss refers as, 'axial coding' by which the transcripts were scrutinized again and again to consider each of the theme among several cases to appraise the fit of each theme to the data. At least one analytical memo was written on each theme. Once approximately two-thirds of the data collected, a major memo was prepared in efforts to bring together the themes and identify other areas for investigation. By coding of qualitative data, the new understandings and insights into the data emerged" (Lincoln and Guba, 1985). There were numerous iterations and review done with the notes and transcribed interviews. Over the time, the issues such as "decaying of codes" or "becoming too general" occurred (Miles and Huberman, 1994). Finally, the stage called "selective coding", once again the remaining data were scrutinized to get refined themes and identify the findings for each. Then, the final sets of memos were written through which the themes were integrated (Glazer and Strauss, 1967). We discuss the results of these analysis in the next Chapter.

3.3.3. Reliability and validity of the methodology

Reliability and validity is particularly important for the qualitative research (Miles and Huberman, 1994). Reliability involves the repeatability of the experiment and even after the replication of the experiment, the same results will be achieved. In this research, a scholar with different study background accompanied the researcher. The scholar had possibly no idea on labour productivity. Both independently recorded and transcribed the interview. Later the results were found to be almost same. In addition, pre-test and pilot test were also conducted to ensure face validity. The

second issue in the quality of the research design is generalizability i.e. "external validity which means how the results can be more generalizable" (Yin, 2003; Auramo et al., 2005). External validity reflects "how precise results represents the phenomenon under investigation, establishing results generalizability" (Yin, 2003). In this research, the generalizability was enhanced as focus groups were conducted with executives with adequate experience who also possess diverse background and represented several departments in manufacturing domain (Automobile, FMCG, Agro, Food and beverages, Oil and Natural Gas, electrical and electronics). According to Yin (2003), the term construct validity refers to "establishment of adequate measures for the concept under investigation". For this purpose, Yin (2003) states that "construct validity can be enhanced by returning the study reports to the respondents for verification". In this research, all the respondents were forwarded with the transcript report before the analysis.

3.4 Research design for Quantitative Study

To achieve the research objective-3, we have conducted quantitative study that involves the development of labour productivity measurement scale. The process of the research design is described in the following section:

3.4.1. Constitution of expert panel and scale development process

To identify, develop and validate the scales for labour productivity, we followed Churchill's (1979) paradigm and other scale development process (Linderbaum and Levy, 2010) that include employment of both qualitative and quantitative methods. In order to identify and develop the constructs, we adopt systematic literature review process and discussions with subject matter experts. The in depth discussions with the expert panel in the first phase of our research helped us to aggregate several common items and provided them with the single label in such way that over 108 items were reduced to only 20 specific measures provided in table in Chapter-2. Specifically, we have reviewed the literature on labour productivity to develop the draft scale. Next, we constituted an expert panel to "solicit experts' insights to refine our scales" (Yeung, 2008). The expert panel was formed based on 2 criteria. First, the members should be "knowledgeable" in the labour productivity and performance improvement in India. Second, the members of this panel were identified with diverse background to make sure that "insights from these executives would give different perspectives" (Bryman, 2008). Further, the expert panel consisted of 10 experts from

manufacturing industries, representing various domains including, petrochemical, pharmaceuticals, FMCG, Automotive, Electrical and electronics and Food and beverages companies. In addition, 2 senior professors from operations background from premier business school and a scholar from operations management were chosen. The list of expert panel constituted for scale development is provided in the table below.

Table 3.3 List of Expert Panel for Scale Development

S. No.	Description	Industry/Academia
1	DGM (Planning)	Industry
2	Sr. Manager - HR	Industry
3	Manager - Production	Industry
4	Manager - IT	Industry
5	Manager - Safety	Industry
6	Manager - Training and Development	Industry
7	Manager - Quality	Industry
8	Manager - Finance	Industry
9	Sr. Manager - Marketing	Industry
10	Manager (Strategic Planning)	Industry
11	Associate Professor (Marketing and Strategy)	Academia
12	Associate Professor (Operations)	Academia

Thus, the extensive literature review and in depth discussion with experts brought us the comprehensive list of scale items used in our study. Further deliberation by expert panel resulted in a 20 item scale which was put to industry practitioners for pilot testing. The detailed flowchart describing research methodology process adopted for quantitative study and the detailed process adopted for preparation of initial questionnaire to final scale is next provided for the ease of clarity.
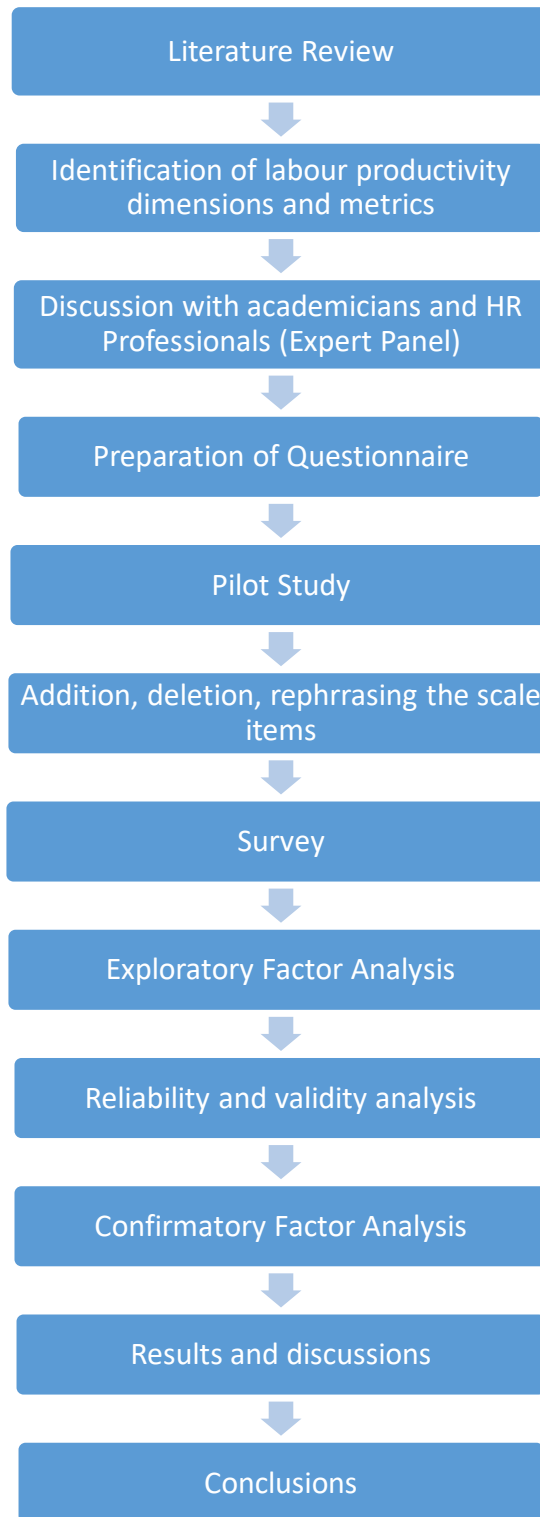
Figure 3.3 Flowchart describing research methodology process (for quantitative study)
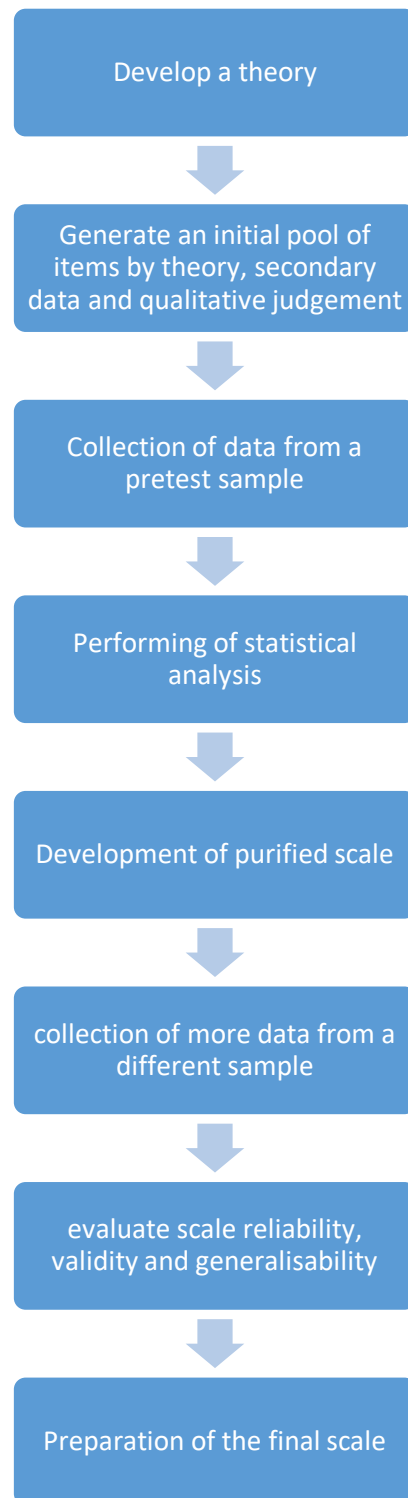
Figure 3.4 Detailed process adopted for preparation of Initial Questionnaire to preparation of Final Scale

3.4.2 Pilot Test – Scale Purification

As discussed earlier, 20 item scale was generated. In order to access the face validity of the scale items, a pilot test was conducted on 35 respondents which were experts in the field of productivity improvement practices. To ensure that the scales are relevant to the target audience, the informants of the pilot test were selected carefully from the manufacturing industry. These experts were representing majority of the key manufacturing sectors of Indian economy that includes automotive, FMCG, oil and gas, energy, electrical engineering. Finally, out of 45 respondents, 35 agreed to participate in the pilot test. The selected respondents were given a brief description on labour productivity and followed by a questionnaire. Based on the outcome of this pilot study, changes were made in few of the scale items to improve the readability and content validity. Finally, on completion of the pilot test, the total number of scale items remained 20 and each assessed by 5 point Likert scale anchored at 1-Strongly disagree to 5-Strongly agree to represent the labour productivity dimensions. 5 point Likert scale is more appropriate in measuring the attitude of the people and has been used previously in several measurement studies (Doloi et al., 2012, Zhu et al., 2008).

Table 3.4 Labour Productivity scale items and their measures (after purification)

(5-point Likert scale; 1=strongly disagree to 5=strongly agree)

S No	Enabler Description	Scale-item Description
1	Education, knowledge, skills and abilities of employee	I feel I have enough education and KSA (knowledge, skill and ability) to perform my job effectively.
2	Physical and mental well-being of employee	I feel I am physically and mentally fit for doing the job.
3	Employee's Attitude, Belief, Values	I feel that I possess positive attitude, strong and persistent belief and values matching with that of my organization.
4	Work Environment	I feel I am given proper working environment required to perform my task.
5	Motivation and Enthusiasm	I am motivated and enthusiastic to bring about improvements in my job.
6	Pay	I feel better pay would motivate me to do my job better.
7	Training and learning & development	I feel adequate and timely training helps in doing my job effectively.

8	Conscious focus on improving productivity	My organization pays attention on productivity improvement.
9	Organisation Structure, Strategy and Culture	The structure, strategy and culture in my firm encourages productive environment.
10	Technology Adoption Level of the Organisation vis-a-vis the Industry	I work on latest technology available in the industry I am working in.
11	Sharing of world class best practices and technological developments	Best practices are employed and shared in my firm.
12	Focus on clear business goals/objectives by regular communication	My organization clearly communicates the goals and business objectives by regular communication.
13	HR Policies of Organisation	HR policies of my firm help me in becoming more productive employee.
14	Presence of regulatory body in the industry	I feel presence of regulatory body in the industry increases productivity as quality standards and best practices are properly maintained.
15	Number of competitors in the industry	I feel number of competitors in the industry positively affects the productivity of my firm.
16	Working Conditions	Working Conditions in my firm play a major role in raising my productivity levels.
17	Cross country migration of skilled labour	I feel migration of skilled labour adversely affects the labour productivity of the firm.
18	Government regulation environment and policy changes	Government environment and policy changes are important for labour productivity growth.
19	Macroeconomics of the country	I feel macroeconomics of the country impacts the labour productivity of the firms and industry.
20	Macroeconomics of the world	I feel macroeconomics of the world impacts the labour productivity of the nation.

3.4.3 Target Population – Domain specification and scale validation

The study has been carried on the enterprises in India. For the purpose of this study, manufacturing enterprises available in State Industrial Development Corporation of Uttarakhand Limited (SIDCUL) Haridwar, Uttarakhand have been considered. The study has been conducted on this segment due to proximity of the researcher with this area and at the same time, there exists a need

of clearly identifying the factors that significantly enhance their labour productivity and also there is a need to develop the measurement scale to measure labour productivity of enterprises as there were no specific scale available to measure exclusively labour productivity. Further, exploratory factor analysis was performed to test the scale reliability and validity.

3.4.4 Sample Size and Sampling Technique

3.4.4.1 Sample Size

The determination of the sample size in the qualitative study is a matter of subjectivity. The sample size is not determined by the need to ensure generalizability, but by a desire to investigate fully the chosen topic and provide information-rich data (Grbich, 1999). The data saturation of the respondents will help in ascertaining exhaustion of sample collection. Indeed, the lack of generalizability in qualitative research has led to criticism of its usefulness (Giacomini, 2001; Mays and Pope, 1995). However, to validate the factors of labour productivity, the sample size for the validation of the labour productivity scale have been identified on the basis of pilot test results.

Table 3.5 Sample and data collection

	Data collection stage	Response	Total companies chosen
Sample	Phase-1-Pilot	35	45 respondents in 5 companies
	Phase-2 – Data collection	640	1400 respondents in 14 companies
Sampling Frame	Having employee strength of at least 1000 employees. Having participation in QCFI (Quality Circle Forum of India)		
Sampling Method	Survey Method		
Sampling Mode	• Online mail survey • Telephonic Survey		
Place	Uttarakhand, India		

3.4.4.2 Sampling Technique

For the study, Judgmental sampling, a form of convenience sampling in which population elements are selected based on the judgment of the researcher has been used. To exercise the judgment, opinion of experts has been used.

3.4.5 Method of Data collection

We followed procedure proposed by Dillman (2007) for questionnaire formatting, distribution and collection. The collection of primary data has been done through mail and personal field visit questionnaire distribution. The questionnaire (Appendix) with the write up information on labour productivity and instructions on how to fill up the questionnaire was sent through mail. Additionally, field visits were conducted to events conducted by Quality Circle Forum of India (QCFI) and other industry interaction events and the survey was personally distributed and the responses were sought.

3.5 Data Analysis Tools and Techniques

The following are the brief summary of the qualitative and quantitative tools that have been used for research problem and the segment selected for the study.

- Content Analysis: has been used to allocate the constructs into suitable categories and a reliability check has been carried out independently by another researcher to check the category definitions and the allocation of constructs to categories (Szalkowski and Jankowicz, 2004).

- ISM (Interpretive Structure Modelling) method has been used to assess the priorities of the dimensions and factors for labour productivity in the Indian context. The ranking of the factors provides a way to improve labour productivity (Nagpal et al., 2015).

- SPSS 21.0-for analyzing the data collected.

- Exploratory Factor Analysis (EFA) – It extracts the key dimensions or constructs in our study. We have also evaluated the reliability and validity of the constructs (Mani et al., 2015).

- Confirmatory Factor Analysis (CFA) using SPSS AMOS 21.0 – to test relationships among variables and to identify which ones are more important. In order to evaluate the model fit, various model fit indices such as Chi-square value, Goodness of Fit index (GFI),

Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA) are evaluated. In this, various measures such as construct reliability and construct validity (both convergent and discriminant) have also been evaluated (Mani et al., 2016).

In the next chapter, various analysis related to both qualitative and quantitative study will be discussed.

4.1 Introduction

In the previous chapter, we have described the research methodology for qualitative and quantitative study. This chapter discusses the results of the qualitative and quantitative analysis. The next section of this chapter presents the results of the qualitative analysis. The subsequent section shows the application of the Interpretive Structural Modelling (ISM) technique to prioritize the enablers which helps in this study by providing a framework of labour productivity. The next section presents the results of quantitative measures using various statistical tools. In this section, first, the results of exploratory factor analysis performed on labour productivity scale items are presented. Then, it is followed by the results of confirmatory factor analysis to evaluate the various properties of the factors. In addition, this chapter also presents the results of various statistical tests conducted for checking the reliability and validity of the constructs identified in the study.

4.2 Findings and Analysis: Qualitative Study (For Barriers)

We next present the factors as barriers that came out as a result of discussion. This would help in identifying the issues specific to Indian context and reinforcing the conclusions of this study.

Rigid Environment – Participants were of the view that Employees cannot be productive in an environment that has very limited flexibility. This is one factor which hampers the productivity. A middle level manager quoted,

"Freedom to express one without having the fear of embarrassment and conflict is very necessary for innovative and creative ideas to flourish which increases employee and organisation productivity."

In Indian context, because of high power distance, employees tend to put down the ideas put up by their subordinates considering them as inferior and subordinates are not encouraged further to put more ideas and suggestions.

Lack of Learning and training opportunities with new technology adoption – Learning environment in an organization is developed through proper training and development program,

which focuses on achieving learning objectives aligned with the goals of the organization (Hayes and Allinson, 1997; Noe, 2010; Rao and Shah, 2012). Learning is all about acquiring new knowledge, developing new skills, competencies and attitude, which helps in developing human capital for future (Noe, 2010). It was noted by the participants of the group that if learning opportunities exists in the organization, employees will try to work harder and may induce others to work hard as well. A manager from private sector company quoted,

"Learning can take place in any form. It can be through classroom training, on the job training through peers and colleagues or e-learning. Further, it should be supplemented by latest technology training and adoption."

Another manager gave the example,

"If by using software, the quality of drawing is good, then productivity and customer satisfaction of organisation will improve. So if proper training is given to an employee in a particular direction and if it is enriched with newer skills, it would lead to more productive employee as well as organisation. Further, it is very important that technology adoption should be coupled with training. Particularly the older employees face much difficulty in coping up and adopting themselves to changing technology."

Thus, new technology adoption should be simultaneously supported by training. Also, technology adoption shall be pushed from top management. New initiatives implementation should be a top down approach; it cannot come from bottom up. Training helps employees in making use of their maximum potential. Training should be linked to job requirements. It should not happen that an employee in need of technical training is being provided behavioural training. The above needs like context specific training, latest technology training, and systematic training to increase the skill set of employee are very much relevant to Indian context where there is a lot of scope for development on these fronts. Training should also be supported by positive learning goal orientation which refers to the desire to increase one's competence by developing new skills and mastering new situations. Individuals with high-learning goal orientation focus on increasing their learning, seeking challenges, and show persistence in the case of failure (Dweck and Leggett, 1988). Further, organizational learning culture is one of the key contextual components to enhance organizational commitment. It is defined as "an organization skilled at creating, acquiring, and

transferring knowledge, and at modifying its behavior to reflect new knowledge and insights (Garvin, 1993, p. 80). Marsick and Watkins (1997) provided a framework that identified seven action imperatives for a learning organization:

(1) create continuous learning opportunities;

(2) promote inquiry and dialogue;

(3) encourage collaboration and team learning;

(4) establish systems to capture and share learning;

(5) empower people to have a collective vision;

(6) connect the organization to the environment; and

(7) use leaders who model and support learning at the individual, team, and organization levels.

Thus, learning organization involves an environment in which organizational learning is structured so that teamwork, collaboration, creativity, and knowledge processes have a collective meaning and value" (Confessore and Kops, 1998).

Improper work distribution – The group noted that the work allocation in Indian context is not proper. The group unanimously agreed on the point that the top management gives more and more work to that person who works hard and on the contrary, top management will not give any important work to that person who doesn't work at all. So there is improper work distribution within a particular department, within a particular organization. A manager asserted,

"This is also one reason of lesser productivity because a resource that is not doing anything is being wasted and the resource that is hardworking is being over utilised."

Building a culture of workplace partnership in the organization will help to get the best from the employees and boost their productivity.

Lack of cohesiveness – Participants were of the view that it is extremely relevant to develop a better understanding of the relation of cohesiveness with the kind of groups, because cohesiveness is heavily correlated with effectiveness. So it is very beneficial to know for organisations how to increase cohesiveness for the team, "since an important goal of an organisation is to pursue teams working effectively without conflicts and getting teams to reach their highest potential" (Mullins,

2006). So efficiency is of absolute importance since it greatly enhances the productivity of the organisation. Participants were of the view that lack of cohesiveness exists at different levels in Indian organisations. A manager said,

"There is always a gap between different layers of management, top management, middle management and lower supervisory and the workers level. This kind of gaps also hamper productivity to a certain extent and for that better cohesiveness is needed and concepts like TQM etc. are very helpful in improving this kind of culture."

