

AN IMPACT ASSESSMENT OF WORK HOUR REGULATIONS ON EMPLOYEE PRODUCTIVITY BY USING THE M.L.S. FRAMEWORK

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Abstract

Employee productivity measures the output produced in physical or monetary terms on an average by each employee per unit time. Labour laws across the world have mainly been driven by the concern for labour welfare and to put an end to labour exploitation. However, the economic rationale behind such laws have not been fully explored. Some nations around the world have enacted labour laws on maximum standard work hours allowed per week. Such laws are justified mostly on the grounds of emancipation of workers and as a step towards labour welfare. This research work goes beyond purely welfare-based arguments and explores the socio-economic basis of such laws. The paper studies labour laws on work hours around the world as the first step. Secondly, it measures employee productivity in top five OECD economies and the five BRICS nations by a quantitative tool known as ‘The National Employee Productivity Ratio’. Thirdly, it extends the analysis by measuring employee productivity in the 4 largest Information Technology companies in the U.S. and India each, with the help of another tool known as ‘The Company-wide Employee Productivity Scale’. The two tools, known collectively as ‘The M.L.S. Framework on Employee Productivity’, have been devised by the author to study the average levels of employee productivity in nations and companies. Fourthly, the paper investigates into the relationship between the standard maximum number of work hours under labour laws in countries and employee productivity and analyses the reasons behind such relationship. Finally, it concludes that work hour regulations that put a ceiling on maximum standard work hours do not harm employee productivity. On the contrary, such regulations have a positive influence on employee productivity.

Keywords: Employee, Productivity, Labour, Laws, Welfare

1.0.Introduction

1.1. Productivity

Productivity means the rate at which output is generated or work is performed per unit time or factor of production. The higher this rate, higher is the productivity. Traditionally, factors of production are mainly of four types – land, labour, capital, and entrepreneurship. Some researchers believe that data is the fifth and the latest factor of production, following the digital revolution. Productivity could be measured for each of these factors of production. For

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instance, rice production per hectare of land, return generated per rupee of capital, jobs created per entrepreneurship venture, or work done per unit of labour, are all measures of productivity, expressed differently based on the purpose of measurement. This research focuses on productivity of labour or work done per unit time per capita (or say work done per man-hour).

1.2. Employee Productivity

Employee productivity is the average value addition carried out by each employee to the total output of a country or company. The unit of measurement could be per capita or per unit time or a combination of both (man-hours) and the level of measurement could be in terms of nations, companies, cities, states, or industries. When aggregated at the firm level, higher employee productivity could make a huge difference in the absolute volume and overall quality of output generated by the firm, measured in terms of total production or revenue generated. Further, when aggregated at the macroeconomic level, the average productivity of labour at firms and industry levels could impact the rate at which a nation generates output, i.e., GDP growth rate. A lower GDP growth rate could mean lesser annual additions to the GDP or national income in absolute terms. This translates into lower levels of savings and investment. Low levels of investment in human resource development could further lower employee productivity at the national, industry, firm or individual levels. It is a vicious cycle. A vice-versa scenario is the virtuous cycle of higher employee productivity which leads to higher GDP growth rate, higher output, higher levels of savings and investment in human resource development and further higher levels of productivity. Therefore, measuring employee productivity is the basis of estimating the efficiency and effectiveness with which managers manage the human resources of their firms and a nation capitalises on its demographic strengths.

2.0. Work Hour Regulations Under Labour Law

2.1. Historical Background

2.1.1. The Dawn of Labour Movement

Traditionally, labour legislations have been driven by the goals of labour welfare and a need to prevent exploitation of labour. Labour was seen as one of the most vulnerable and

disempowered sections during the advent of industrial revolution. Labour was at the mercy of capital and those who owned it, i.e., capitalists. Working conditions of labour was poor, safety standards were inadequate, job security was fragile, and their future was bleak with insufficient opportunities for growth and career advancement.

The 20th century witnessed a gradual shift. Rapid industrialisation created negative externalities such as pollution, unplanned urbanisation, new occupational diseases, cut-throat competition for resources, unsustainable resource consumption, state rivalry for resources, war depredations and their harmful impacts on economies, unhindered population growth, and increased labour exploitation. These problems required consensus, cooperation, and congregation of nations at the global level to seek resolution. The first half of the eventful century saw the formation of international organisations such as United Nations ('UN'), International Labour Organisation ('ILO'), European Union, etc. to evolve international laws to deal with such global issues. These international organisations emphasised on liberal values such as equal worth of all human beings; human rights and dignity of labour; freedom of collectivisation, association, and peaceful assembly; and economic, social, and political justice. Their foundations were based on natural rights. Human rights became the buzzword of the last century.