Further, cohesiveness is the function of collectivism or individualism according to the culture. For western countries where individualism exists, cohesiveness of a team depends upon whether the results are beneficial to the self. In Indian context, collectivism exists and cohesiveness of a team is high if group members know each other and need of affiliation to the group is high. "Individualistic orientated work groups could be more cohesive when the job would satisfy a range of personal needs relevant to the self, like acknowledgement or a individual bonus or promotion" (Wendt *et al.*, 2009).

Lack of proper Incentive System – The participants agreed to the point that if limited incentives exist in the organization, then it may hamper productivity to a large extent. For e.g. if for same work, somebody is getting higher pay and other is not getting that kind of pay, productivity may also be affected. In case of public sector enterprises, a unique anomaly exists in the incentives being drawn by the regular employees and the work charged employees. A public sector manager said,

"Those who are in regular cadre of the organization, even if the employee is a peon, he may get Rs. 30-35 thousand of salary and on the same position if a work hire employee is there, he may get only Rs. 5-6 thousand. So even if the jobs, duties and responsibilities are same, but because of this improper incentive system, productivity may also be affected."

The productivity of high pay employee is lower as he feels that his job is secure and he cannot be shown doors out of the company whereas the employee having lower pay lives in the fear of being thrown out of the company and works tirelessly to achieve his targets.

Lack of Motivation - Motivation is something which drives an individual. Motivation has both the factors, internal motivation and motivation because of the external factors which may hamper him internally. The participants agreed to the point that motivation affects productivity in a huge manner but the constituents of motivation were not gathered. The factors that motivate an individual to work productively can be found out by conducting a separate study. If policy implementation is transparent, employee productivity will increase as motivation to work will increase. If support of seniors and colleagues exists in implementation of new idea or suggestion, motivation to work will increase. So can motivation be improved by offering more salaries, can motivation be improved by offering better uniforms, or by offering more training programs are the questions that require answer in order to work on factors that will improve motivation. "Active association of all the employees in various aspects of productive operations in a true participative spirit is essential for the creation of a climate of involvement and commitment, which alone can motivate them to contribute their best for the sustained growth and prosperity of the organization" (Cotton et al., 1988). Participative environment is also very essential for the development of any economy, with the help of building sense of entrepreneurship among the members of the society to build social and equitable economy (Bharti et.al, 2013). A manager said,

"This discussion can be related to McGregor theory where he proposed X and Y type of people. There are people who are self motivated and there are people who require some external form of motivation to get motivated. Where external motivation is required, it can be money, reward, recognition, punishment and where internal motivation is required it may be the passion and liking to do something good and to be at a higher level of productivity. It may be because of culture like in Japanese culture, where everybody is committed to do best possible work, the sense of belongingness is there, so it is very subjective cultural and contextual issues where productivity factors can vary from country to country."

Another manager concurred,

"One such example to prove this point is sense of belongingness. While Indians believe in friendship and are close community, sense of belongingness is like basic qualifying factor in Indian context but for European countries productivity was more related to sense of belongingness that if employees are friends with their colleagues, their productivity will be more. While in Indian

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environment, no worker will sit alone during lunch and all will sit together whereas in European organization, one person will have lunch at one table, another will have at another table."

It is important to understand the term organizational commitment in this context as it is an indicator of employee motivation. "Organizational commitment refers to an employee's feelings about the organization as a whole. It is the psychological bond that an individual has with an organization and has been found to be related to value and goal congruence, behavioral investments in the organization, and likelihood to stay with the organization" (Mowday et al., 1982).

Organizational commitment is conceptualized as an affective response that results from an evaluation of the work situation that links the employee to the organization. Meyer and Allen (1991) have "termed the three components as affective commitment, continuance commitment, and normative commitment. Three characteristics of organizational commitment are:

(1) A strong belief in and acceptance of the organization's goals and values.
(2) A willingness to exert considerable effort on behalf of the organization.
(3) A strong desire to maintain membership in the organization" (Mowday et al., 1982).

Lack of Job Recognition – The group noted that in Indian manufacturing organisations, production department is given more preference than other departments. Employees working in production department feel more important and privileged than employees working in support or service departments. Every department has its core competence and they should be highlighted. If equal recognition is given to all the services, the productivity of employees who are in allied area can be improved. Also, there are gender related issues. A public sector middle level manager said,

"Women hired as engineers are not allotted production department and work in allied supporting departments. As a result, they are not able to fully make use of the skills they were in possession of."

There has to be a sincere commitment in an organizational leadership, which must focus on inclusive growth, with a vision that includes clarity about the human dimension, and also on people development, not just profit (Cappelli et al, 2010; Kotter, 1999; Michaelis et al., 2009; Rodgers et.al, 1993). Business goals and directions are decided by the key top executives in every business organization. Commitment and the right intent are required from key officials in the leadership in

an organization to drive the organization by any philosophy or thought. It is important for the business organizations to ensure sustainable growth along with improving the welfare measures of employees, contributing to the society and overall to the value enhancement for shareholders and other investors.

Improper Postings – A lot of employees are misfit for the job that they are doing. In public sector enterprise particularly the one in which the FGD was conducted, employees are put in different departments without looking at the abilities and skills of the employees. The participants were of the view that this has resulted in improper job postings. A manager noted,

"Although at the time of selection, they were at the same level but they were put in different departments with no assessment of their interests."

In one particular case, it was informed that only one person was hired as storekeeper years ago in stores department. All other employees working in the stores department got transferred from other departments where they were not needed.

Lack of Multiskilling - If employees are developed to be multitalented then the same will also help in improving productivity. If an employee has the knowledge of operating different machines, then he can be utilised in a multifunctional manner. However, in literature there is a very strong debate on this particular point whether productivity increases on multitasking or productivity increases by specialization. There are good numbers of researches, which are available, which say that productivity increases because of specialization that if one is specialized only in welding or turning, so one will be highly productive person. But on the contrary people from human resource management, they say that if one is continuously working on a same platform, same machine, so monotony will take place, fatigue will take place and job enrichment is required for productivity, so one should be multitasking. A public sector manager said,

"On one end of spectrum, learning curve phenomena exists which is from the point of view of specialization that as learning improves in a particular specialization, productivity also improves continuously. So every organization wants its learning curve quotient to be high. And then on the other end of spectrum, there are other people, which support the view of having the multitasking and multitalented people. So both these schools of thoughts are there and it can be further

empirically validated in future studies in order to know exactly which school of thought is actually acceptable for Indian workers and particularly for PSUs."

Lack of Ownership towards work – The group participants were of the view that the employees in Indian manufacturing organisations don't take ownership of their work. The individual employee at the lower level is unaware of his/her targets. Department knows how much goods they have to produce but individual workmen doesn't know his targets how much he needs to produce in 1 year, six months and in a quarter. So when they are not aware of their quantifiable work, how can they improve upon when they don't know how much they have to complete. So the concept of labour productivity itself is lagging. Milestones must be clearly defined and must be clearly communicated. Each and every employee shall know his goal. And sometimes, it doesn't get reviewed also. So, the industrial engineering department must periodically complete time and motion studies and come up with new standards. Process capability should be developed in such a way that there should not be any need of separate inspection or supervision. It is very much necessary that even floor worker should be aware of who is ultimate customer of the product that he/she is making. How a small part of a big product affects the whole product and that big product is catering the needs of which final customer, all these things should be conveyed and should be clear to the shop floor worker. But because of their various constraints and limitations, organisations have yet not understood the importance of management principles like TQM in right spirit and there are so many myths, misunderstandings about quality related issues. If implementation of all the management concepts is done in right spirit, all employees will be having very good understanding. A manager noted,

"And that's how Japanese system of management is different. Japanese employees or workers know who my customer is and what the expectation of my customer of this product is. So, they will produce that kind of product right from the shop floor stage. However, in case of Indian manufacturing organisations, the worker doesn't know anything about the final customer. It is a separate department may be quality assurance or marketing people, who know about the final customer. So there is a big gap between shop floor worker and end customer and that is why customer satisfaction will also be low and the worker productivity will also be low. So concepts and management principles are already there but the proper spirit is not there, the right approach

is not followed and that hampers the productivity. There is a big difference in Japanese philosophy and Indian philosophy of working."

Ownership is the core of Japanese system of improving the productivity that they create ownership and individual worker is the owner of his or her own task. In Indian organisation, employees don't have that kind of attachment with their work. And when there is no passion, attachment or emotional connect with our work, obviously productivity goes down.

Lack of Good Physical and Mental Health – The participants observed that in Indian manufacturing organisations particularly public sectors, there is no provision of mandatory exercise at work place. A private sector manager said

"The food distributed to employees during breakfast, lunch or dinner is not paid attention to and the aspect that what effect it is creating on the health of employees is not looked after."

In Japanese organisations, everyday 5 min of exercise is compulsory. Studies have been conducted in US and other western countries to support the fact that the quality of food is important for better employee productivity (Bilger *et al.*, 2013; Gates *et al.*, 2008; Thompson *et al.*, 1998). However, no such study was found in Indian context.

Thus, the table below shows the list of barriers along with the focus group in which it was identified. Further, it was found that all the barriers are covered under some or the other enabler identified in the study. Thus, the table also shows the mapping of barriers with enablers.

Table 4.1 List of barriers

S No	Description of barrier	Identified in	Covered under enabler
1	Rigid Environment	FGD1	Work Environment
2	Lack of Learning and training opportunities with new technology adoption.	FGD2	Training and learning & development Technology Adoption Level of the Organisation vis-a-vis the Industry
3	Improper work distribution	FGD2	Work Environment
4	Lack of cohesiveness	FGD2	Work Environment
5	Lack of proper Incentive System	FGD1, FGD2	Pay

6	Lack of Motivation	FGD1, FGD2	Motivation and Enthusiasm
7	Lack of Job Recognition	FGD1, FGD2	Motivation and Enthusiasm
8	Improper Postings	FGD1	HR Policies of Organisation
9	Lack of Multiskilling	FGD1, FGD2	Education, knowledge, skills and abilities of employee
10	Lack of Ownership towards work	FGD1, FGD2	Motivation and Enthusiasm
11	Lack of Good Physical and Mental Health	FGD2	Physical and mental well-being of employee

4.3 Applying ISM Technique to Enablers

ISM and development of structural model

ISM is an "interactive learning process in which a set of different and directly related elements or variables of interest are structured into a systematic hierarchical model known as a structural model" (Warfield, 1974; Sage, 1977). Mental models are "generally vague when we have a large number of variables and it becomes difficult to interpret the interactions and inter-relationships among variables; ISM gives a clear understanding of all the variables and their relationship with other variables. The model formed depicts the structure of a complex process or problem, a system or a field of study in a carefully designed pattern implying graphics as well as words" (Ravi and Shankar, 2005; Faisal et al., 2006; Ramesh et al., 2010; Madaan and Choudhary, 2015). ISM methodology helps to "impose order and direction of complexity of relationships among system" (Agarwal et al., 2007; Ramesh et al., 2010). The ISM methodology is "interpretive in the sense that judgment of the group decides whether the variables are related or not and the direction of their contextual relationship. It is structural in the sense that an overall structure is extracted from the complex set of variables on the basis of relationships" (Agarwal et al., 2007; Ramesh et al., 2010; Haleem et al., 2012; Mani et al., 2016). ISM is a powerful tool to develop relational (contextual relationship) structural model.

Singh and Sushil (2013) state "ISM follows a methodological series of steps which are as follows:

Step 1: Identification of variables affecting the system or the process of interest. This could be done with the help of a literature review, brainstorming and opinion of the experts from industry and academia.

Step 2: Define the contextual relationship between variables of interest. The contextual relationship is dependent of the type of structure we are dealing with such as intent, priority, attribute enhancement, process of mathematical dependence and this gives the nature of relationships between the variables (Sushil, 2012). In case of intent structure, the contextual relationship can be that of "leads to" type, i.e. A leads to B.

Step 3: Developing a structural self-interaction matrix (SSIM) for variables. SSIM indicates pairwise relationships among variables of the system under consideration. This pairwise contextual relationship is expressed in the form of V, A, X and O which is explained in the next section.

Step 4: Developing a reachability matrix from the SSIM by converting the information in each cell of the matrix from step 3 into binary numbers "0" and "1."

Step 5: Reachability matrix obtained from step 4 is then checked for transitivity. Transitivity is the basic assumption in ISM which states that if a variable i is related to j and j is related to k then i is necessarily related to k.

Step 6: The final reachability matrix obtained from step 5 is then partitioned into different levels on the basis of reachability and antecedents sets for each variable through a series of iterations called as level partitioning.

Step 7: On the basis of final reachability matrix obtained from step 5 and level partitions obtained from step 6, a conical matrix or lower triangular matrix is constructed. From this conical matrix a directed graph (DIAGRAPH) is constructed and all the transitive links (indirect links) are removed.

Step 8: The resultant diagraph is converted into ISM by replacing the variables nodes with statements.

Step 9: Finally, ISM model developed is checked for conceptual inconsistency and make necessary modifications, if any".

SSIM

After identification of a total 20 variables through extensive literature review, brain storming and expert opinion from the industry and academia, analysis was then carried out. For carrying out this

research work three experts from the manufacturing industry and three experts from academia were consulted. These experts from industry and academia were very well conversant with issues of improving labour productivity.

Table 4.2 List of Expert Panel for classification of Enablers

S. No.	Description	Industry/Academia
1	Sr. Manager - Planning	Industry
2	Sr. Manager - HR	Industry
3	DGM - Production	Industry
4	Professor (HR)	Academia
5	Associate Professor (Marketing and Strategy)	Academia
6	Associate Professor (Operations)	Academia

A contextual relationship of "leads to" type was chosen, this means variable i leads to variable j. Keeping in mind the contextual relationship for each variable, the existence of a relationship between any two variables and the associated direction of relation was questioned. There were in all {n (n-1)/2} paired comparisons. Four symbols were used to denote the direction of relationship between any paired variables (i and j) which are as follows: V=variable i will leads to j.

A=variable j will leads to i.

X=variable i and j will leads to each other, i.e. relation in both directions.

O=variable i and j are not related, i.e. no relationship exists between the two variables.

Based on the contextual relationship between the variables and responses from the experts, SSIM is developed, shown in Table.

Table 4.3 Structural Self Interaction Matrix (SSIM)

S No	V --> If i leads to j A --> If j leads to i X --> If i & j lead to each other O --> If i & j not related	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Physical and mental well being of employee	X	X	X	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
2	Employee's Attitude, Belief, Values		X	X	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
3	Motivation and Enthusiasm			X	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
4	Education, knowledge, skills				X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

#	Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	and abilities of employee																				
5	Working Conditions					X	X	X	X	X	X	X	X	X	A	A	A	A	A	A	A
6	Organisation Structure, Strategy and Culture						X	X	X	X	X	X	X	X	A	A	A	A	A	A	A
7	Work Environment							X	X	X	X	X	X	X	A	A	A	A	A	A	A
8	Pay								X	X	X	X	X	X	A	A	A	A	A	A	A
9	Training and learning & development									X	X	X	X	X	A	A	A	A	A	A	A
10	HR Policies of Organisation										X	X	X	X	A	A	A	A	A	A	A
11	Technology Adoption Level of the Organisation vis-a-vis the Industry											X	X	X	A	A	A	A	A	A	A
12	Focus on clear business goals/objectives (through regular communication)												X	X	A	A	A	A	A	A	A
13	Conscious focus on improving productivity													X	A	A	A	A	A	A	A
14	Number of competitors in the industry														X	X	A	A	A	A	A
15	Presence of regulatory body in the industry															X	A	A	A	A	A
16	Macroeconomics of the country																X	X	A	A	A
17	Government regulation environment and policy changes																	X	A	A	A
18	Cross country migration of skilled labour																		X	X	X
19	Evolution of world class best practices and technological developments																			X	X
20	Macroeconomics of the world																				X

Reachability matrix

The SSIM is transformed into initial reachability matrix by substituting each cell into binary digits 0 and 1. The substitution rule into binary digits is done as follows:

If the (i,j) entry in SSIM is V, the (i,j) entry in the reachability matrix becomes 1 and the (j,i) entry becomes 0.

If the (i,j) entry in SSIM is A, the (i,j) entry in the reachability matrix becomes 0 and the (j,i) entry becomes 1.

If the (i,j) entry in SSIM is X, the (i,j) entry in the reachability matrix becomes 1 and the (j,i) entry becomes 1.

If the (i,j) entry in SSIM is O, the (i,j) entry in the reachability matrix becomes 0 and the (j,i) entry becomes 0.

As per Singh and Sushil (2013), "Following these rules, the initial reachability matrix for the variables is prepared. The final reachability matrix is obtained after incorporating the transitivity as explained in step 5 of ISM methodology". The final reachability matrix is shown in Table 4.4 along with driving power and dependence power. The driving power of a variable is the total number of variables including itself which it may help to achieve. The dependence power is the total number of variables including itself which it may help in achieving it.

Table 4.4 Final Reachability Matrix

V --> If i is affecting j A --> If j is affecting i X --> If i & j support each other O --> If i & j not related	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19	V20	Driving Power
Physical and mental well being of employee	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Employee's Attitude, Belief, Values	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Motivation and Enthusiasm	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Education, knowledge, skills and abilities of employee	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Working Conditions	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Organisation Structure,	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13

Strategy and Culture																					
Work Environment	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Pay	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Training and learning & development	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
HR Policies of Organisation	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Technology Adoption Level of the Organisation vis-a-vis the Industry	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Focus on clear business goals/objectives (through regular communication)	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Conscious focus on improving productivity	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	13
Number of competitors in the industry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	15

Presence of regulatory body in the industry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	15
Macroeconomics of the country	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	17
Government regulation environment and policy changes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	17
Cross country migration of skilled labour	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Evolution of world class best practices and technological developments	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Macroeconomics of the world	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Dependence Power	20	20	20	20	16	16	16	16	16	16	16	16	16	7	7	5	5	3	3	3	

Level partitions as suggested by Warfield (1974), the reachability and antecedent sets for each variable is found out from the final reachability matrix. As per Singh and Sushil (2013), "The reachability set (R) consists of the element itself and other elements, which it may help to achieve, whereas the antecedent set (A) consists of the element itself and other elements, which may help achieving it. Then the intersection set is derived for each variable. The variables for which the intersection set and the reachability set are the same is given the top-level variable in the ISM hierarchy. These top-level variables in the ISM hierarchy will not help to achieve any other variable above their own level. Once the top-level variables are identified, these are then removed from the rest of the variables and the process is repeated till all variables are assigned their levels." All the variables along with reachability set, antecedent set, intersection set and variable level are shown in Table below. From the table, it is seen that variable 1, 2, 3 and 4 are at the top level of the ISM hierarchy. After removing these variables, the same process is repeated again to find next level for variables. These levels help in building the diagraph and the final model. The process has been completed in five iterations giving five levels in the ISM hierarchy. From the iterations it is clear that variable 1, 2, 3 and 4 are at the top level of the ISM hierarchy and variable 18, 19 and 20 are at the bottom of the hierarchy while all other variables are at various intermediate levels.

Table 4.5 Level Partitioning

Var	RS	AS	RS Intersection AS	Level
V1	1,2,3,4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	1,2,3,4	I
V2	1,2,3,4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	1,2,3,4	I
V3	1,2,3,4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	1,2,3,4	I
V4	1,2,3,4	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	1,2,3,4	I
V5	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V6	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V7	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V8	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V9	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V10	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V11	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V12	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	
V13	1,2,3,4,5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	

V14	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13,14,15	
V15	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13,14,15	
V16	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	16,17,18,19,20	16,17	
V17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17	16,17,18,19,20	16,17	
V18	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	
V19	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	
V20	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	

Var	RS	AS	RS Intersection AS	Level
V5	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V6	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V7	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V8	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V9	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V10	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V11	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V12	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V13	5,6,7,8,9,10,11,12,13	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	5,6,7,8,9,10,11,12,13	II
V14	5,6,7,8,9,10,11,12,13,14,15	14,15,16,17,18,19,20	14,15	
V15	5,6,7,8,9,10,11,12,13,14,15	14,15,16,17,18,19,20	14,15	
V16	5,6,7,8,9,10,11,12,13,14,15,16,17	16,17,18,19,20	16,17	
V17	5,6,7,8,9,10,11,12,13,14,15,16,17	16,17,18,19,20	16,17	
V18	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	
V19	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	
V20	5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20	18,19,20	18,19,20	

Var	RS	AS	RS Intersection AS	Level
V14	14,15	14,15,16,17,18,19,20	14,15	III
V15	14,15	14,15,16,17,18,19,20	14,15	III
V16	14,15,16,17	16,17,18,19,20	16,17	
V17	14,15,16,17	16,17,18,19,20	16,17	

Var	RS	AS	RS Intersection AS	Level
V18	14,15,16,17,18,19,20	18,19,20	18,19,20	
V19	14,15,16,17,18,19,20	18,19,20	18,19,20	
V20	14,15,16,17,18,19,20	18,19,20	18,19,20	
Var	RS	AS	RS Intersection AS	Level
V16	16,17	16,17,18,19,20	16,17	IV
V17	16,17	16,17,18,19,20	16,17	IV
V18	16,17,18,19,20	18,19,20	18,19,20	
V19	16,17,18,19,20	18,19,20	18,19,20	
V20	16,17,18,19,20	18,19,20	18,19,20	
Var	RS	AS	RS Intersection AS	Level
V18	18,19,20	18,19,20	18,19,20	V
V19	18,19,20	18,19,20	18,19,20	V
V20	18,19,20	18,19,20	18,19,20	V

The final structural model (ISM) is obtained as shown in Figure below.
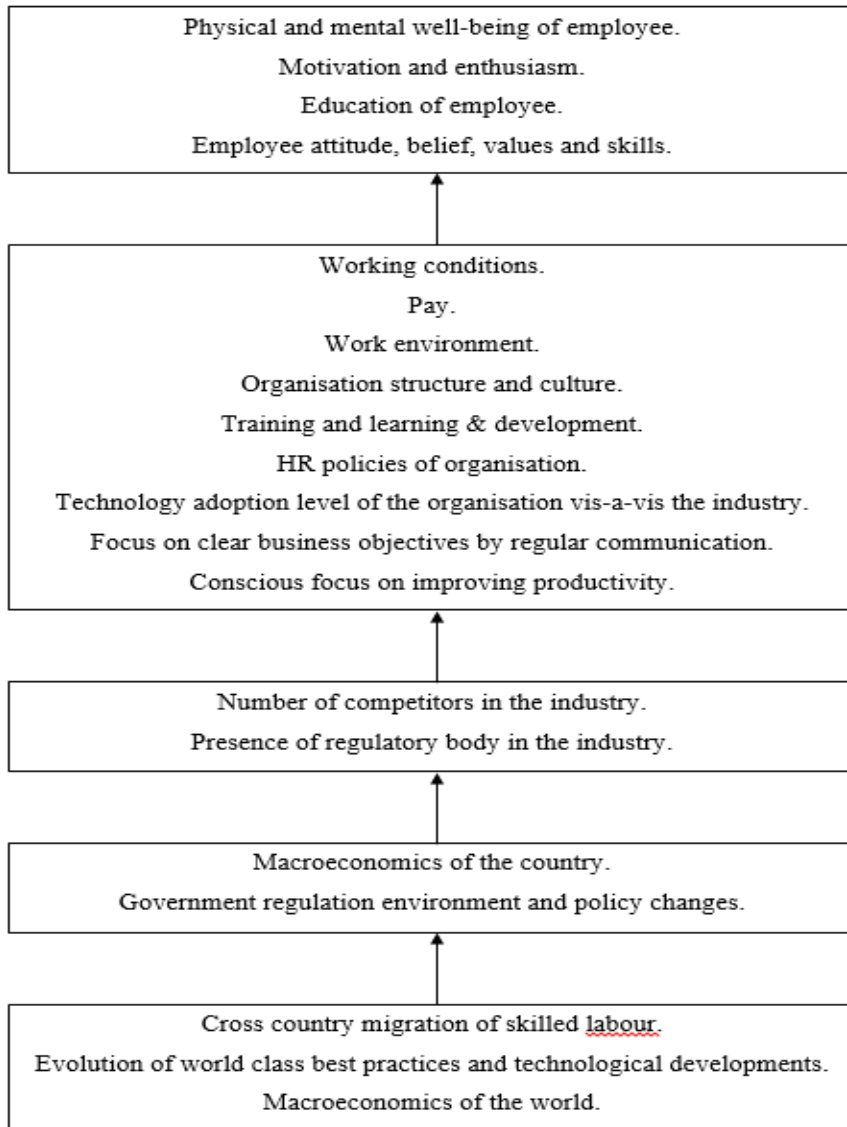
Figure 4.1 Interpretive Structural Model (ISM) of labour productivity

After applying ISM Technique to understand the relative importance of enablers, we were able to classify the enablers into 5 categories as follows:

‣ Internal to Employee (IE)
‣ Internal to Organization but external to employee (IO)
‣ Internal to Industry but external to organization (II)
‣ Internal to Nation but external to industry (IN)
‣ International factors (INT)

Table 4.6 Categorization of factors identified

S.No.	Category	Factors
1	Internal to Employee	Physical and mental well-being of employee.
		Motivation and enthusiasm.
		Education of employee.
		Employee attitude, belief, values and skills.
2	Internal to Organization but external to employee	Working conditions.
		Pay.
		Work environment.
		Organisation structure and culture.
		Training and learning & development.
		HR policies of organisation.
		Technology adoption level of the organisation vis-a-vis the industry.
		Focus on clear business objectives.
		Conscious focus on improving productivity.
3	Internal to Industry but external to organization	Number of competitors in the industry.
		Presence of regulatory body in the industry.
4	Internal to Nation but external to industry	Macroeconomics of the country.
		Government regulation environment and policy changes.
5	International factors	Cross country migration of skilled labour. Evolution of world class best practices and technological developments.
		Macroeconomics of the world.

Individual Factors

Organization Related Factors

Industry Related Factors

National Factors

International Factors
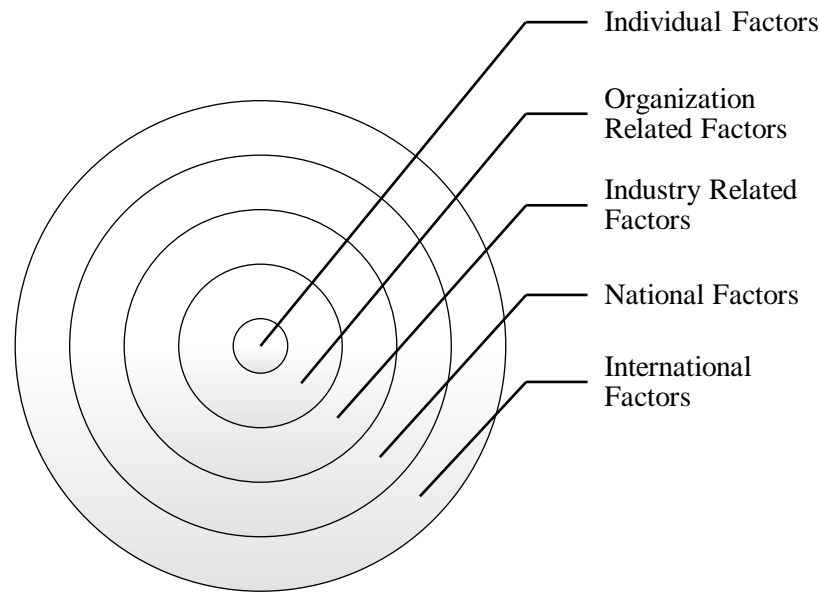
Figure 4.2 Model showing factors encompassing labour productivity

These factors are shown in circular patterns as the factor in each bigger circle has the potential to effect on all smaller circles inside it. For example, an international factor like changes in macroeconomics of the world has the potential to affect the productivity of a nation or a industry or a firm or an individual. On the other hand, employee related factors are responsible for individual level productivity and are subset of organisation wide productivity. Similarly, organisation wide productivity factors are subset of industry level productivity. Therefore, each factor in smaller circle is responsible for the productivity of entities present outside it. The classification is also supported by previous work in literature (Mohanty, 1992).

These factors can further be divided into 2 broad categories:-

1. Internal factors, on which we have control, the IE and the IO factors

2. External factors, on which we have no control, the II, the IN and the INT factors. However, we can visualise and forecast, in advance, the situations coming in our way and can accordingly take preventive and corrective steps.

4.4 Findings and Analysis: Quantitative Study

Based on the discussions, we have proposed labour productivity framework in the previous chapter. In the following sections, the proposed framework is being quantitatively evaluated

through various statistical tests. As discussed in previous chapter, we have done the statistical analysis towards developing the measuring instrument for labour productivity.

4.4.1 Response Rate

We sent a total of 1400 emails in 3 lots. We received a total of 720 responses out of which 652 responses were usable as the rest were largely incomplete. These 652 responses were then further reviewed for errors including missing data or responses on only one option. 12 such responses were removed from the data giving us 640 sanitized responses with a response rate of 45.71% collected from 14 manufacturing companies of SIDCUL Uttarakhand. 46.25% of the respondents were from manufacturing companies with annual revenues exceeding Rs.10000 crores (Rs. 100 Billion) and 41.25% of the respondents were from manufacturing companies with annual revenues between Rs.1000 crores to Rs.10000 crores (between Rs. 10 to 100 Billion). Another 12.5% respondents were from manufacturing companies with annual revenues between Rs.100 crores to Rs.1000 crores (between Rs. 1 to 10 Billion). This implies that respondents mainly belonged to medium and large organisations. Also, the majority of respondents were lower and middle level management executives while 10% of the respondents were holding senior management level positions. The characteristics of the sample are presented next and are highlighted in table below.

4.4.2 Demographic information of respondents

Table 4.7 List of respondents (as per company)

S No	Name	Number of respondents
1	AIS Glass	40
2	ITC	48
3	BHEL Haridwar	104
4	CavinKare	32
5	Genus Power	48
6	Halonix	32
7	Hero Motocorp	56
8	M&M Swaraj	32
9	Mother Dairy	32

10	NTPC	56
11	Parle Biscuits	32
12	Punjab State Power Corporation Limited	48
13	Rockman	32
14	THDC India Limited	48

Table 4.8 Sample characteristics

Measure	Description	Freq	Percentage
Type of Industry	Automotive-4	160	25
	Consumer Products-2	80	12.5
	FMCG-2	80	12.5
	Food and Beverages-2	64	10
	Power-4	256	40
Annual Revenues	Below Rs.100 Crores (1 Billion)	0	0
	Rs. 100 to 1000 Crores-2 (between 1 to 10 Billion)	80	12.5
	Rs. 1000 to 10000 Crores-7 (between 10 to 100 Billion)	264	41.25
	More than 10000 Crores-5 (over 100 Billion)	296	46.25
Profile of respondents	Lower Management (Executive, Sr. Executive, Asst. Manager)	241	37.66
	Middle Management (Manager, Sr. Manager, DGM)	335	52.34
	Senior Management (AGM, GM, ED, Director, President, VP, CEO, MD)	64	10
Experience of respondents	1-5 Years	22	3.44
	5-10 Years	218	34.06
	10-20 Years	305	47.66
	More than 20 Years	95	14.84
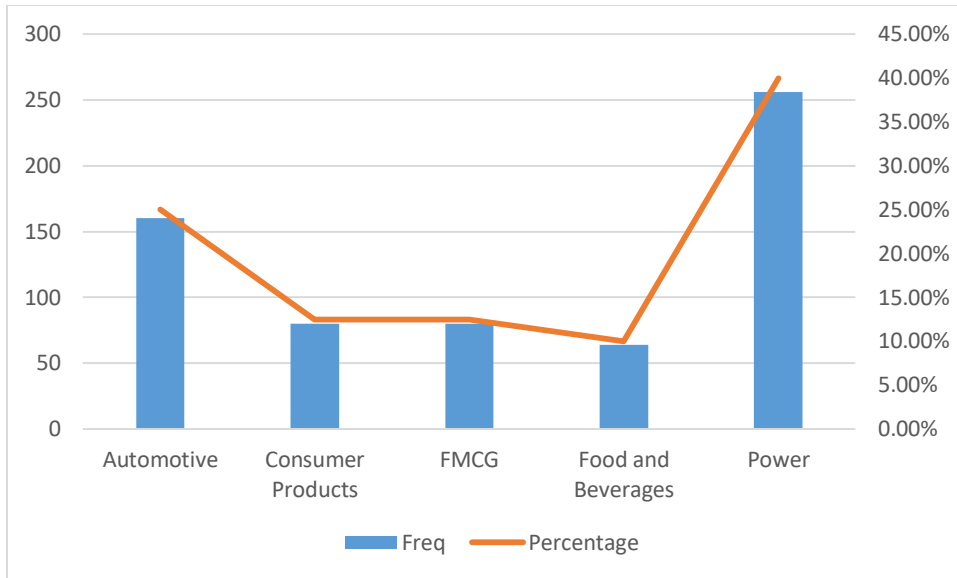
Figure 4.3 Description of Companies
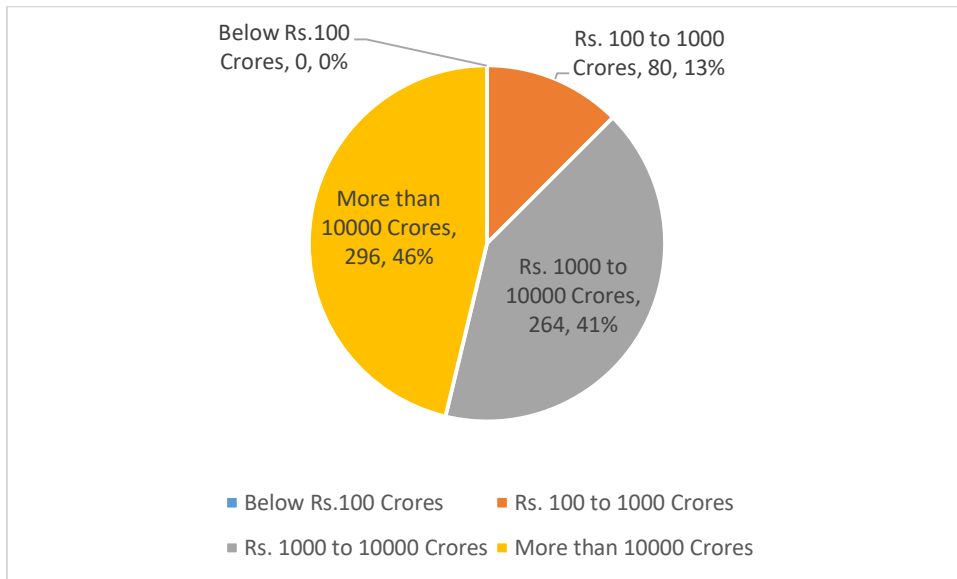
Figure 4.4 Company Revenues
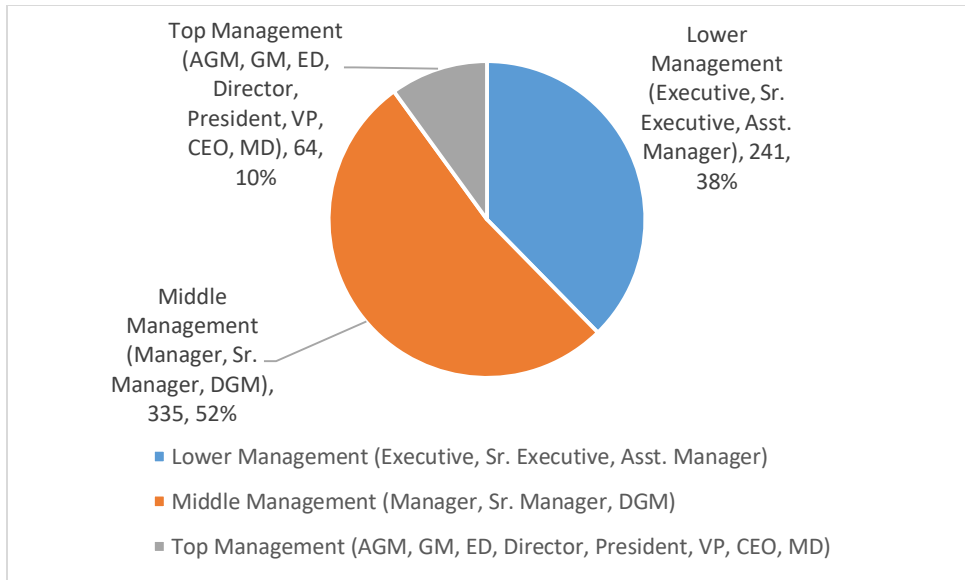
Figure 4.5 Position of executives
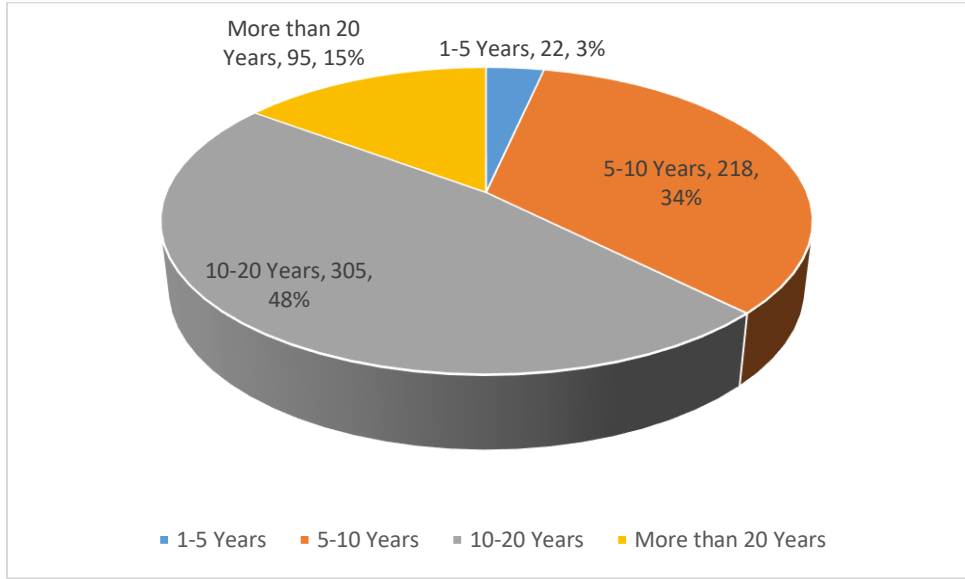
Figure 4.6 Experience of executives

4.4.3 Scale Formulation

As mentioned previously, this study followed the approach of Churchill (1979) for developing multiple-item constructs and is consistent with the approach taken by other researchers who have developed similar scales (e.g., Linderbaum and Levy, 2010). As explained in the previous chapter, to identify the constructs and their properties, we conducted two procedural steps. First, we

conducted Exploratory Factor Analysis (EFA) which was followed by Confirmatory Factor Analysis (CFA). In the next section, we present the results of EFA.

4.5 Exploratory Factor Analysis

We have performed EFA on 160 samples we collected in our study to examine the dimensionality of the productivity scale in order to make certain that all the measures loaded into productivity dimensions only. We have used Principal Component Analysis with promax rotation. Promax rotation was employed because "it is oblique in nature, so it is reasonable to assume that any extracted factors pertinent to productivity must be inter correlated" (Gorsuch, 1988). In order to identify the factors underlying the productivity dimension, we applied three commonly used decision criteria (Hair et al 2010). First, "the items loading with less than 0.40 are excluded. Second, the items that are cross loaded on two or more factors are excluded. Finally, the factors with eigen value of 1 and more were considered for cutoff value for extraction". Furthermore, there were three factors explaining 62.23% of total variance was extracted. Table below results shows the factor loadings for the 15 items scale with all the item loadings exceeding 0.40 and above. All the items loading significantly on to one factor indicate unidimensionality. The table also shows that no item had multiple cross loadings which shows the preliminary discriminant validity of the scale. Finally, all factors' reliability value (cronbach's alpha) is in excess of 0.70, which indicates acceptable reliability (Nunnally, 1978).

Table 4.9 Pattern Matrix

Pattern Matrix[a]

| | Component | | |
	1	2	3
IC1	.424		
IC2	.793		
IC3	.689		
IC4	.749		
IC5	.564		
IC6	.673		
IC7	.541		
FC1		.513	
FC2		.540	

FC3		.870	
FC4		.724	
FC5		.680	
FC6		.791	
EC1			.774
EC2			.597

Extraction Method: Principal
Component Analysis.
Rotation Method: Promax with
Kaiser Normalization.
a. Rotation converged in 7 iterations.

In the next section, we present the results of Confirmatory Factor Analysis (CFA) conducted in our study.

4.6 Confirmatory Factor Analysis

To conduct CFA, the same data of 640 samples was used. Previous studies have used single sample for EFA and CFA (Chow and Chen, 2012; Zhu et al., 2008). In this sample, there could be a possibility of common method bias as all the samples were collected through mail survey. To identify the common method bias, we have performed Harmon's single factor method in SPSS and the results indicate that there was no such problem (Total variance extracted = 18.59). Furthermore, we have performed CFA to create a measurement model and evaluate the measurement efficiency directly (Bentler, 1990). CFA techniques were applied in this study by using AMOS 21.0 software with maximum likelihood estimation procedure (MLE). We have applied a series of procedures to verify that all the proposed measurement items represent the constructs. We test the reliability and validity (both convergent and discriminant) in the subsequent sections.

4.6.1 Reliability Test

Construct reliability measures display "the accuracy and precision of the measuring instrument that refers to the level of internal consistency between multiple measures of variable" (Hair et al., 2010; Fornell and Larcker, 1981). We tested our scales, using cronbach's alpha and CR. All the scales as shown in table below demonstrate cronbach's alpha and CR greater than 0.7 and hence exhibit great reliability (Kline, 1998). We finally assessed convergent validity and discriminant validity which is discussed next.