2.1.2. Collectivisation of Labour

With exponential growth in industrialisation and rising demand for labour in western nations, the attitude of businesses began to change. This was an internally driven change. Attracting the best workers, educated, skilled, and well-trained, became the new theatre of competition for business firms. Education, vocational training, and continual skilling with active association and generous support from industries became a new trend across the world. These changes gave respect, dignity, and self-esteem back to workers. Dignified treatment of labour was perceived to be a source of goodwill and reputation for the business firms. A pivotal role in this transformation was played by collectivisation movement and its products in the form of collective bargaining and trade unions. Workers realised that by uniting themselves into associations, they could've stronger bargaining power to demand better terms and conditions of work. Their resolve was strengthened by the global socialist movement during the early 20th century, led by the Soviet Union, that emphasised on the collective power of labour as a class. Gradually, a vibrant and thriving labour market developed, where labour had some bargaining power collectively, as a class. Labour and trade unions, espousing the cause of labour

emancipation or welfare, through collective bargaining, were formed across the world based on geographical or industrial affiliations. Often, the euphoria of labour solidarity took irrational and extreme forms and led to sustained industrial strikes, poor industrial relations, and deadlock situations such as lockouts or mass job cuts.

2.1.3. Capitalists React with Contractualization

Sir Isaac Newton once stated that, every action has an equal and opposite reaction, in one of his laws of motion. The law equally applies to any mass movement. Following a prolonged tussle between labour and capital, capitalists and business firms reacted by resorting to contractual employment. Contractualization of labour could break down the solidarity that cemented trade unions or labour as a class, by individually committing workers to contractual obligations which could be legally enforced against them in the case of breach. Workers, desperate for jobs in an increasingly competitive labour market had no options but to agree to such unilaterally drafted contracts, leaving absolutely no bargaining power with them. Business firms can isolate workers from their collective associations by threats of rescission, termination or non-renewal of their contracts of employment by references to the unilaterally drafted clauses in those contracts. Thus, workers were expected to fulfil such terms/clauses, even if they were manifestly exploitative of labour or against the statutory provisions or intent. Once again, labour was at the mercy of capital and those who owned it.

2.1.4. Latest Trends in Contractualization

The latest trend in contractualization of labour is imposition of onerous terms and conditions in the contract of employment, drafted without negotiation with workers, often at complete disregard to their own welfare. One of such conditions is with regards to time that workers are required to commit to their work/jobs. Contractualization enables firms to extract the maximum out of their workers by committing them to contracts with no clauses on maximum hours of work per week or per day and overtime allowance. Workers end up working for as long as 12-16 hours, without any overtime pay and often under oppressive and unhealthy working conditions.

2.2. Needs and Rationale for Work Hour Regulations

Work hour regulations mainly focus on mandating a minimum level of wages for a maximum number of standard hours in a week or a day. Beyond this work hours ceiling, workers are permitted to work but they are entitled to an overtime payment. Overtime premium for work

done beyond the standard maximum labour hours is set at a rate higher than the normal wage rate to compensate the workers for extra work and discourage employers from imposing unfair terms in employment contracts such as excessively long work hours or unpaid overtime work. This is the norm in western countries with some of the best labour regimes such as Canada or U.S., where 40 hours a week is the national standard. This one move is a master stroke that can restore dignity and respect back to labour. Out of all terms in a contractual employment, the one related to work hour is the most impactful in terms of labour welfare, occupational health, and the take-home pay. Fixing a ceiling on work hours can bring the balance back in the labour-capital tug-war.

The objective is fair pay for fair work and to secure just and humane conditions of work, consistent with Article 42 of Part IV of the Constitution of India. Under Article 43, the Constitution urges the State to take steps to secure living wages, working condition that ensure decent standards of life and full enjoyment of leisure and social and cultural opportunities, of all workers, agricultural or industrial or otherwise, through suitable legislation or economic organisation. Under Article 39 (e), the Constitution provides that the State shall direct its policy towards securing health and strength of workers.² A more detailed analysis on the need for work hour regulations is given in section 5.

2.3. Global Survey on Work Hour Regulations

The following is a brief country-wise summary of the global survey on labour laws related to work hour regulations in 10 countries, 5 advanced and 5 emerging nations, from Organisation of Economic Cooperation and Development (OECD) (the top 5 OECD economies by nominal GDP) and all BRICS nations respectively –

Group	Countries	Work Hour Regulations
OECD	USA	Maximum standard hours permitted for workers aged 16 and older with normal wages is 40 hours a week. Normal wage rate cannot be lower than the minimum wage rate as provided under the Fair Labour Standards Act, 1938 (FLSA). Overtime

² Constitution of India 1950 (India), Article 39, 42 & 43.

		rates at 1.5 times the normal wage rate applies for the overtime hours (hours worked in excess of 40 hours a week). There is no ceiling limit on overtime hours. ³
	Japan	The Labour Standard Law under Article 32 provides for 40 hours work week, beyond which overtime pay must be paid within a range of 25-50% over the normal wage rate per overtime work hour. There is no maximum ceiling on overtime hour. ⁴
	Germany	The Hours of Work Act provides for maximum of an average of 8 hours a day of work (considered over a period of 24 weeks). There is no work hours mandate for a week. However, the 8 hours a day work with Sunday and public holiday as mandatory leaves amounts to an average of 48 hours work week at maximum. ⁵
	United Kingdom	Maximum hours of normal work allowed for adults above 18 years of age is an average of 48 hours a week (considered over a period of 17 weeks). Employees may work more than this statutory limit by ‘opting out agreement’ voluntarily and in writing. Employees cannot be forced to do so against their will by employers or be fired for refusing to do so. Opting out must be consensual. There is no statutory provision for overtime payment. However, employees must be paid at or over the minimum wage rate for overtime work. ⁶
	France	The legal work time is an average of 35 hours a week (considered over a period of 52 weeks), which may get

³ The Fair Labour Standards Act 1938 (United States).