4.6.2 Convergent Validity Test

In order to establish convergent validity, the parameters such as "the factor loading of the items, the average variance extracted (AVE), and composite reliability (CR) must be examined" (Hair et al., 2010). Table below indicates the standardized path loadings of all the items that are highly significantly related to their corresponding factors. The results of AVE and CR are summarized in table below which illustrates the exceeded threshold levels of AVE and CR. AVE is a primary indicator of convergence and "if the value of AVE is less than 0.5 indicates that more error is still remain in the model than the variance explained by latent variable" (Hair et al., 2010). On the other hand, "a CR value of 0.7 and above indicates the adequate internal consistency of the latent constructs analysed". All the constructs in the model fulfill the threshold levels of both AVE and CR and results and are displayed in Table below. Thus, it implies high convergent validity for the scales in this research.

Table 4.10 Convergent and Discriminant Validity of the constructs

	CR	AVE	MSV	ASV	FC	IC	EC
FC	0.869	0.527	0.231	0.146	0.726		
IC	0.882	0.518	0.231	0.185	0.481	0.719	
EC	0.702	0.543	0.138	0.099	0.246	0.371	0.737

4.6.3 Discriminant Validity Test

In order to evaluate the discriminant validity (Churchil, 1979; Hair et al., 2010), we examined:

(i)   Factor correlations (Kline, 2005);

(ii)   Maximum Shared Variance (MSV) and Average Shared Variance (ASV), and

(iii)   Square root of Average Variance Extracted (AVE) should be greater than interconstruct correlations (Hair et al., 2010).

When we examined the factor correlations (table above), all 3 factors correlations are below 0.80 confirming the discriminate validity of the scale (Bhattacherjee, 2002). Furthermore, the MSV was found lesser than the average variance extracted of the factors (table above). In addition, average

shared variance (ASV) values are less than the average variance extracted (ASV<AVE). The values in table below also suggest that square root of AVE is greater than interconstruct correlations. Therefore, all our three dimensions of employee productivity passed the discriminant validity test.

4.7 The Measurement Model

Based on the analysis using AMOS21.0, the first order correlated model for productivity was constructed as depicted in Figure below.

The first order model suggests that there are three dimensions (Constructs) (i.e., IC, FC and EC). The dimensions are independent in their prediction of Productivity. The construct IC is measured by 7 items, FC is measured by 6 items and EC is measured by 2 items in the model. (Figure below). The first order model for testing productivity passed all the required tests: $\chi2/df(CMIN) = 1.526$, GFI = .903, NFI = .836, CFI = .935 and RMSEA= 0.059. The results suggest that the first order model depicted in figure as an accurate representation for productivity. Furthermore, our results suggest the factor loadings for first order constructs of IC, FC and EC were ranged from .79 to .64, .78 to .60 and .79 to .68 respectively. In addition, the correlation between IC and FC stands at .48, followed by IC and EC at .37 and FC and EC at .25.

The table below provides the average score each factor received on a scale of 5.

Table 4.11 Average score received by each scale-item

S No	Factor	Description	Score
1	IC1	Education, knowledge, skills and abilities of employee	4.45
2	IC2	Physical and mental well being of employee	4.42
3	IC3	Employee's Attitude, Belief, Values	4.37
4	IC4	Working Conditions	4.30
5	IC5	Motivation and Enthusiasm	4.27
6	IC6	Pay	4.27
7	IC7	Training and learning & development	4.24
8	FC1	Conscious focus on improving productivity	4.15

| 9 | FC2 | Organisation Structure, Strategy and Culture | 4.10 |
10	FC3	Technology Adoption Level of the Organisation vis-a-vis the Industry	4.07
11	FC4	Evolution of world class best practices and technological developments	4.07
12	FC5	Focus on clear business goals/objectives (through regular communication)	4.05
13	FC6	HR Policies of Organisation	4.01
14	EC1	Presence of regulatory body in the industry	3.95
15	EC2	Number of competitors in the industry	3.93
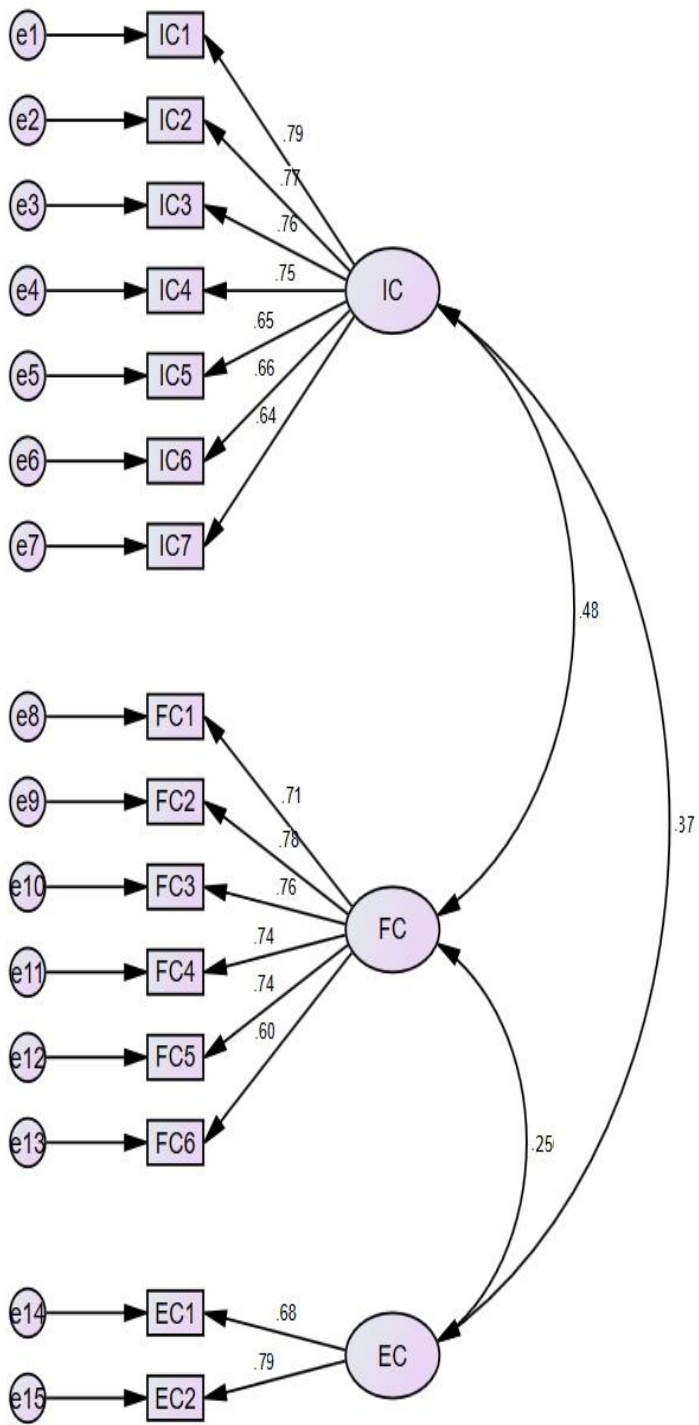
Figure 4.7 The measurement model (after Confirmatory Factor Analysis)

4.8 Findings and Results – Summary of the quantitative analysis

The 20 scale-item questionnaire was floated to 1400 respondents in 14 companies. In total, 640 sanitized responses were obtained with a response rate of 45.71%. Exploratory Factor Analysis (EFA) was performed on the sanitized data. Out of 20 scale items, only 15 loaded on to 3 dimensions. The broad categories (factors belonging to nation and international factors) did not load sufficiently as the survey instrument used was individual survey where a respondent was answering the questionnaire in the capacity of an individual capturing his own perceptions as an individual. However, if the survey instrument was to be used as a firm based survey that is asking the respondent to answer the questionnaire in the capacity of a firm, then the above factors might have loaded sufficiently on the scale. As, national and international factors have a little effect on individual level productivity, therefore, this may be taken as a reason why these factors have not loaded sufficiently on the scale.

Using the same data, Confirmatory Factor Analysis (CFA) was performed and a measurement model with 3 dimensions was obtained. The model thus obtained has been checked for reliability and validity. With the help of another focus group done with 4 experts from academia and 4 experts from industry, these three dimensions of labour productivity were identified as individual characteristics (IC), firm characteristics (FC) and external characteristics (EC).

The three factors identified as individual characteristics, firm characteristics and external characteristics had a significant effect in measuring labour productivity.

Table 4.12 List of Participants of Focus Group for validation of strategy

S. No.	Description	Industry/Academia
1	DGM - Planning	Industry
2	Sr. Manager - HR	Industry
3	Manager - Production	Industry
4	Sr. Manager - Strategy	Industry
5	Associate Professor (Operations)	Academia
6	Professor (HR)	Academia
7	Associate Professor (Strategy)	Academia
8	Associate Professor (Operations)	Academia

Table 4.13 Labour Productivity scale items and their measures (after refinement)

(5-point Likert scale; 1=strongly disagree to 5=strongly agree)

Dimensions	Items	Measures
Individual Characteristics	IC1	I feel I have enough education and KSA (knowledge, skill and ability) required for the job profile I am working in.
	IC2	I feel I am physically and mentally fit for doing the job.
	IC3	I feel that I possess positive attitude, strong and persistent belief and values matching with that of my organization.
	IC4	I feel I am given proper working conditions required to perform my task.
	IC5	I am motivated and enthusiastic to bring about improvements in my job.
	IC6	I feel I am being rightly paid for the job I am doing.
	IC7	I feel I get adequate and timely training required for the job.
Firm Characteristics	FC1	My organization pays attention on productivity improvement.
	FC2	The structure, strategy and culture in my firm encourages productive environment.
	FC3	I work on latest technology available in the industry I am working in.
	FC4	Best practices are employed and shared in my firm.
	FC5	My organization clearly communicates the goals and business objectives by regular communication.
	FC6	HR policies of my firm help me in becoming more productive employee.
External Characteristics	EC1	I feel presence of regulatory body in the industry increases productivity as quality standards and best practices are properly maintained.
	EC2	I feel number of competitors in the industry positively affects the productivity of my firm.

Three parameters namely Pay, Working conditions and Training and learning and development were originally in the category of organization related factors. However, these factors loaded on to the Individual Characterstic dimension as these are specific to individual even though decided by the organization. One of the reason for this result may be the design of the scale item in the questionnaire. Since, in our survey questionnaire, the corresponding scale item was asking about the individual level requirement of pay, working conditions and training & development, these

factors loaded on to individual characteristic dimension. Had the scale item talked about general organization-level factor i.e. for pay, if the question had been "My organisation payscales/remuneration practices are competitive in the market", for working conditions, if the question had been "My organization provide good working condition when compared with other competitors in the industry" and for training and development, if the question had been "My organization training facilities are better than competitors in the industry", the results would have been different.

In the next few paragraphs, findings against each research question have been summarized.

Objective-1 To define labour productivity in Indian context.
we define productivity as an *effective* utilization of the *resources* to achieve set *objectives*. Few points need to be highlighted with respect to the above definition:

1. Effective and efficient utilization of resources. The focus is shifting from hard work to smart work and from output to useful output with reduced rework.
2. It is a combined output of manager and individual depending upon the manager's capability on recognition of individual competency and allocation of work accordingly.
3. With rapidly growing and frequently changing project teams, the focus is shifting from individual effort to team effort.

Objective-2 To identify various factors (enablers and barriers) of labour productivity for enterprises in manufacturing sector in India.
By doing extensive literature review, a total of 108 different factors were identified which were classified into 20 enablers using a panel of 3 industry and 3 academia experts which included health, education, attitude, motivation, work environment and conditions, pay, organization structure and culture, Training & development, HR policies, technology adoption, communication, focus on improving productivity, sharing of best practices, number of competitors and presence of regulatory body in the industry, government policy, macroeconomics of the country, migration of skilled labour and macroeconomics of the world.
Then, to identify the barriers, 2 Focus Group Discussions (FGD) were conducted. First FGD was conducted in a Maharatna Public Sector Unit in Uttarakhand with 10 participants in the age group of 28 to 38 years with average experience of 8.4 years for 2 hours. 7 barriers were identified from

this group. The second FGD was conducted with 10 participants from public and private sector companies in the age group of 27 to 38 years with average experience of 9.8 years for 2 hours. This group identified 9 barriers out of which 5 barriers were common as identified by group 1. The barriers included Rigid Environment, Learning and training opportunities with new technology adoption, Improper work distribution, Lack of cohesiveness, Incentive System, Motivation, Job Recognition, Improper Postings, Multiskilling, Ownership, Physical and Mental Health.

In the next stage, using ISM and a panel of 3 industry and 3 academia experts, a multilevel hierarchy structure was obtained and factors were classified into 5 levels namely, Employee Related, Organisation Related, Industry Related, Nation Related and International factors.

Objective-3 To develop a scale for measuring labour productivity of manufacturing enterprises by exploring the state of perception of various enablers.

This study followed the approach of Churchill (1979) for developing multiple-item constructs and is consistent with the approach taken by other researchers who have developed similar scales (e.g., Linderbaum and Levy, 2010). A 20 item labour productivity scale emerged. The questionnaire developed was mailed to employees in 14 companies and 640 responses remained after sanitization of data. Exploratory Factor Analysis (EFA) was performed on the sanitized data. Out of 20 scale-items, only 15 loaded on to 3 dimensions. Using the same data, Confirmatory Factor Analysis was performed and a measurement model was obtained with 3 dimensions namely Individual Characteristics (IC), Firm Characteristics (FC) and External Characteristics (EC). The labour productivity measurement model thus obtained has been tested for reliability and validity.

The next chapter presents the detailed outcome of the research contributions and elaborates on key strategies for improving labour productivity. It further provides the key recommendations to managers, policymakers and academicians for improving labour productivity. It then briefly discusses the FLOPACE model which addresses the challenges posed by productivity issues in Indian manufacturing organisations. A brief summary of steps taken by an organisation to improve employee productivity have also been presented as case study.

5.1 Introduction

This chapter will discuss the findings that emerge after various statistical analyses carried out in the previous chapter (Chapter-4), as well as the contribution it makes to the existing body of research in the field. It also discusses the rationale for the relationships found out between various parameters in the previous chapter. Moreover, the discussion presented in this chapter represents a theory-driven examination of how the labour productivity dimensions are associated with the performance in the context of the Indian manufacturing industries. In the next section, the key strategies for improving labour productivity have been provided after which the recommendations for academicians, managers and policymakers have been presented in the next section of the chapter. Next, the FLOPACE model which can be applied to Indian Manufacturing Industries is presented and discussed. In addition to that, a case study highlighting the efforts made by the top electrical equipment manufacturer in India to improve the productivity of its employees has been discussed.

5.2 Discussion

As stated in the previous chapter, the main findings of this study in terms of objective number 2 were identified in the form of enablers. In the next few paragraphs, we discuss the relevance of some of these enablers in the light of their application in manufacturing organisations.

One of the most important enabler considered by many is pay. For lower level employees, pay can be a significant motivating factor when compared to other factors like working conditions. An absolute increase of Rs.200 (USD 3 approx.) in the wages of a daily worker who is poor and is in the need of money can result in huge productivity improvements even if he is employed in challenging working conditions. On the other hand, a middle level employee having an absolute salary of say, Rs.15000 (USD 250 approx.) per month, if given an increase of Rs.200 (USD 3 approx.) will not show any substantial productivity improvements.

Another aspect is the effect of working conditions on pay in the long run. It is observed that some employees prefer quality of work life over pay. They give more value to the comfort obtained by

work life balance than what they achieve by getting higher wages. This phenomenon can be seen for employees of public sector organizations where there is less work pressure than private companies.

One of the important enablers analysed in our study is with regards to the training. Employees perceive the receiving of training in different ways. Some employees may consider it as a source of individual development and feel motivated thinking that the training provided to them is resulting in their personal growth. However, some employees also perceive that better training will have an impact on their market value and thus on their future pay. Therefore, an organization must pay attention in providing better training to its employees. This may also result in reduced employee turnover and retention of talent.

Another important enabler is adoption of technology. Technology adoption can lead to more production in lesser time, generation of lesser defects, errors and rejections, increased plant life with reduced expense on breakdowns, repair and maintenance, consistency and repeatability in processes, reduced wastages, reduced fatigue to operators engaged in the production process. The impact of technology adoption is twofold on any organization. On the one hand, technology adoption by a firm will result in reduced requirement of manpower resulting in replacement of manpower by capital. However, on the other hand, the available manpower will now have to possess more skill set in order to deal with the technology. Thus, the firm may have to pay more in order to compensate the increased skill set of its employees.

Organisational structure and culture is identified as another important enabler in our study. It is very difficult for top executives to handle a large number of direct subordinates. Hence, an organization must keep the number of direct reports to top executives to a limited number. The organizational culture drives many things in the organization. One of the factor that is impacted by organizational culture is focus of the employees in achieving their targets. Sincere and disciplined environment leads to more productive employees. In a highly motivated employee participative environment, less levels of controls will be needed as compared to an environment where work proceeds as per the directions of an authoritative boss.

Benefits provided by the organization is also considered as an important enabler by employees. Employees rate high the extent of social security benefits provided by the firm. Thus, the firm

should pay attention towards the social security needs of the employees. Many organisations do this by providing a comprehensive medical insurance cover to the employee and his dependent family members. Additionally, some organisations also provide the lifetime medical insurance cover to the dependents of the employee in the case of death of the employee.

It is very essential to apply the knowledge. Application of existing knowledge to solve the problem is a skill that employees rarely have. Also, it is important to keep in mind the educational background of a worker while dealing with the lower level employee as he may not comprehend the technical or complicated instructions provided to him.

The productivity management will differ as per the size of the organization. In a small undertaking hard pressed for resources, non-availability of qualified professionals and where the tasks do not justify the full time executives, it is advisable to club functional areas of Productivity and Quality as both these functions have common approaches and tools for improvement. One executive heading this area can be an Industrial Engineer. In medium sized manufacturing organisations, there is a justification to create a separate productivity management department to be headed by an experienced qualified industrial engineer with a set of core staffers. Here again the department should draw upon the expertise of professionals from areas such as design and development, tool design, manufacturing, marketing by creating a number of committees and inviting these professionals to take part in deliberations. In large undertakings, the department of productivity management should be full fledges service set up with professional expertise to interact and co-ordinate more effectively with various functional departments.

As technological breakthrough rapidly shifts the frontier between the work tasks performed by the humans and those performed by machines & algorithms, global labour markets are undergoing many transformations. These transformations if managed wisely could lead to a new age of good works, good jobs, highly increased wages and improved quality of life for all. But if managed poorly, they should bear the risk of widening skill gaps, greater inequality and broader polarization.

The labour productivity scale developed in this research contribute to the managerial practice. The proposed dimensions and measures can be used by managers focusing on improving the productivity in Indian manufacturing organisations. The individual characteristic (IC) dimension of labour productivity guides the firms by providing seven clear measures related to the individual

to be considered by the managers of these firms. The managers may identify the measure that receives the bad rating and work on improving upon it. The firm characteristic (FC) dimension of labour productivity addresses the measures that are controlled by the firm. The managers may always look into these factors and can do a SWOT analysis on these factors and pay an effort to improve these factors. The managers may improve the IC measures as well by improving the FC measure. For example, if an employee is having low productivity because he is not having the desired skill to do his job, then he may be provided appropriate training and knowledge of best practices may be shared with him for the same. The third dimension External characteristics (EC) encompasses the industry level factors which contribute in the productivity of a firm and an individual. This dimension includes the competitors in the industry and the presence of regulator in the industry. Furthermore, since our proposed instrument has been developed using the experience of industry experts of manufacturing organisations in India, it provides valuable insights to those managers in developing countries and the emerging economies who aim at measuring the labour productivity of the manufacturing enterprises. The proposed scale would be useful for those managers who think proactively and act upon improving productivity in their organisations. Such an approach paves the way for the strategic thinking on the needs of the firm, and for further development and promotion of the strategic management competencies. These competencies result in competitive advantage in future. The managers may also benchmark their current productivity improvement practices and policies in the light of proposed dimensions of labour productivity.

5.3 Key Strategies for improving labour productivity

As stated in the previous chapter, the main findings of this study in terms of objective number 3 were identified in the form of constructs. With the help of a Focus Group Discussion, the dimensions of labour productivity were identified and further, strategies for improving the factors encompassed by those dimensions of productivity were identified. This FGD was done with 4 experts from academia and 4 experts from Industry. The discussion and brainstorming led to the formulation of strategies which can be implemented to further improve the productivity of the manufacturing enterprises. Based on the findings of the research in first three objectives, following strategies were identified and were validated by the focus group:

1. To imbibe the new concept of labour productivity into the minds of professionals with special focus on understanding individual competencies, encouraging team work and reducing rework.
2. To focus on the driving factors (Individual related and organization related factors) of model obtained using ISM.
3. To design and monitor innovative incentive techniques to boost productivity.
4. To give equal emphasis on Individual, Firm and External characteristics for enhancing productivity.

Three basic factors which should be the focus of most improvement strategies are the organizational factor, the human factor and the technology factor.

i. **Organisational Factor:** The exercise to improve productivity starts at the management level. The foremost requirement is the commitment of the top management towards these objectives. Research on management style confirms that participation and involvement of employees helps enhance productivity. The higher the level of education and expertise of the employees, the more is the expectation to perform. The employees like to be consulted and involved in decision making concerning their jobs. The employees have a high esteem of their managers who are sensitive and understanding and are in a position to inspire. The management style conducive to improvement in productivity encourages participation, job satisfaction, cooperation, recognition to merit in a transparent manner and an open system where in employees feel encouraged to approach and to discuss their problems with the management. The management steps in these direction call for a proper organisation structure, constituting several fora, committees and discussion groups to enable employees to interact with management and participate in decision-making, regular two-way communication with employees, a defined policy for job enrichment, training and development, promotion, rewards and incentives which contribute towards improvement of productivity. A conducive work culture is to be promoted where every employee feels as a part of organisation and considers that his goals are no different from the goals of the organisation. To encourage excellence in all disciplines whether product technology, product quality, delivery time or customer service should be the main motive of all the objectives.

ii. **Human Factor:** In a survey conducted by National Productivity Council, inefficient utilisation of human resources constitutes the single largest factor for low level of productivity in Indian manufacturing organisations. The role of human resource in productivity has been well recognised by a number of researchers. The human resource includes employee at all levels – executives, supervisors, blue and white collar workers. The key element is to achieve improvements in productivity. Sumanth (1984) has listed several employee-based techniques: financial incentives, fringe benefits, promotions, job enrichment, job enlargement, job rotation, employee participation, skill enhancement, management by objectives, learning curve, communication, working condition improvement, training, education, role perception, recognition etc. Productivity improvement strategies involve improvement in Organisation Development (OD), Employee Participation, Employee motivation and Training and development. OD calls for changing the systems, the culture and the behaviour of an organisation in a systematic and planned manner. Employees can be involved through several ways: Productivity circles, task forces, brainstorming, suggestion schemes, meetings and through informal discussions. Employee Motivation can be driven by an environment characterised by an atmosphere of trust, protection and security with opportunities for professional development. Motivation can be increased by financial incentives (like payment based on results, merit rating and gain sharing schemes) and non-financial incentives (like recognition awards, certificates and generation of esteem among colleagues). Training and development implies preparing workers, executives and managers for a future role, by exposing them to practices of science and management, new emerging concepts, knowledge about internal and external environment, expectations of customers, suppliers, stakeholders and society. Engineers and technicians require exposure to changing technology, product designs, methods and job design and new information technology methods through participation in seminars, exhibitions, training courses and encouragement to pursue further studies. Workers need training to prepare them for development of new processes, manufacturing practices and new technologies.

iii. **Technology factor:** It is the single most important factor for the largest increase in labour productivity. Several researchers (Kendrick, 1977 and Morrison et al., 1978) have reported that technology has an impact on increased productivity. First, technology is represented

in the selection of appropriate plant and machinery. Automation brings in increased rate of production. The net effect is reduced cost of production. Technology also encompasses use of appropriate manufacturing methods, process engineering, production planning and control, production scheduling, tool engineering. Industrial Engineering techniques such as Time and motion study, work analysis and work design improve the effectiveness of work. Next, technology factor covers use of appropriate techniques in the area of inventory management, materials planning, quality control, value analysis, supply chain management and in selection of appropriate inputs for raw materials. Third, it is relevant in the selection of product design and product research which has an effect of life of machine tools or processing machinery, cost of production, the rejection rate and generation of wastages. Further, technology adoption has to be evaluated against several criteria. Very often, alternative technologies are available in the market. It is not always the latest technology but the appropriate technology which is to be chosen in the interest of organisation.

Taken together, the below three points provide a framework for launching and sustaining a total process for managing the improvement job.

- **Creating the high performance culture:** Make performance improvement a routine aspect of everyday management.
- **Providing the leadership for performance improvement:** Put in place the management disciplines and mechanisms essential to productivity and performance improvement.
- **Getting started with short term improvement projects:** Design these as building blocks for sustained performance improvement.

Productivity Improvement is generally triggered when an external threat occurs like a sudden market erosion by an external competitor, or a sudden change in technology or government policy. It can also be a sudden demand from the end of customer or a sudden failure in supplies from the end of supplier. This results in sudden change of priorities and leads to finding problems in practices being followed only when the need arises. As soon as this external threat is gone, the improvement efforts get switched off. The idea is to generate an organization culture where it is expected to do continuous performance and productivity improvement. In such a culture, resources are fully exploited and managers are more insistent in exhausting all possibilities from existing resources before searching for additional resources. This results in managers being focused on

planning and execution which in turn results in motivation to exploit additional investments whenever they are made resulting in clear assessment of additional resources required.

In organizations where crisis triggers campaigns for cost and performance improvements, such organizations are not driven by performance improvement culture. Such campaigns are also short lived and fail to gel with the processes of the organization. To be more productive, the managers must use the ongoing budgeting, goal setting, planning, operations review, performance review and other management processes effectively to the purpose of improving them continuously instead of adding any special mechanisms to the old.

Pareto 80:20 rule is understood by all. The organisations must apply the same to improve productivity and performance by focusing on few critical issues where substantial improvements can be brought upon. Instead of plant wide programs which are often perceived as threatening and carry high risk of failure, an organization can gain substantial performance improvement benefits by focusing on targeted areas.

The following is required by top management in providing sustained improvement methods:
1. Establish specific demands and expectations
2. Assign responsibility for managing the effort.
3. Assign responsibility for results.
4. Use disciplined management work plans.
5. Making help available to managers for accomplishing results.

Conducting Productivity Audit is also one of the most important practice that is rarely found in Indian manufacturing organization and can have a significant affect in identification of productivity improvement strategies.

5.4 Recommendations of the Study

Labour productivity in the manufacturing sector is a very complex process which is driven by numerous factors. As Bureš and Stropková (2014) put it, "the labour productivity is influenced by many other factors which have complex interactions among each other". The complex inter-related structure of different influencing factors in construction projects has been effectively shown by Nasirzadeh and Nojedehi (2013). The systematic review shows this complexity as how one

identified factor interacts or affects other identified factor. This complexity together with the diversity of degree of association of several variables identified in research studies conducted so far makes the analysis process difficult and cumbersome to compare and summarize. At this point, we would also like to highlight the main limitation of our study that it only includes articles in peer reviewed journals and does not considers other type of research reports (like books, newspaper articles etc.). Thus, we propose that our results should not be generalised and should be considered as suggestions which shall help researchers, managers and policy makers interested in understanding the concept and vying for improvement in labour productivity. We shall present the recommendations in the following passages.

5.4.1 Recommendation to managers for improving employee productivity

Managers must understand that for improving labour productivity, its true measurement is necessary. A true measurement shall reflect where the organisation stands as compared to its competitors and must identify the gaps which it can close in order to improve its productivity. For the true measurement to happen, managers shall disseminate the importance of productivity measurement and improvement first to the top management and then to the whole employees. The top management must support the productivity measurement and improvement programmes in true spirit and shall supervise that the programmes are progressing in the direction of organisational goals and objectives. The productivity management cycle as formulated by sink consisting of four phases Measurement, Evaluation, Planning and Improvement must be kept in mind while implementing or monitoring any productivity programme. Herron and Braiden (2006) describe a model to direct and generate sustainable and quantifiable productivity improvement in a group of manufacturing companies. The leaders shall make the organisational structure more cohesive and lean so that it supports productivity and discourages any bureaucracy. They shall ensure that the organisation adopts latest available tools and techniques which can improve organisation's productivity and keep the organisation ahead of the competition. Bernolak (1997) highlights the vital importance of company productivity, not only for the companies themselves but also for overall prosperity. Gunasekaran et al. (1994) proposes a framework to improve the productivity and quality by integrating various functional activities in manufacturing organisations. Huang et al. (2002) propose a methodology to model manufacturing systems for productivity improvement. Managers must make sure that the organisational culture and work environment breeds an

environment of high quality competition resulting in reduced rework and improved productivity. Programmes like TQM, TPM, six sigma, quality circles, suggestion schemes, JIT, Kaizen, 5S shall be suitably implemented after taking into account the size and industry in which the organization is competing (Sharma et al., 2006). Proper training and development opportunities that shall help in increasing skills and learning of the employees shall be provided by managers. Lado and Wilson (1994) argue that middle HR managers can exert influence on top management about how productive their employees can be. By creating organisational capital (by generating information about employees KSA and interpreting this information in organisational context), organisational productivity can be enhanced (by enabling the firm to determine the suitability of employee for a particular task and adequacy of employees' KSA for attaining organisation goals). Further, by designing better jobs, utilisation of employees' talent can be enhanced and can result in higher employee productivity. Good work conditions and remuneration are the must to keep the motivation level going for any workforce in the world. In addition, HR policies in the area of personnel selection, performance appraisal, incentive compensation, job design, grievance procedure, information sharing, attitude assessment, labour management participation, training and development and promotion shall encourage and foster a high performance culture in the organisation. Mefford (2009) explains a new paradigm which is both a philosophy of management and a set of methods for increasing productivity in global firms and the role of the CEO in successful implementation of New Productivity Paradigm (NPP). As told by Mefford (2009), following are the four key components that the CEO of a firm can successfully adopt for improving productivity, namely, Belief – in the benefits of improvement program, Commitment – to implement the same, Involvement – of all employees in the implementation and Patience – to wait for the results. Rothwell (1982) explains the steps to reduce employee turnover to bring productivity improvement. The researcher explains that the strategic approach to control and reduce labour turnover should identify the exact reason of dissatisfaction of employee and should result in rethinking of the way the organization looks towards its employees rather than changing individual policy. Shetty (1982) describes the key elements of productivity improvement programs namely, top management support, organization culture, company climate, productivity measurement and goals, productivity improvement techniques and Implementation and evaluation. The author further explains each key element. The top management must make a definitive policy commitment to implement such initiatives and shall ensure that goals are set up by operating units.

Further, timely support and allocation of resources should be made while undergoing implementation of improvement programs. Bobbe and Schaffer (1983) tell that productivity improvement can either be managed or needs to be purchased. The developed scale in the study can be used by managers to benchmark their organisations with respect to labour productivity. With better and productive operational practices, the performance of an organization improves, thereby providing the competitive edge to the manufacturing firm. With this insight, the future managers can proactively incorporate the recommendations given in this study to be more competitive in the global market.

5.4.2 Recommendation to policymakers for improving labour productivity

Policymakers must ensure the presence of a regulatory body in every industry that promotes productivity measurement and improvement programmes. These regulatory bodies can ensure proper flow of knowledge from one organisation to another and can share the best practices among the several organisations in that industry. At the same time, they can ensure that no organisation gains a monopolistic advantage by encouraging healthy competition between firms. Policymakers must first identify the industries which have low productivity and require productivity improvement programmes and then they shall develop and design policies to bring a systemic improvement in productivity. The policy statement should be clear in terms of what, how, where and when it wants to achieve. They can also encourage government, academia (researchers etc.), and industry to come on a common platform and discuss the needs of the various stakeholders. For this, they can organise several industry level meets and conclaves where several ideas can be shared and exchanged. Several new initiatives by establishing the centre for excellence, specialised universities providing specific knowledge of the areas where improvement is needed in the targeted area can be started. The macroeconomic reforms having cross-country implications which help in introducing technology acquisition and technology transfer and sharing of best practices across several similar industries in the world can also be brought about.

5.4.3 Recommendation to academicians

The research helps academicians to understand the definition of labour productivity in Indian context. It also helps to understand the several issues that are related to productivity enhancement in the manufacturing industry for further knowledge and theory building. At the organizational

level, firm based surveys can be developed to measure true labour productivity of the firm. At industry level, more models can be developed specific to the industry. Further, future studies can carry out inter-industry and inter-nation comparisons to bring in various dimensions of labour productivity. It is also important to mention here that the models developed are not implemented practically as the operationalization concept of these models is not discussed. Academicians may also look into this aspect of including the working models through case study examples.

5.5 FLOPACE Model

From the findings discussed in the previous chapters, it is evident that 83 out of 108 elements are related to individual level or firm level. Also, 13 out of 20 enablers identified in the study are related to improvements in individual level or firm level. Further, out of 15 scale-items loaded, 7 are related to individual characteristics and 6 are related firm characteristics. Thus, it is clear that efforts are to be made at firm level and individual level to improve the labour productivity. The same has been discussed in the key strategies for improving labour productivity (section 5.3) with three key factors/dimensions namely, Organisational Factor, Human Factor and Technology Factor. Under the organizational factors, it has been stated that the exercise to improve productivity starts by gaining **focus** towards the key performance objectives and commitment of the top management. The management style of **leadership** is next highlighted which is a key factor in driving enablers such as adoption of technology and key HR policies which drives the **organization style** (Figure 4.1). To improve Human Factor, it has been discussed to improve working condition, role perception, communication processes which can only be done with better **planning**. Further, **adaptability** is required in preparing the work force for future challenges by exposing them to new emerging concepts and expectation of stakeholders. Also, the efforts of human capital need to be **controlled and rewarded** appropriately. Lastly, the application of Technology Factor requires **entrepreneurial culture** to implement various possible combinations that are fit for a particular organisation. The same can be implemented by the use of suggestion schemes and Quality Circles where employees meet, discuss and brainstorm many different ideas.

Thus, the organisation can understand their internal and external factors and based on that can do a SWOT analysis. The organization interested in improving its productivity first identify its strengths and weaknesses by understanding its employee's characteristics and its own characteristics. Next, it should identify the opportunities and threats by carefully monitoring the

external environment. Based on the analysis and after understanding its position, the organization may decide the focus areas, the leadership style to be adopted and the organization structure to follow. Finally, the organization may plan and adapt to the changing situations, adopt control and reward policies and develop entrepreneurial culture. The seven dimensions which are acronym as FLOPACE are proposed:

- ▶ Focus
- ▶ Leadership Style
- ▶ Organization Structure
- ▶ Planning
- ▶ Adaptability
- ▶ Control & Reward
- ▶ Entrepreneurial Culture

A hypothesized model of productivity enhancement through these dimensions is proposed in below figure. Based on the key discussion in Section 2.5.1 and 5.3, the sub-elements shown in the model are some of the key indicators which act as the deciding factors of how organization will perform on the major FLOPACE factors. However, these sub-elements may vary based on the variation of product-market-country combination a firm is operating in.

An organization can lead to enhanced labour productivity by focusing on understanding the performance objectives and on employee participation towards improvement initiatives together with the leadership style that is top-driven and having freedom of decision making and with organisation style that is inclusive, for welfare of all and with innovative work culture. These things together with better planning, adaptability, control and reward and entrepreneurial culture will lead in better and improved productivity.

Focus
1. Understanding organisation objectives
2. Good training opportunities
3. Understanding of best practices in similar industries (Awareness about the latest technological changes in world)
4. Commitment policies rather than control practices

Leadership Style
1. Freedom of decision making
2. Top management leadership

Organisation Style
1. Good work culture (Innovative, Challenging)
2. Good work environment (One team, one organization feeling)
3. Good physical facilities like proper lightings, temperature
4. Modern equipments
5. Flat organisation Structure
6. Various social benefits provided by organization (Paternity/maternity leave, Festival Advance, flexi hours, school fees, medical care, gifts, uniform)

Planning
1. Communication and responsibility sharing
2. TQM
3. Standard ever improving continuously innovating documented process maps
4. 5S
5. Kaizen

Adaptability
1. Level of automation
2. Job rotation/enlargement

Control and Reward
1. Good pay
2. Appraisal system
3. Reward and recognition scheme
4. Incentive scheme
5. Good career growth

Entrepreneurial Culture
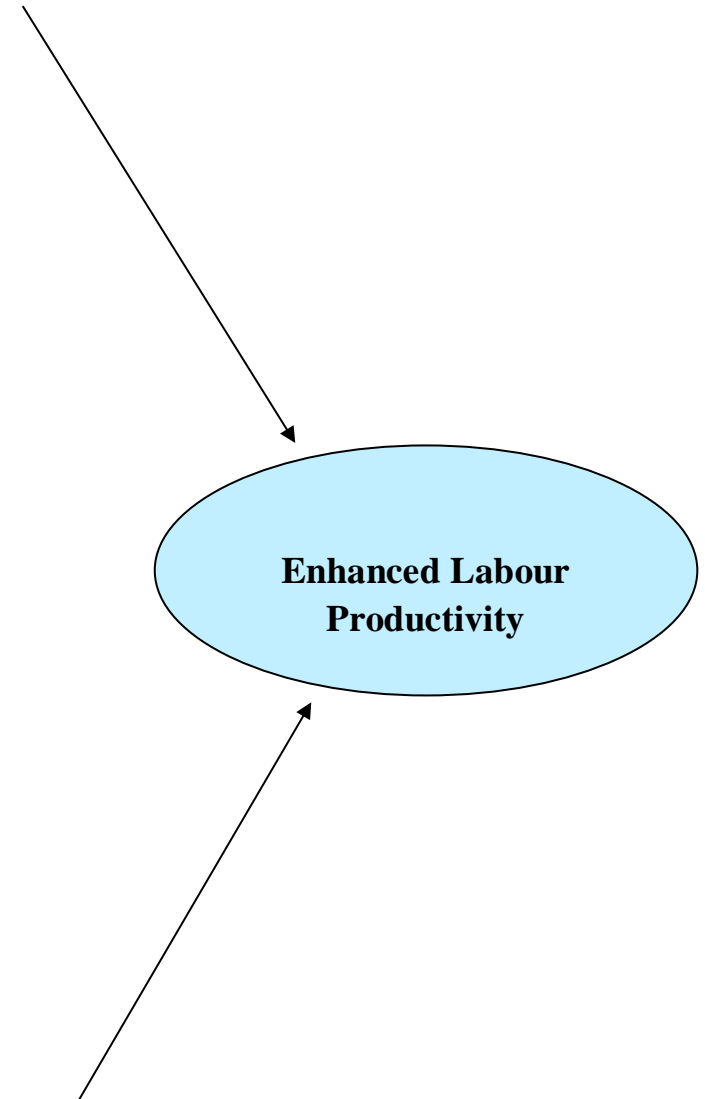1. Suggestion schemes
2. Quality circle

Enhanced Labour Productivity

Fig 5.1 FLOPACE Model

5.6 Case Study of a top electrical equipment manufacturer in India

This case study highlights the efforts made by the organization to improve the productivity of its employees. This organization is one of the key PSU established in 1964 to cater to the field of power sector in India. It has a legacy of more than 40 years and has been a market leader in the power sector market of India. It is a well-known Maharatna PSU organization, which constantly booked profit in last four decades except the financial year 2014-15. Lately, this journey has not been easy for the organisation. Market dynamics changed in industry and the organisation along with other PSUs also had to face various challenges to achieve sustainable growth, especially in terms of competition from private players in the power sector market (Mahanti, 2016). Since then, the top management has been putting thrust on making important organizational changes like policy transformation, introducing new technology for productivity enhancement, expansion in existing infrastructural facilities, and technological advancement through Memorandum of understanding (MoU) and merger and acquisitions along with innovative business practices involving participation of all the stakeholders. When there was economic slowdown in Indian market in 2001, the organisation went aggressively for capacity enhancement (Table 5.1) of its existing production facilities and also recruited manpower on year on year basis to maintain adequate strength (Table 5.2) in the organization to meet the production targets in different manufacturing units in response to the market demands.

Table 5.1 Capacity augmentation of company

Capacity enhancement of Company in field of Power Generation (MW)	10,000 MW	15,000 MW	20,000 MW
Completion	Achieved in Dec, 2007	March, 2010	March, 2012
Capital Investment **(INR billions)** **(USD millions)**	9.61 149	29.40 455.8	15.93 246.98
Phases	1	2	3

Source: Company Annual reports 2007 to 2016 (1 USD = 64.5 INR)

Table 5.2 Manpower Details

Financial Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
No. of Employees	46274	46748	49390	48399	47525	44905	42200	39821	37540
Productivity (Turnover per employee) (INR millions) (USD '000)	7.48 115.93	9.42 145.98	10.18 157.77	10.53 163.25	8.64 133.94	7.05 109.26	6.31 97.87	7.46 115.63	7.74 120.02

Source: Company Annual report FY2009 to FY2018

As a consequence, the organisation played a major role in Industrial development of the Indian economy; specifically by catering to the power sector, which provided a boost to industrialization in India. From year 2001, the turnover of the organisation increased manifolds from INR 63.48 billion to INR 501.56 billion, i.e., about seven times in the year 2013. Even when the power sector market was hit by the financial crisis of 2009, the organisation was able to maintain desired growth in turnover till 2013. Changes in government policy of land acquisition in year 2012 and issues related to environmental clearances and coal shortage to power projects, resulted in low order inflow for the company thus impacting the overall business growth (Table 5.3).

Table 5.3 Company Order Receipt and Outstanding

Financial Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Order Receipt (INR billions) (USD billions)	590.37 9.15	605.07 9.38	220.96 3.425	316.50 4.91	280.07 4.34	308.14 4.78	437.27 6.78	234.89 3.64	409.32 6.35
Order Outstanding (INR billions) (USD billions)	1443 22.37	1641 25.44	1353 20.98	1151 17.85	1071 16.61	1010 15.66	1107.3 17.17	1052 16.31	1180 18.30

Source: Company Annual report FY2010 to FY2018

The organisation is now facing a challenge to keep innovating new processes and products to remain competitive in the market, to make special efforts to remain as one of the leading organizations catering to core sector in global market (Mahanti, 2016). Being a reputed PSU, it has a good brand value and is one of the renowned companies and rated high on employee satisfaction in India.

Table 5.4 Company Forex Data

Financial Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Exports (on FOB Basis) (INR billions) (USD billions)	15.70 0.24	12.31 0.19	7.69 0.12	10.07 0.16	4.39 0.07	13.58 0.21	7.47 0.12	286.63 0.04	2.93 0.05
Exports as % of Gross Sales	4.54	2.80	1.53	1.98	1.07	4.29	2.81	0.97	1.01
Net Foreign Exchange(Forex earnings minus expenses) (INR billions) (USD billions)	-52.37 -0.81	-64.69 -1.00	-79.30 -1.23	-60.81 -0.94	-50.64 -0.79	-33.71 -0.52	-38.01 -0.59	-28.26 -0.44	-11.73 -0.18

Source: Capitaline Database

Some of the steps that the organisation has taken to improve the productivity are:

Focus:

- The company changed its vision, mission and value statement to be more precise and shorter statements. Values were introduced to employees in the form of an Acronym viz. GRELICIT (G-Governance, R-Respect, E-Excellence, L-Loyalty, I-Integrity, C-Commitment, I – Innovation, T-Teamwork)
- Creation of dedicated departments to focus on productivity improvement. A productivity head and several champions have been identified.

The above steps helped the company to identify the Opportunities for Improvement (OFI) and the priority areas which needed urgent attention of the management of the company.

Leadership style:

- The organisation introduced NEEV (Nine Elements of Executing Vision) and gave them the acronym ECS, ADD, GDI (E-Execution, C-Consolidation, S-Simplification, A-Assertiveness, D-Development, D-Digitalisation, G-Globalisation, D-Diversification, I-Innovation).
- As part of decentralization, the company delegated its middle level managers more power and made them responsible for the important projects of the company. Further, the results obtained in these projects were linked with the promotion of the managers.
- The company has been a firm believer in the concept of workers' participation in management. Recently, HR executives were made part of shop council resulting in increase in interaction with other employees across the plant.

Thus, the organisation launched a new improvement programme with identified areas and held several training programmes to cover the broad themes of NEEV. The organisation also conducted group exercises to gauge what the middle level managers thought about the programme and to identify the detail execution plan for improvement under the broad themes. moved from centralisation to decentralisation after understanding the demand posed by the time.

Organisation style:

- For organisation structure, the company made sure that there are no more than six levels of reporting from bottom to top.
- The company optimised sitting space by installing modern style office management seating and compactors for files. This made the working conditions look pleasant.
- Several benefits to the employees under the employee welfare schemes were raised like amount under the Group Insurance Scheme, Death Relief Fund Scheme.
- The company has introduced several new leaves like sabbatical leave, study leave, child care leave and sponsorship leave. Also, the leave rules were relaxed with regard to the combination of leaves that can be availed at a stretch.
- The company has encouraged its employees to go for higher studies through distance learning/part time courses by providing cash award on completion of courses.

Thus, the organisation altered its structure to suit the changing needs. It also reviewed several of its policies to make them more employee friendly.

Planning:

- Succession Planning Scheme has been introduced to look after the knowledge management because of superannuation and separations due to resignations.
- For better technological planning, various agreements with foreign firms (either through licensing or joint venture) were signed by the organisation to bring in the technological development in the organisation.
- The organization noticed that the recruitment cycle was not periodic. The recruitments were being done once in a while in large numbers. This heavily impacted the structure of the organization which was not in pyramid shape. This further impacted the learning and growth of new employees due to age and generational gap between the new employees and their reporting officers. Thus, the company made it a point to periodically recruit manpower in smaller number to maintain continuity of operations.
- Employee engagement surveys were conducted and the engagement of employees was measured. Based on the outcome, training programmes were carried out for three different layers of management. The bottom level (operational level) managers were given the training "Winning Together" to instill a sense of team building and achieving targets. "People development programs" were carried out for the middle level managers so that they could understand the thought process and aspirations of young operational managers and handle them accordingly. Top level managers were provided strategic and high end management training by the premier management institute of the country.
- Several cross functional committees were made to look into the potential problems of the employees like grievance committee, township advisory committee.

Thus, the company took many steps to keep the knowledge management among its employees frequent, agile and flexible. The company gauged the pulse of employees by different surveys and launched several training programmes for the development of the employees.

Adaptability:

- The company made changes in purchase policy and works policy to provide more delegation and authority to lower level executives.

- A new department with the name New Business Development Group (NBDG) was formed to keep looking for diversification opportunities with the existing resources.

- Communication has been improved by the company in a big way. The company now uses all the mediums of communication in a big way to reach to all the employees from top to bottom. Regular e-mails are sent to all employees whenever any major milestone is achieved by the company. Company intranet portals have been standardised across several plants and geographies to have the same look, feel and set of information. This has further helped in systematic updation and dissemination of information.

- The company has also started developing e-learning modules and investing heavily in the training opportunities.

Thus, the company adopted new measures during the implementation of the improvement programmes and kept on changing structure and policies. It introduced a new motto among its employees which focused on 3Rs (Responsive, Robust, Rising).

Control and reward:

- Job rotation has been made mandatory on promotion leading to removal on monotonicity.

- The company has also started reward and recognition scheme recently viz. the best executive of the quarter, the best supervisor and worker for the half year.

- The new and improved incentive scheme with more accurate formulae has been introduced which helps in more justified payments of incentives to the employees.

- The retirement age at the company is 60 years. The company has the system of reviewing the performance and services of the employee on attaining the age of 55 and 58 years. Recently, this process for review of services has been made simpler and efficient.

Thus, the organisation enhanced the motivation of its employees by effectively handling their career paths and introducing reward and recognition programmes and revised incentive schemes.

Entrepreneurial culture:

- The organisation has been practicing several idea generation schemes like Quality Circle concepts and Suggestion schemes. Recently, the organisation made registration of improvement projects a regular feature in the performance appraisal of senior and middle level managers.
- The company sent its employees to various industry level events like conferences and competitions. This gave the employees more exposure about the state of industry and competitors and made them ready to face the competition.
- The organisation made changes to the recruitment policy particularly with respect to the recruitment of statutory level posts (like welfare officer and safety officer) to bring more clarity reducing the number of potential litigation cases.

Thus, it can be seen that all out efforts are required to bring labour productivity improvements in an organization. The next chapter discusses the summary and conclusions arrived at in this research and examines its limitations along with suggesting the future research directions.

6.1 Introduction

This chapter will summarize the findings after which the conclusions of the study will be presented in detailed form. Then, Limitations and area of further research will be discussed.

6.2 Summary of findings

Productivity as a central concept of growth and development has been studied. Labour Productivity is the only factor of production where output can be much more than the input. For developing economies, the definition of labour productivity is better employment. The overall productivity is improving for several sectors of the economy over the years. In the labour productivity literature, holistic studies covering most of the antecedents in Indian manufacturing industry are scant. We conducted this research with the objective of identifying the challenges and their solutions to improve labour productivity in the Indian manufacturing industry through clearly stated four research objectives. The study carried out a detailed review of literature and has identified several definitions of labour productivity. This completed the first objective of the research study. The primary objective of the research was to identify the various enablers and barriers that could be modelled on and integrated with the firms in the Indian manufacturing industry. For the purpose, an extensive literature review was carried out giving comprehensive list of labour productivity measures. Then, using a panel of experts, among all these measures, the items relevant to the Indian manufacturing industry were identified and these variables were then classified into 20 enablers. In addition, barriers of labour productivity have been identified using Focus Groups conducted with academia and industry experts. The thesis could find rigid environment, opportunities of training and learning, work distribution, cohesiveness, compensation, motivation, job description and recognition, ownership and physical and mental health amongst several others to be the sub-problems. We have also shown how these 20 enablers can be grouped in various levels by using ISM Technique. The 5 levels identified in which factors can be classified are internal to employee, internal to organization, internal to industry, internal to nation and international factors. The factors were broadly classified as internal (Factors related to employee and organization) and external (Factors beyond the scope of organization, related to industry, nation and international factors).

Next, it has been shown how these enablers form a scale to measure labour productivity. Scale Formulation for labour productivity for manufacturing organizations was done using Confirmatory Factor Analysis (CFA). With the help of an expert panel, 20 item scale was defined and questionnaire of the study was finalized. Then, a pilot study was conducted on 35 practitioners which further refined the scale items as per Indian manufacturing industry context, followed by exploratory factor analysis using the data of 640 respondents from 14 companies in Haridwar SIDCUL area that yielded 15 measures with three distinguishable dimensions. The priority of several enablers have also been shown by ranking them in order of the average rating each enabler received. Subsequent statistical tests, such as Confirmatory Factor Analysis (CFA) and reliability and validity tests confirmed 15 specific scale items giving 3 distinguishable dimensions that can be used to measure labour productivity of manufacturing organization. To identify the constructs/dimensions and to find the strategies for improvement of the factors in the construct, another focus group discussion (FGD) was done with 4 experts from academia and 4 experts from Industry. The discussion and brainstorming led to the identification of 3 major constructs that have surfaced namely, Individual Characteristics (IC), Firm Characteristics (FC) and External Characteristics (EC). The discussion of the focus group further led to formulation of strategies which can be implemented to improve the productivity of the manufacturing enterprises.

6.3 Conclusion

Improving Labour productivity is a problem which doesn't have a precise solution. It can be seen with three different perspectives as emerged during the research:

a) That labour productivity is an amalgamation of several factors which may be seen with reference to the enablers and barriers identified and explained as a result of primary and secondary research conducted in this study.

b) As discussed in the discussion chapter, labour productivity can also be seen with reference to being a persistent issue which keeps on evolving in terms of being a problem and addresses itself through managerial models in terms of finding its own solutions.

c) Philosophically, labour productivity can also be seen as a problem whose solution is yet to be found which entails an ongoing research with lots of literature exploration and especially empirical observation based understanding. This was precisely the reason that this thesis resorted to

understanding labour productivity as one of its most prominent objectives and tried to get to as many definitions as it could. Further, the literature itself diverted the research towards analysing the enablers of labour productivity which were not required to be primarily corroborated because they do exist in understandable forms and have been addressed with several theoretical standpoints. The said theories have emerged through different functional angles like herzberg's two factor theory talks about productivity enhancement through hygiene factors and motivators.

6.3.1. Conclusion in terms of enablers of labour productivity

Research has shown that out of 20 factors identified above, factors internal to employee and internal to organization have more direct and quick effects on employee productivity. Maintenance of these factors lead to faster improvement in employee productivity. However, once the improvement has been done in these factors, then to bring about further improvement, external factors require improvement. In other words, improvement in external factors or macro factors would lead to long term improvement in labour productivity. At this juncture, it would be worthwhile to differentiate between the two terms, employee productivity and labour productivity. Employee productivity is seen from the lens of a manager of organization and labour productivity is seen from the lens of a policymaker of nation.

6.3.2. Conclusion in terms of barriers of labour productivity

As explained in the preceding perspectives which have gained prominence in due course, if non-enhancement of labour productivity has at all to be seen with reference to a collection of barriers, then the thesis could find environment, opportunities of training and learning, work distribution, cohesiveness, compensation, motivation, job description and recognition, ownership and physical and mental health amongst several others to be the sub-problems.

Concluding through the above-mentioned perspective, if one looks at rigid environment as a barrier, it may have a backdrop of policies which may be internal/external but largely internal when seen with reference to the subject. Another dimension is leadership, which on the one side pursues vision and on the other side keeps on developing the culture of the organisation. For example, there are many organisations wherein leadership has been flexible and has nurtured participative culture. For example, Tata Steel wherein JRD Tata and Naval Tata inducted labour and labour unions as partners. Though, it is important to mention here that once the parametric

basis of result oriented efficiency enhancement was introduced in such plants, they resorted to larger induction of contract labour which in turn enhanced the rigidity of the environment by reducing partnership of the labour. PSU were initiated in India to develop employment opportunities, equity, capability apart from manufacturing capacity by the government of India which had a prominent aspect of environmental flexibility. Though, such flexibility is now known to be a barrier to manufacturing efficiency vis-a-vis labour productivity.

Learning and training opportunities as discussed in Chapter 2 as well as discussion chapter are required for labour productivity enhancement but the hidden part which a researcher may understand is related to the willingness of labour in capitalising upon such opportunities. This means up to what extent and up to what level a worker is motivated to make use of the learning and training facilities provided by the organization. Further, the methodology of an organisation, flexibility of environment and motivation of the leadership to justify the reason of such trainings so as to enhance the willingness of the labour for the same also play an important role in the use of such facilities by the labour. As a service provider, the training and development department shall look forward to increase the number of trainings provided to an employee during his/her lifecycle. For example, the training provided to an employee may be targeted to increase from 1 per year to 10 per year by using various methodologies including training at workplace/shop floor and micro e-learning on mobiles/tablets. The training sessions can be designed to have a lot of flexibility in terms of delivery time and mode of training.

Comparison in compensatory terms and distribution of work are very important, subtle and natural aspects which culturally exists amongst any workforce. Compensation and incentives may be justified with reference to seniority, additional skills or qualifications and individual contribution to outputs, as all these are measurable. But work distribution can never be justified because it always may not be quantified except for in terms of number of hours. Therefore, resentment in terms of comparison of work distribution from the labour side and flawful work distribution from the managerial side is inevitable and becomes a barrier. Resentment through comparison is supported by percentage in time base thinking which is expressed by workers in terms of long hours they are putting and others are not. Managerial flawfulness is fed by the fact that work is allocated to people who may do it and hence a question of equity always remains because managers are always oriented towards getting the work done rather than equity/justice of work distribution.

Cohesiveness is the most important element to be achieved. The reason to such a categorical understanding is that cohesiveness is not demanding by nature but it is giving by nature. It means that because cohesiveness is achieved through harmonious understanding, trust, belief, dependency, reliability and consistently being there with the team, therefore it always projects the aspect of 'I am there for you' and does not ask for 'You be there for me'. If such a harmony is achieved, the requirement of elimination of rest of the barriers may also be reduced in due course of time. The perspective here is that individuals keep thinking in terms of their presence, their role and how well and when the team may need them.

Services can also contribute to enhance the productivity in manufacturing. The labour productivity of support functions of a firm like Material Management, Commercial, Engineering, Quality, Logistics and service functions like HR, Finance, IT, Maintenance play an important role in the price, quality, delivery time and customer satisfaction for a product. These support and service functions ensure the competitiveness of the product in the domestic and foreign markets. On one hand, the support functions ensure that the raw material is timely procured, product is appropriately designed and manufactured, quality checks are proper, delivery time is lesser; on the other hand, the service departments ensure that the morale of employees is higher and they contribute in an effective way in the manufacturing process and development of the product leading to customer satisfaction.

6.4 Value of the study

Academics: This study is a substantial contribution to the existing theory by following a systematic practical approach which includes 4 stages that complement mapping of research objectives on research questions. The study adds value to the existing body of research by proposing concentric circle model showing factors encompassing labour productivity (Fig. 4.2) and by developing a scale for measuring labour productivity exclusively for manufacturing sector in India (Table 3.4 and Table 4.13). Another important contribution of this research is the formulation of strategies adopted by enterprises for improving their productivity of labour by identifying various challenges and enablers of labour productivity. Future research can build up on the theory and scale developed in this research.

Government and Industry: The result of the study will provide a path of improvement for both enterprises and the government. For businesses, the findings of this study can help in improving the growth and survival rate of their enterprises and also help in increasing their profits. For government, the results of the study can help in improving productivity by introducing labour reforms in the country.

6.5 Limitations of the study

This study faced a number of challenges. First, the present study is based out of data collected from private and public sector manufacturing organisations in the state of Uttarakhand, India. Hence the findings may not be generalized in both type of organisations beyond the state of Uttarakhand. Second, the samples were collected only from manufacturing sector and not from services sector. Thus, the results may not be generalised to services sector. Third, 90% of the sample constituted middle and lower level management executives and 87.5% of the respondents were from the medium and large size organisations having annual turnover of more than Rs.1000 Crores (Rs. 10 Billion). Thus, a separate study can be conducted with more varied sample characteristics having supervisors and lower level workers with representation of small size organisations. Fourth, the future study can be done on the other specific industries like automobiles, chemicals, infrastructure and services sector and inter industry comparisons can be done to bring in various perspectives to understanding of employee productivity. Further, in the world of globalization, there is a scope of conducting the product-market-country specific studies and the role of productivity in improving global competitiveness with respect to Indian firms. The present research has not focused on such problems and their solutions due to large number and variety of product-market-country combinations which are possible in Indian context.

6.6 Areas of Further Research

More samples collected from Indian manufacturing organization would lead to better representation of population data. Though our research findings suggest a good fit for all the tested parameters, two important aspects need attention. On the one hand, for a good sample size, a good fitting model is sometimes rejected merely due to small differences between the observed and the predicted covariance matrix. On the other hand, ill-fitting model may be accepted as having inadequate fit in a relatively smaller sample size (Bentler and Bonnett, 1980). Hence more studies

are needed to be done in future by using the scale instrument with different sample size, in order to generalize the findings across varying population size. Further, services can also contribute to enhance productivity in manufacturing. The role of services in enhancing the productivity and competitiveness of manufacturing organisations need to be empirically tested. Also, similar research can be carried out for service sector organisations as the contribution of services sector in the economy is on the rise worldwide. More models need to be developed which are specific to the various sectors of the economy and which can be implemented sectorwise. It is important to mention here that best practices, concepts and models are easier to remember but tough to implement because the operationalization of the practices, concepts and models is not understood by many. This operationalization of new models proposed needs to be simplified so that they can be easily implemented.

The recommendations or suggestions mentioned above are to be implemented in a judicious way based on the needs of the firm, the environment in which the firm is operating, the competition the firm is facing in industry and the macroeconomic conditions of the nation of the firm and the world. Limited amount of work has been done in past research studies in terms of standardization of measurability of dependent and independent variables which limit us from making any generalisation. As we saw, productivity has been measured by several research studies having different variables but not measuring the same construct and thus resulting in differing degree of associations preventing us from comparing the results. For example, labour productivity, the term itself, can be expressed in several different ratios (revenue per employee, profit per employee etc.). Understanding employee's attitude, belief and matching those with organisational values is a very subjective aspect and to empirically create a construct for same is very difficult. As a result, it is strongly suggested that future research shall standardize the definition and measurement of labour productivity across industries and nations. This standardization would be a complex process and shall encompass and should be a result of all the necessary parameters affecting productivity of the entity in question. Within the industry, firm based surveys shall be developed that shall measure the true productivity of the firm. In addition, the future studies can carry out inter industry comparisons to bring in various dimensions of labour productivity. Further, longitudinal and geographical studies shall be done covering the firm and industry data so that the direction in which they are heading to can be judged and any corrective measure can be timely taken. Since the prosperity of people depend on productivity and competitiveness across various levels including

international competitiveness and technological competitiveness, the linkage between productivity and areas such as export competitiveness and technological inclusiveness of Indian manufacturing firms is of utmost importance and future research may be conducted in this direction. More studies may be conducted which are focused on improving productivity and competitiveness in specific product-market-country combinations and developing and validating empirical relationships. The suggestions given above if implemented would ensure in better understanding the phenomena of productivity improvement and would lead to its better promotion by researchers, managers and policy makers.

1. Abad, J., Lafuente, E., & Vilajosana, J. (2013). An assessment of the OHSAS 18001 certification process: Objective drivers and consequences on safety performance and labour productivity. *Safety Science*, 60, 47–56.

2. Abdel-razek, R. H. (1997). How Construction Managers would like their performance to be evaluated. *Journal of Construction Engineering and Management*, 123(September), 208–213.

3. Abor, J. (2010). Foreign direct investment and firm productivity: evidence from firm-level data. *Global Business and Economics Review*, *12*(4), 267-285.

4. Acemoglu, D. (1998). Why do new technologies complement skills? Directed technical change and wage inequality. *The Quarterly Journal of Economics*, 113(4), 1055-1089.

5. Addessi, W. (2014). The productivity effect of permanent and temporary labor contracts in the Italian manufacturing sector. *Economic Modelling*, 36, 666–672.

6. Adler, P. S., Benner, M., Brunner, D. J., Macduffie, J. P., Osono, E., Staats, B. R., & Winter, S. G. (2009). Perspectives on the productivity dilemma. *Journal of Operations Management*, 27, 99–113.

7. Agarwal, A., Shankar, R. & Tiwari, M.K. (2007). Modeling agility of supply chain. *Industrial Marketing Management*, 36(4), 443-457.

8. Argyris, C., & Schon, D. A. (1974). *Theory in practice: Increasing professional effectiveness*. Jossey-Bass.

9. Arthur, J. B., (1994). Effects of Human Resource Systems on Manufacturing Performance and Turnover. *The Academy of Management Journal*, 37, 670-687.

10. Ashton, T. S. (1997). *The industrial revolution 1760-1830*. OUP Catalogue.

11. Auramo, J., Kauremaa, J., & Tanskanen, K. (2005). Benefits of IT in supply chain management: An explorative study of progressive companies. *International Journal of Physical Distribution and Logistics Management*, 35(2), 82–100.

12. Badescu, M., & Garcés-Ayerbe, C. (2009). The impact of information technologies on firm productivity: Empirical evidence from Spain. *Technovation*, 29(2), 122-129.

13. Barki, E., & Parente, J. (2014). Challenges and opportunities of the last mile for the base of the pyramid: the case of Brazil. *Field Actions Science Reports. The journal of field actions*, (Special Issue 12).

14. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.

15. Beauregard, T. A., & Henry, L. C. (2009). Making the link between work-life balance practices and organizational performance. *Human Resource Management Review*, 19, 9–22.

16. Benavides-Chicón, C. G., & Ortega, B. (2014). The impact of quality management on productivity in the hospitality sector. *International Journal of Hospitality Management*, *42*, 165-173.

17. Ben-Ner, A., & Jones, D. C. (1995). Employee participation, ownership, and productivity: A theoretical framework. *Industrial Relations: A Journal of Economy and Society*, *34*(4), 532-554.

18. Bentler, P.M., (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246.

19. Bentler, P.M., & Bonnett, D.G., (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588-606.

20. Bernolak, I. (1997). Effective measurement and successful elements of company productivity: The basis of competitiveness and world prosperity. *International Journal of Production Economics*, 52, 203–213.

21. Bharti, K., Agrawal, R., Sharma, V., & Sengar, A. (2013). Innovative Product Development at the Bottom of the Pyramid. *Editorial Advisory Board*, 50.

22. Bhattacherjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of management information systems*, 19(1), 211-241.

23. Bilger, M., & Carrieri, V. (2013). Health in the cities: When the neighborhood matters more than income. *Journal of Health Economics*, 32(1), 1-11.

24. Bilsborrow, R. E., Oberai, A. S., & Standing, G. (1984). *Migration surveys in low income countries: guidelines for survey and questionnaire design.* London: Croom-Helm.

25. Blackburn, R., & Stokes, D. (2000). Breaking down the barriers: using focus groups to research small and medium-sized enterprises. *International Small Business Journal*, *19*(1), 44-67.

26. Bobbe, R. A., & Schaffer, R. H. (1983). Productivity improvement: Manage it or buy it? *Business Horizons*, 26(March-April), 62–69.

27. Bower, G. H., & Hilgard, E. R. (1981). *Theories of Learning (5th Edition)*. NJ Prentice Hall.

28. Boyle, P., & Keith, H. (2014). *Exploring contemporary migration*. Routledge.

29. Boyle, R. (2006). *Measuring public sector productivity: lessons from international experience* (Vol. 35). Institute of Public Administration.

30. Bryman, A. (2008). *Social research methods.* Oxford: Oxford University Press.

31. Bures, V., Stropkova, A., (2014). Labour Productivity and Possibilities of its Extension by Knowledge Management Aspects. *Procedia – Social and Behavioral Sciences*, 109, 1088-1093.

32. Calcagnini, G., & Travaglini, G. (2014). A time series analysis of labor productivity. Italy versus the European countries and the U.S.. *Economic Modelling*, 36, 622–628.

33. Cappelli, P., Yang, Y., (2010). Who Gets the Top Job? Change in the Attributes of Human Resource Heads and Implications for the Future. *PriceWaterhouseCoopers report*.

34. Carr, D. (2009). Rural migration: The driving force behind tropical deforestation on the settlement frontier. *Progress in human geography*, *33*(3), 355.

35. Chandler Jr, A. D., & Hikino, T. (1994). *Scale and Scope: The dynamics of industrial capitalism*. Harvard University Press.

36. Chapman, R., & Al-Khawaldeh, K. (2002). TQM and labour productivity in Jordanian industrial companies. *The TQM Magazine*, 14(4), 248–262.

37. Chase, D. A. (1973). The intensive group interviewing in marketing. *MRA Viewpoints*.

38. Chaudhuri, A., Koudal, P., & Seshadri, S. (2010). Productivity and capital investments: An empirical study of three manufacturing industries in India. *IIMB Management Review*, 22(3), 65-79.

39. Chow, W. S., & Chen, Y. (2012). Corporate sustainable development: Testing a new scale based on the mainland Chinese context. *Journal of business ethics*, 105(4), 519-533.

40. Churchill, G. A., Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64–73.

41. Conen, W. S., Dalen, H. P. Van, & Henkens, K. (2012). Ageing and employers' perceptions of labour costs and productivity: A survey among European employers. *International Journal of Manpower*, 33, 629–647.

42. Confessore, S. J., & Kops, W. J. (1998). Self-directed learning and the learning organization: Examining the connection between the individual and the learning environment. *Human resource development quarterly*, 9(4), 365-375.

43. Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13(1), 3-21.

44. Cotton, J. (1988). On the decomposition of wage differentials. *The review of economics and statistics*, 236-243.

45. Cotton, J. L., Vollrath, D. A., Froggatt, K. L., Lengnick-Hall, M. L., & Jennings, K. R. (1988). Employee participation: Diverse forms and different outcomes. *Academy of Management review*, 13(1), 8-22.

46. Czumanski, T., & Lšdding, H. (2012). Integral analysis of labor productivity. Procedia CIRP, 3, 55-60.

47. Das, A., Ray, S. C., & Nag, A. (2009). Labor-use efficiency in Indian banking: A branch-level analysis. *The International Journal of Management Science*, 37, 411-425.

48. Demeter, K., Chikan, A., & Matyusz, Z. (2011). Labour productivity change: drivers, business impact and macroeconomic moderators. *International Journal of Production Economics*, 131(1), 215–223.

49. DeShields Jr, O. W., Kara, A., & Kaynak, E. (2005). Determinants of business student satisfaction and retention in higher education: applying Herzberg's two-factor theory. *International journal of educational management*, *19*(2), 128-139.

50. Dewangan, D. K., Agrawal, R., & Sharma, V. (2015). Enablers for competitiveness of Indian manufacturing sector: An ISM-fuzzy MICMAC analysis. *Procedia-Social and Behavioral Sciences*, 189, 416-432.

51. Dillman, D. A. (2011). *Mail and Internet surveys: The tailored design method--2007 Update with new Internet, visual, and mixed-mode guide*. John Wiley & Sons.

52. Doloi, H., Sawhney, A., Iyer, K. C., & Rentala, S. (2012). Analysing factors affecting delays in Indian construction projects. *International Journal of Project Management*, 30(4), 479–489.

53. Durdyev, S., Ismail, S., Bakar, N. A., Rizwan, M. S., Iqbal, M. J., Tan, F. Y., & Cheong, K. C. (2012). Factors Constraining Labour Productivity: Case Study of Turkmenistan. *Razak School of Engineering and Advanced Technology*, University Technology Malaysia, International Campus, Jalan Semarak, 54100.

54. Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological review*, 95(2), 256.

55. Dyer, L., Reeves, T., (1994). Human Resource Strategies and Firm Performance: What Do We Know and Where Do We Need to Go? *CAHRS Working Paper Series*, #94-29.

56. Easterly, W. (2001). The political economy of growth without development: A case study of Pakistan. *Paper for the Analytical Narratives of Growth Project*.

57. Easterly, W. (2003). The political economy of growth without development. *In Search of Prosperity: Analytic Narratives on Economic Growth*, 439.

58. Enshassi, A., Mohamed, S., Mustafa, Z. A., & Mayer, P. E. (2007). Factors Affecting Labour Productivity in Building Projects in The Gaza Strip. *Journal of Civil Engineering and Management*, xiii(4), 245–254.

59. Ernst, Harry (1956). Accounting for Productivity Changes. *Harvard Business Review*, May-June, 109-121.

60. Faisal, M. N., Banwet, D. K. and Shankar, R. (2006), Supply chain risk mitigation: modeling the enablers. *Business Process Management Journal*, 12(4), 535-552.

61. Fayol, H. (1916). *General and industrial management*. Ravenio Books.

62. Feldstein, M. (2008). Did wages reflect growth in productivity? *Journal of Policy Modeling*, 30, 591–594.

63. Finnegan Jr, J. R., Meischke, H., Zapka, J. G., Leviton, L., Meshack, A., Benjamin-Garner, R., & Weitzman, E. R. (2000). Patient delay in seeking care for heart attack symptoms: findings from focus groups conducted in five US regions. *Preventive medicine*, *31*(3), 205-213.

64. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 18(1), 39-50.

65. Forrest, C. (2002). Research with a laugh track. *Marketing News*, 36(5), 48.

66. Freeman, T. (2006). 'Best practice' in focus group research: making sense of different views. *Journal of advanced nursing*, 56(5), 491-497.

67. Gates, D. M., Succop, P., Brehm, B. J., Gillespie, G. L., & Sommers, B. D. (2008). Obesity and presenteeism: the impact of body mass index on workplace productivity. *Journal of Occupational and Environmental Medicine*, 50(1), 39-45.

68. Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review*, July-August, 71(4), 78-91.

69. Giacomini M., K. & Cook D., J. (2001). Users' guides to the medical literature, XXIII: qualitative research in health care—A, are the results of the study valid? *JAMA*; 284, 357–362

70. Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. New York: Aldine De Gruyter.

71. Goel, V., & Agrawal, R.(2017). Factors affecting labour productivity: an integrative synthesis and productivity modelling. *Global Business and Economics Review*, 19(3), 299-322.

72. Gold, B. (1983). Practical Productivity Analysis for Management: Part-II, Measurement and Interpretation, IIIE Transactions, 15(1), March, 63-78.

73. Gorsuch, R. L. (1988). *Exploratory factor analysis. In Handbook of multivariate experimental psychology,* 231-258, Springer, Boston, MA.

74. Grbich, C. (1999). *Qualitative research in health*. Sage Publications, London.

75. Greenbaum, T. L. (1999). *Moderating focus groups: A practical guide for group facilitation*. Sage Publications.

76. Gruman, J. A., & Saks, A. M. (2011). Performance management and employee engagement. *Human Resource Management Review*, 21, 123–136.

77. Gunasekaran, A., Korukonda, A. R., Virtanen, I., & Yli-Olli, P. (1994). Improving productivity and quality in manufacturing organisations. *International Journal of Production Economics*, 36, 169–183.

78. Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis*. Englewood Cliffs, NJ: Prentice Hall.

79. Haleem, A., Sushil, Qadri, M.A., & Kumar, S. (2012). Analysis of critical success factors of world class manufacturing practices: an application of interpretive structural modelling and interpretative ranking process, *Production Planning and Control: The Management of Operations*, 23(10-11), 722-734.

80. Hall, J. (2000). Moderators must motivate focus group. *Marketing News*, 34(19), 26-27.

81. Haller, S. A., & Lyons, S. (2014). Broadband adoption and firm productivity: Evidence from Irish manufacturing firms. *Telecommunications Policy*, 1–13.

82. Hanna, A. S., Taylor, C. S., & Sullivan, K. T. (2005). Impact of Extended Overtime on Construction Labor Productivity. *Journal of Construction Engineering and Management*, 131(6), 734–739.

83. Hannula, M. (2002). Total productivity measurement based on partial productivity ratios. *International Journal of Production Economics*, 78(1), 57–67.

84. Hartley, D. E. (2001). *Selling e-learning*. American Society for Training and Development.

85. Hartwell, R. M. (1961). The Rising Standard of Living in England, 1800-1850. *The Economic History Review*, 13(3), 397-416.

86. Hasan, F., Jain, P. K., & Kumar, D. (2014). Performance issues in reconfigurable manufacturing system. *DAAAM international scientific book*, 13, 295-310.

87. Hasan, R. (2002). The impact of imported and domestic technologies on the productivity of firms: Panel data evidence from Indian manufacturing firms. *Journal of Development Economics*, 69, 23–49.

88. Hassard, J. S. (2012). Rethinking the Hawthorne Studies: The Western Electric research in its social, political and historical context. *Human Relations*, 65(11), 1431-1461.

89. Hayes, J., & Allinson, C. W. (1997). Learning styles and training and development in work settings: Lessons from educational research. *Educational Psychology*, 17(1-2), 185-193.

90. Heeler, R. M., & Ray, M. L. (1972). Measure validation in marketing. *Journal of Marketing Research*, 9(4), 361–370.

91. Herron, C., & Braiden, P. M. (2006). A methodology for developing sustainable quantifiable productivity improvement in manufacturing companies. *International Journal of Production Economics*, 104, 143–153.

92. Higginbottom, G. M. A. (2004). Sampling issues in qualitative research. *Nurse Researcher*, 12(1), 7.

93. Hobsbawm, E. J. (1969). *The age of revolution: Europe 1789-1848*. Weidenfeld & Nicolson.

94. Hong, W., & Kirk, D. (1995). The assessment of labour productivity and its influencing variables in 12 conventional hospital food service systems in the U.K.. *International Journal of Hospitality Management*, 14(1), 53–66.

95. Huang, S. H., Dismukes, J. P., Shi, J., Su, Q., Wang, G., Razzak, M. A., & Robinson, D. E. (2002). Manufacturing system modeling for productivity improvement. *Journal of Manufacturing Systems*, 21(4), 249–259.

96. Huselid, M. A. (1995). The impact of human resource management practices on Turnover, Productivity, and Corporate Financial Performance. *Academy of Management Journal*, 38(3), 635–672.

97. Ichniowski, (1990). Human Resource Management Systems and the Performance of U. S. Manufacturing Businesses. *National Bureau of Economic Research,* Working Paper No. 3449.

98. Ichniowski, Shaw, Prennushi (1993). The Effects of Human Resource Management Practices on Productivity. *Unpublished paper* presented at the ILR School, Cornell University.

99. Ilieva-Koleva, D., & Vazov, R. (2014). Neuro-Linguistic Programming techniques for perfecting presentation skills. *Selected papers presented at 3rd m-sphere international conference for multidisciplinarity in science and business*, 30-37.

100. International Labour Office. (1967). *Higher productivity in manufacturing industries*. ILO, Geneva.

101. International Labour Office. (2014). *World of Work Report 2014: developing with jobs*. International Labour Office.

102. Jackson, T., & Victor, P. (2011). Productivity and work in the 'green economy': Some theoretical reflections and empirical tests. *Environmental Innovation and Societal Transitions*, 1(1), 101-108.

103. Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *the Journal of Finance*, *48*(3), 831-880.

104. Jha, S. K., Mukundan, R., & Jain, K. (2010). Linking innovation process to the provisioning of public goods: The case of neglected diseases. *The Innovation Journal: The Public Sector Innovation Journal*, 15(2), 7.

105. Joo, B. K., & Park, S. (2010). Career satisfaction, organizational commitment, and turnover intention: The effects of goal orientation, organizational learning culture and developmental feedback. *Leadership & Organization Development Journal*, 31(6), 482-500.

106. Kendrick, J. W. (1973). *National Productivity and Economic Growth. In Postwar Productivity Trends in the United States, 1948–1969 (pp. 64-76).* National Bureau of Economic Research, Princeton University Press, Princeton.

107. Kendrick, J., W. & Creamer D. (1965). *Measuring company productivity, Handbook with case studies*. National Industrial Conference Board, New York.

108. Khan, A. (2008). The industrial revolution and the demographic transition. *Business Review, First Quarter*, 9-15.

109. Kharub, M., & Sharma, R. K. (2018). Quantifying the relationship between latent variables after successful implementation of QM practices in MSMEs. *International Journal of Quality & Reliability Management*, 35(4), 875-896.

110. Kline, R. B. (1998). Software review: Software programs for structural equation modeling: AMOS, EQS, and LISREL. *Journal of psychoeducational assessment*, 16(4), 343-364.

111. Kline, R. B. (2005). *Principles and practice of structural equation modeling*. Guilford, New York.

112. Koch, M. J., & McGrath, R. G. (1996). Improving Labor Productivity: Human Resource Management Policies Do Matter. *Strategic Management Journal*, 17, 335–354.

113. Koirala, G. P., & Koshal, R. K. (1999). Productivity and technology in Nepal: An analysis of foreign and domestic firms. *Journal of Asian Economics*, 10(4), 605-618.

114. Kotter, J.P. (1988). *The leadership factor*. New York, Free Press.

115. Kotter, J. P. (1999). *John P. Kotter on what leaders really do.* Harvard Business Press.

116. Krausmann, F., Gingrich, S., Eisenmenger, N., Erb, K. H., Haberl, H., & Fischer-Kowalski, M. (2009). Growth in global materials use, GDP and population during the 20th century. *Ecological Economics*, 68(10), 2696-2705.

117. Krueger, R. A. (2014). *Focus groups: A practical guide for applied research*. Sage publications.

118. Künn-Nelen, A., De Grip, A., & Fouarge, D. (2013). Is part-time employment beneficial for firm productivity? *Industrial and Labor Relations Review*, 66(5), 1172–1191.

119. Kwong, W. C., Toncich, D., & Lee, S. F. (2003). Potential manufacturing productivity changes arising from the application of Internet-based technologies. *Journal of Materials Processing Technology*, 139, 35–39.

120. Lado, A. A., & Wilson, M. C. (1994). Human Resource Systems and Sustained Competitive Advantage: A Competency-Based Perspective. *The Academy of Management Review*, 19(4), 699–727.

121. Lautman, M. R. (1982). *Focus groups: Theory and method.* ACR North American Advances.

122. Lavopa, A., & Szirmai, A. (2012). *Industrialization, employment and poverty* (Working Paper No. 081). United Nations University-Maastricht Economic and Social Research Institute on Innovation and Technology (MERIT).

123. Lee, K. J., Fariza, B., & Sharipova, Z. (2015). The Relationship between FDI, Diversification and Economic Growth in Natural Resource Oriented Countries: Case of Kazakhstan. *Journal of International Business and Economics*, 3(2), 51-62.

124. Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

125. Linderbaum, B. A., & Levy, P. E. (2010). The development and validation of the feedback orientation scale (FOS). *Journal of Management*, 36(6), 1372–1405.

126.Lipsey, R. G., & Lancaster, K. (1956). The general theory of second best. *The review of economic studies*, 24(1), 11-32.

127.Locke, E. A., & Henne, D. (1986). Work motivation theories. *International review of industrial and organizational psychology*, 1, 1-35.

128.Lucas, R. E. (2002). The industrial revolution: Past and future. *Lectures on economic growth*, 109-188.

129.MacDougall, C., & Fudge, E. (2001). Planning and recruiting the sample for focus groups and in-depth interviews. *Qualitative health research*, 11(1), 117-126.

130.Macduffie, (1995). Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review*, 48, 197-221.

131.MacDuffie, J. P., & Kochan, T. A. (1991). Does the U.S. underinvest in training? Determinants of training in the world economy. *Paper Presented at the Annual Meeting of the Academy of Management*, Miami.

132.Macey, W. H., & Schneider, B. (2008). The Meaning of Employee Engagement. *Industrial and Organizational Psychology*, 1(1), 3–30.

133.Mačiulytė-Šniukienė, A., & Gaile-Sarkane, E. (2014). Impact of Information and Telecommunication Technologies Development on Labour Productivity. *In Procedia - Social and Behavioral Sciences*, 110, 1271–1282.

134.Madaan, J. K., & Choudhary, D. (2015). A flexible decision model for risk analysis in product recovery systems. *Global Journal of Flexible Systems Management*, 16(4), 313-329.

135.Maddison, A. (2001). *The world economy volume 1: A millennial perspective volume 2: Historical statistics*. Academic Foundation.

136.Mahanti, T. K. (2016). Indian PSUs rediscovering their potential. *Business Economics*, 21(19), 28-31.

137.Mahmood, M. (2008). Labour productivity and employment in Australian manufacturing SMEs. *International Entrepreneurship and Management Journal*, 4(1), 51-62.

138.Maidani, E. A. (1991). Comparative study of Herzberg's two-factor theory of job satisfaction among public and private sectors. *Public personnel management*, 20(4), 441-448.

139.Malhotra, N. K., & Dash, S. (2010). *Marketing research: An applied approach*. Pearson Education South Asia.

140. Mani, V., Agarwal, R., Gunasekaran, A., Papadopoulos, T., Dubey, R., & Childe, S. J. (2016). Social sustainability in the supply chain: Construct development and measurement validation. *Ecological Indicators*, 71, 270-279.

141. Mani, V., Agrawal, R., & Sharma, V. (2015). Social sustainability in the supply chain: Analysis of enablers. *Management Research Review*, 38(9), 1016-1042.

142. Mani, V., Agrawal, R., & Sharma, V. (2016). Impediments to social sustainability adoption in the supply chain: An ISM and MICMAC analysis in Indian manufacturing industries. *Global Journal of Flexible Systems Management*, 17(2), 135-156.

143. Marshall, A. (2009). *Principles of economics: unabridged eighth edition*. Cosimo, Inc..

144. Marsick, V. J., & Watkins, K. E. (1997). Case study research methods. *Human resource development research handbook: Linking research and practice*, 138-157.

145. Marsick, V. J., & Watkins, K. E. (1997). Organizational learning. *What works and what doesn't: Assessment, development, and measurement*, 65-86.

146. Marx, K., & Engels, F. (1977). *Selected works: in three volumes. Vol. 3*. Progress Publishers.

147. Maslow, A. H. (1943). A theory of human motivation. *Psychological review*, 50(4), 370.

148. Mathew, J. (2007). The relationship of organisational culture with productivity and quality: A study of Indian software organisations. *Employee Relations*, 29(6), 677–695.

149. Mays, N., & Pope, C. (1995). Qualitative Research: Rigour and qualitative research. *BMJ*, 311, 109–112.

150. Mazella, G., F. (1997). Show and tell focus groups reveal core boomer values. *Marketing News*, 31(12), H8.

151. McGregor, D. M. (1967). *The professional manager*. McGraw-Hill, New York.

152. Mefford, R. N. (2009). Increasing productivity in global firms: The CEO challenge. *Journal of International Management*, 15, 262–272.

153. Meyer, J.P. and Allen, N.J. (1991), A three component conceptualization of organization commitment, *Human Resource Management Review*, 1(1), 61-89.

154. Michaelis, B., Stegmaier, R., & Sonntag, K. (2009). Affective commitment to change and innovation implementation behavior: The role of charismatic leadership and employees' trust in top management. *Journal of Change Management*, 9(4), 399-417.

155. Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage.

156. Millea, M., & Fuess, S. M. (2005). Does pay affect productivity or react to it? Examination of U.S. manufacturing. *Quarterly Review of Economics and Finance*, 45, 796–807.

157. Mohanty, R. P. (1992). Consensus and conflicts in understanding productivity. *International Journal of Production Economics*, 28, 95–106.

158. Mohapatra, B., & Mohamed, A. R. (2013). Place attachment and participation in management of neighbourhood green space: a place-based community management. *International Journal of Sustainable Society*, 5(3), 266-283.

159. Mokyr, J. (1998). The second industrial revolution, 1870-1914. *Storia dell'economia Mondiale*, 219-45.

160. Momaya, K. S., & Gupta, R. (2013). Exploring the macro and micro contexts in China and India. *Disruptive Innovation in Chinese and Indian Businesses: The Strategic Implications for Local Entrepreneurs and Global Incumbents*, 97, 33.

161. Morgan, D. L. (1996). Focus groups. *Annual review of sociology*, 22(1), 129-152.

162. Morrison, D. L., & McKee, K. E. (1978). Technology-For improved productivity. *Manufacturing Productivity Frontiers*, 6(2), 1-8.

163. Mowday, R., Steers, R. and Porter, L. (1982). *Employee-organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover*. Academic Press, New York, NY.

164. Mullins, L. J. (2006), *Essentials of Organisational Behaviour*. Financial Times Prentice-Hall, Harlow.

165. Nagpal, S., Khatri, S. K., & Kapur, P. K. (2015). Prioritization and ranking of ERP testing components. In *Reliability, Infocom Technologies and Optimization (ICRITO)(Trends and Future Directions), September 2015 4th International Conference on* (pp. 1-6). IEEE.

166. Najafi, S., Noruzy, A., Azar, H. K., Nazari-Shirkouhi, S., & Dalv, M. R. (2011). Investigating the relationship between organizational justice, psychological empowerment, job satisfaction, organizational commitment and organizational citizenship behavior: An empirical model. *African Journal of Business Management*, 5(13), 5241-5248.

167. Nasirzadeh, F., & Nojedehi, P. (2013). Dynamic modeling of labor productivity in construction projects. *International Journal of Project Management*, 31(6), 903–911.

168. Nataraj, S. (2011). The impact of trade liberalization on productivity: Evidence from India's formal and informal manufacturing sectors. *Journal of International Economics*, 85(2), 292–301.

169. Nelen, A., K., Grip, A., D., & Fouarge, D., (2013). Is part-time employment beneficial for firm productivity? *Industrial and Labor Relations Review*, 66, 1172-1191.

170. Nelson, R. R., & Phelps, E. S. (1966). Investment in humans, technological diffusion, and economic growth. *The American economic review*, 56(1/2), 69-75.

171. Noe, R. A., Tews, M. J., & McConnell Dachner, A. (2010). Learner engagement: A new perspective for enhancing our understanding of learner motivation and workplace learning. *Academy of Management Annals*, 4(1), 279-315.

172. Ocampo, J. A., Rada, C., & Taylor, L. (2013). *Growth and Policy in Developing Countries: A Structuralist Approach.* Columbia University Press.

173. OECD. (2001). *Overview of productivity measures. Measuring Productivity - OECD Manual* (Vol. 2). OECD.

174. Opsahl, R. L., & Dunnette, M. D. (1970). The role of financial compensation in industrial motivation. *Psychological Bulletin*, 66, 94–118.

175. Orazalin, N., Mahmood, M., & Jung Lee, K. (2016). Corporate governance, financial crises and bank performance: lessons from top Russian banks. *Corporate Governance: The International Journal of Business in Society*, 16(5), 798-814.

176. Pandey, M., & Dong, X. Y. (2009). Manufacturing productivity in China and India: The role of institutional changes. *China Economic Review*, 20(4), 754–766.

177. Paradi, J. C., & Zhu, H. (2013). A survey on bank branch efficiency and performance research with data envelopment analysis. *Omega-International Journal of Management Science*, 41(1), 61–79.

178. Parthasarathy, S., Momaya, K. S., & Jha, S. K. (2016). Internationalization of Indian Firms: An Exploratory Study of Two Firms from the Tyre Industry. *Journal of East-West Business*, *22*(4), 324-350.

179. Pattnayak, S. S., & Thangavelu, S. M. (2005). Economic reform and productivity growth in Indian manufacturing industries: An interaction of technical change and scale economies. *Economic Modelling*, 22, 601–615.

180. Petridis, K., & Dey, P. K. (2018). Measuring incineration plants' performance using combined data envelopment analysis, goal programming and mixed integer linear programming. *Annals of Operations Research*, 1-25.

181. Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and companies.* New York.

182. Powell, R. A., & Single, H. M. (1996). Focus groups. *International journal for quality in health care*, 8(5), 499-504.

183. Puchta, C., & Potter, J. (2004). *Focus group practice*. Sage.

184. Qin, H. (2010). Rural-to-urban labor migration, household livelihoods, and the rural environment in Chongqing Municipality, Southwest China. *Human Ecology*, 38(5), 675-690.

185. Rada, C., & von Arnim, R. (2012). Structural transformation in China and India: A note on macroeconomic policies. *Structural Change and Economic Dynamics*, 23(3), 264–275.

186. Ramesh, A., Banwet., D.K. and Shankar, R. (2010). Modeling the barriers of supply chain collaboration, *Journal of Modelling in Management*, 5(2), 176-193.

187. Ramsay, M., R. (1973), Overall Productivity Measurement. *Conference Papers, World Productivity Conference*, Indian Institution of Industrial Engineering, Bombay.

188. Rantakyro, L. (2005). Knowledge management in small firms. *Global Business and Economics Review*, 7(2-3), 214-225.

189. Rao, K. L. N., & Shah, H. (2012). Exploring training needs for old and new age middle managers. *Vision*, 16(1), 37-43.

190. Ravi, V. & Shankar, R. (2005). Analysis of interactions among the barriers of reverse logistics, *Technological Forecasting and Social Change*, 72(8), 1011-1029.

191. Razzak, W., & Timmins, J. (2007). Education and Productivity in New Zealand. Department of Labour, *Applied Economics Letters*, 17(2):169-173.

192. Record, R., Kuttner, S., Phuoxay, K., (2012). Labour practices and productivity in the Lao garments sector: Perspectives from managers and workers. *Better Work Discussion Paper*, 8, 49.

193. Reddy, K. S., & Agrawal, R. (2012). Designing case studies from secondary sources – A conceptual framework. *International Management Review*, 8(2), 63-70.

194. Reynolds, D., & Thompson, G. M. (2007). Multiunit restaurant productivity assessment using three-phase data envelopment analysis. *International Journal of Hospitality Management*, 26(1), 20–32.

195. Richardson, R. J., de Souza Peres, J. A., Wanderley, J. C. V., Correia, L. M., & de Melo Peres, M. H. (1999). *Social research: methods and techniques*. São Paulo: Atlas.

196. Roberge, M. É., & van Dick, R. (2010). Recognizing the benefits of diversity: When and how does diversity increase group performance? *Human Resource Management Review*, 20(4), 295–308.

197. Rodgers, R., Hunter, J. E., & Rogers, D. L. (1993). Influence of top management commitment on management program success. *Journal of Applied Psychology*, 78(1), 151.

198. Rothwell, S. (1982). Productivity improvement through reduced labour turnover. *Long Range Planning*, 15(2), 67–76.

199. Sage, A.P. (1977), *Interpretive Structural Modeling: Methodology for Large Scale Systems*, McGraw-Hill, New York, NY.

200. Samoilenko, S., & Osei-Bryson, K. M. (2013). Using Data Envelopment Analysis (DEA) for monitoring efficiency-based performance of productivity-driven organizations: Design and implementation of a decision support system. *Omega*, 41(1), 131-142.

201. Sandbhor, S. S., & Botre, R. P. (2014). Applying total interpretive structural modeling to study factors affecting construction labour productivity. A*ustralasian Journal of Construction Economics and Building*, 14(1), 20-31.

202. Sauian, M. S. (2002). Labour productivity: an important business strategy in manufacturing. *Integrated Manufacturing Systems*, 13(6), 435–438.

203. Sauian, M. S., Kamarudin, N., & Rani, R. M. (2013). Labor Productivity of Services Sector in Malaysia: Analysis Using Input-output Approach. *Procedia Economics and Finance*, 7, 35-41.

204. Schonewille, M. (2001). Does training generally work?: Explaining labour productivity effects from schooling and training. *International Journal of Manpower*, 22(1/2), 158–172.

205. Selaya, P., Rainer, T., (2008). Aid and Sectoral Labour Productivity. *Kiel Working Paper No. 1468*.

206. Sharma, R. K., & Dash, A. (2006). Labour productivity in small scale industries in India: A state-wise analysis. *Indian Journal of Labour Economics*, 49(3), 407–427.

207. Sharma, R. K., Kumar, D., & Kumar, P. (2006). Manufacturing excellence through TPM implementation: a practical analysis. *Industrial Management & Data Systems*, 106(2), 256-280.

208. Shehata, M. E., & El-Gohary, K. M. (2011). Towards improving construction labor productivity and projects' performance. *Alexandria Engineering Journal*, 50(4), 321-330.

209. Shetty, Y. K. (1982). Key Elements of Productivity Improvement Programs. *Business Horizons*, 25(April), 15.

210. Sheu, H., & Yang, C. (2005). Insider Ownership Structure and Firm Performance: a productivity perspective study in Taiwan's electronics industry. *Corporate Governance*, 13(2), 326–337.

211. Singh, A. K., & Sushil. (2013). Modeling enablers of TQM to improve airline performance. *International Journal of Productivity and Performance Management*, 62(3), 250-275.

212. Sink, D. S. (1985). *Productivity management: planning, measurement and evaluation, control, and improvement*. John Wiley & Sons.

213. Sniukiene, A., M., Sarkane, E., G., (2013). Impact of information and telecommunication technologies development on labour productivity. *Procedia – Social and Behavioral Sciences*, 110, 1270-1282.

214. Stewart, W., T. (1983). Multiple Input Productivity Measurement of Production Systems, *International Journal of Production Research*, 21(5), 745-753.

215. Strauss, A., & Corbin, J. (1994). Grounded theory methodology. *Handbook of qualitative research*, 17, 273-285.

216. Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory*. Thousand Oaks, Calif.: Sage.

217. Strickland, C. J. (1999). Conducting focus groups cross-culturally: experiences with Pacific Northwest Indian people. *Public Health Nursing*, 16(3), 190-197.

218. Subrahmanya, M. H. B. (2006). Labour productivity, energy intensity and economic performance in small enterprises: A study of brick enterprises cluster in India. *Energy Conversion and Management*, 47, 763-777.

219. Subrahmanya, M. H. B. (2010). Auto SMEs in Bangalore: Does Innovation Promote Employment and Labour Productivity?. *Economic & Political Weekly*, 45(11), 59.

220. Sumanth, D. J., & Hassan, M. Z. (1980). Productivity measurement in manufacturing companies by using a product oriented total productivity model. *Proceedings, AIEE Spring Annual Conference*, 225-266.

221. Sushil (2012). Interpreting the Interpretive Structural Model. *Global Journal of Flexible Systems Management*, 13(2), 87-106.

222. Szalkowski, A., & Jankowicz, D. (2004). The development of human resources during the process of economic and structural transformation in Poland. *Advances in Developing Human Resources*, 6(3), 346-354.

223. Taylor, F. W. (1911). *The principles of scientific management*. Harper Bros, New York.

224. Taylor, F. W. (1914). Scientific management. *The Sociological Review*, 7(3), 266-269.

225. Teece, D. J. (1993). The dynamics of industrial capitalism: perspectives on Alfred Chandler's scale and scope. *Journal of economic literature*, 31(1), 199-225.

226. Thompson, C. J., & Dey, E. L. (1998). Pushed to the margins: Sources of stress for African American college and university faculty. *The Journal of Higher Education*, 69(3), 324-345.

227. Thornhill, S. (2006). Knowledge, innovation and firm performance in high-and low-technology regimes. *Journal of business venturing*, 21(5), 687-703.

228. Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, 207–222.

229. Traulsen, J. M., Almarsdóttir, A. B., & Björnsdóttir, I. (2004). Interviewing the moderator: An ancillary method to focus groups. *Qualitative health research*, 14(5), 714-725.

230. Tsujimura, Kotaro (1963). The measurement of productivity. *APO Translation Series-2*, Asian Productivity Organisation, Tokyo.

231. Vandenberg, R. J., Richardson, H. A., & Eastman, L. J. (1999). The impact of high involvement work processes on organizational effectiveness: A second-order latent variable approach. *Group & Organization Management*, 24(3), 300-339.

232. Vrat, P., Sardana, G. D., & Sahay, B. S. (1998*). Productivity Management: A Systems Approach*. Narosa Publishing House.

233. Wacker, J. G., Yang, C. L., & Sheu, C. (2006). Productivity of production labor, non-production labor, and capital: An international study. *International Journal of Production Economics*, 103, 863–872.

234. Wagner, Joachim (2001). The causal effects of exports on firm size and labor productivity: First evidence from a matching approach, *HWWA Discussion Paper*, No. 155.

235. Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human resource management review*, *20*(2), 115-131.

236. Warfield, J.W. (1974), Developing interconnected matrices in structural modeling, IEEE Transcripts on Systems Men and Cybernetics, 4(1), 51-81.

237. Wendt, C. (2009). Mapping European healthcare systems: a comparative analysis of financing, service provision and access to healthcare. *Journal of European Social Policy*, 19(5), 432-445.

238. Wren, D. A., & Bedeian, A. G. (1994). *The evolution of management thought*. John Wiley & Sons, Inc.

239. Wygant, R. M. (1987). Improving productivity with financial incentives. *Engineering Management International*, 4, 87–93.

240. Yeung, A. C. L. (2008). Strategic supply management, quality initiatives, and organizational performance. *Journal of Operations Management*, 26(4), 490–502.

241. Yin, R. (2003). *Case study research: Design and methods (3rd ed.)*. Beverly Hills, CA: Sage.

242. Yuda, M. (2011). The effect of habitual smoking on labour productivity. *Applied Economics Letters*, 18, 1125–1132.

243. Zhang, J., & Liu, X. (2013). The evolving pattern of the wage-labor productivity nexus in China: Evidence from manufacturing firm-level data. *Economic Systems*, 37(3), 354–368.

244. Zhu, Q., Sarkis, J., & Lai, K. H. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International Journal of Production Economics*, 111(2), 261–273.

245. Zwick, T. (2004). Employee participation and productivity. *Labour Economics*, 11, 715–740.

Appendix-I

Questionnaire for Qualitative Study to identify the challenges or barriers of labour productivity in Indian manufacturing enterprises

Introduction

We are here to identify the challenges or barriers of productivity. I would like to start by saying there is no right or wrong answers, no disagreement in views. I am interested to get both positive and negative comments; and both can be very useful. I am trying to capture your perspectives on challenges for improving labour productivity in your organization.

Questions

1. What are the top 5 challenges that you think hamper the productivity of you and your organisation?
2. Do you think that these problems or challenges can be resolved?
3. In what ways you think these challenges can be overcome?
4. What are the immediate or long term suggestions you suggest that you or your organisation can adopt to overcome these challenges?
5. Any other comment you would like to make?

Thank you very much for your time.

Appendix-II

Questionnaire for Quantitative Study to formulate the scale to measure labour productivity in Indian manufacturing enterprises

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
DEPARTMENT OF MANAGEMENT STUDIES

Dear Participant,

The importance of productivity especially, labour productivity cannot be ignored in today's time of cut throat global competition. Moreover, the efficiency of labour in manufacturing sector especially in developing countries is even more important as the manufacturing sector contributes to significant portion in building the GDP of any developing country. Poor productivity is one of the root causes of cost inefficiency, quality defects, time overruns and service ineffectiveness.

In this direction, the attached questionnaire is a tool to help us understand your perceptions on the factors that impact labour productivity as you have work experience in the organization. Your responses will add value to our research as well as to the literature of labour productivity. So, please indicate your views by circling the appropriate number provided against each statement. Confidentiality will surely be maintained and the aggregate responses shall only be used for academic purposes.

Thanking You.

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Section-I: Questionnaire (Labour Productivity in Indian Manufacturing Organisations)

(1=Strongly Disagree; 2=Disagree; 3=Neither agree nor disagree; 4=Agree; 5=Strongly Agree)

Q.No	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I feel I have enough education and KSA (knowledge, skill and ability) to perform my job effectively.	1	2	3	4	5
2	I feel I am physically and mentally fit for doing the job.	1	2	3	4	5
3	I feel that I possess positive attitude, strong and persistent belief and values matching with that of my organization.	1	2	3	4	5
4	I feel I am given proper working environment required to perform my task.	1	2	3	4	5
5	I am motivated and enthusiastic to bring about improvements in my job.	1	2	3	4	5
6	I feel better pay would motivate me to do my job better.	1	2	3	4	5
7	I feel adequate and timely training helps in doing my job effectively.	1	2	3	4	5
8	My organization pays attention on productivity improvement.	1	2	3	4	5
9	The structure, strategy and culture in my firm encourages productive environment.	1	2	3	4	5
10	I work on latest technology available in the industry I am working in.	1	2	3	4	5
11	Best practices are employed and shared in my firm.	1	2	3	4	5

Q.No	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12	My organization clearly communicates the goals and business objectives by regular communication.	1	2	3	4	5
13	HR policies of my firm help me in becoming more productive employee.	1	2	3	4	5
14	I feel presence of regulatory body in the industry increases productivity as quality standards and best practices are properly maintained.	1	2	3	4	5
15	I feel number of competitors in the industry positively affects the productivity of my firm.	1	2	3	4	5
16	Working Conditions in my firm play a major role in raising my productivity levels.	1	2	3	4	5
17	I feel migration of skilled labour adversely affects the labour productivity of the firm.	1	2	3	4	5
18	Government environment and policy changes are important for labour productivity growth.	1	2	3	4	5
19	I feel macroeconomics of the country impacts the labour productivity of the firms and industry.	1	2	3	4	5
20	I feel macroeconomics of the world impacts the labour productivity of the nation.	1	2	3	4	5

Section II: The company belongs to (Please tick mark)

Automobile Industry/ Pharma Industry/ Electrical Equipment Manufacturer/ Electronics/ FMCG/ Consumer Durables/ Construction/ Cement/ Oil and Natural Gas/ Chemical/ Food and Beverages/ Power / Any other, please specify…………………………………………..

Section III: Turnover of the company: Below Rs.100 Crores/ Rs. 100 to 1000 Crores/ Rs. 1000 to 10000 Crores/ More than 10000 Crores

Section IV: Location of the company: …………………………………………..

Section V: Kindly specify your position in the company

- Lower Management (Executive, Sr. Executive, Asst. Manager)
- Middle Management (Manager, Sr. Manager, DGM)
- Senior Management (AGM, GM, ED, Director, President, VP, CEO, MD)

Section VI: How long have you been working with this organization

- 1-5 Years
- 5-10 Years
- 10-20 Years
- More than 20 Years

Section VII: Name (if you wish to specify) ………………………………………