⁴ ‘National Labour Profile: Japan’ (*International Labour Organisation*) <https://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158904/lang-en/index.htm> accessed 13 September 2022.

⁵ ‘NATLEX’ (*International Labour Organisation*) <https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=37814&p_country=DEU&p_count=1231&p_classification=13&p_classcount=25#:~:text=The%20Hours%20of%20Work%20Act,of%20at%20least%2011%20hours.> accessed 14 September 2022.

⁶ ‘Maximum Weekly Working Hours’ (*Government of UK*) <<https://www.gov.uk/maximum-weekly-working-hours#:~:text=You%20cannot%20work%20more%20than,or%2040%20hours%20a%20week.>> accessed 14 September 2022.

		extended to 48 hours a week with overtime. For any 12-week period, average weekly worktime may go up to as high as an average of 44 hours a week. However, over a 52-week period, it must average 35 hours or attract overtime pay for the excess hours worked. So, effectively annual average work time for normal work is 35 hours. ⁷
BRICS	China	Standard working hours shall not exceed 44 hours week on an average with at least one day off a week. Beyond this overtime pay of 150-300% apply on overtime hours, based on the days on which overtime work is arranged (overtime premium on weekends or public holidays are higher than normal weekdays). ⁸
	India	The Occupational Safety, Health, and Working Conditions Code, 2020 under section 25 provides that no worker shall be allowed to work for more than 8 hours a day and for more than 6 days a week. Beyond this statutory maximum, a worker may get overtime payment at the rate twice the normal wage rate on weekly or daily basis, whichever is favourable to him. So, effectively, the standard work hour at normal wage rate is 48 hours a week. ⁹ However, now the cap of 8 hours a day has been increased to 12 hours a day, without affecting the weekly maximum work hours of 48 hours, to allow for a '4 days a week work regime' in future. The maximum number of overtime hours allowed is 125 hours per quarter. ¹⁰
	Brazil	Maximum standard work hour shall not exceed 44 hours a week or 8 hours a day, subject to a maximum of 220 hours a

⁷ 'France Employment Law' (*Replicon*) <<https://www.replicon.com/regulation/france-labor-laws/>> accessed 14 September 2022.

⁸ 'Labour Law of the People's Republic of China' (*ILO*) <<https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/37357/108026/#:~:text=Article%2036%20The%20State%20shall,a%20week%20on%20the%20average.>> accessed 14 September 2022.

⁹ The Occupational Safety, Health, and Working Condition Code 2020 (India), ss 25, 26 & 27.

¹⁰ 'Pay, Leaves and Work Hours: How the New Labour Codes Impact You' *Economic Times* (30 June 2022) <<https://economictimes.indiatimes.com/news/economy/policy/pay-leaves-and-work-hours-how-the-new-labour-codes-impact-you/articleshow/92562758.cms>> accessed 14 September 2022.

		month. Overtime hours are capped at 2 hours a day charged at 150% of normal wage rate. ¹¹
	Russia	Article 91 of the Labour Code of Russia provides for a 40 hours normal work week. Overtime hours are allowed only with a written consent of workers and cannot exceed 4 hours for two consecutive days or 120 hours a year. ¹²
	South Africa	The Basic Condition of Employment Act, 1997 provides for an average of 45 hours a week with maximum 9 hours allowed a day. Beyond this normal work hour, overtime can extend to 10 hours a week or at maximum 3 hours a day. Overtime is charged at 1.5 times the normal wage rate. ¹³

Table 1: Global Survey of Work Hours Regulations

3.0.M.L.S. Evaluation Framework On Employee Productivity

3.1. The Framework

The M.L.S. Framework ('the Framework') on Employee Productivity is a set of two quantitative tools to measure employee productivity across countries and companies. It uses data as disclosed by countries to ILO as part of their regular reporting mechanism and those that have been collected by organisations of repute such as the World Bank. The objective of this quantitative tool is to measure the efficiency, effectiveness, and productivity with which countries and companies use their human resources. The two constituents of the Framework are detailed as below -

3.1.1. National Employee Productivity Ratio

¹¹ 'Brazil Employment Law' (*Replicon*) <<https://www.replicon.com/regulation/brazil-labor-laws/>> accessed 14 September 2022.

¹² 'National Labour Law Profile: Russian Federation' (*International Labour Organisation*) <https://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158917/lang-en/index.htm> accessed 14 September 2022.

¹³ 'The National Labour Law Profile: South Africa' (*International Labour Law*) <https://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158919/lang-en/index.htm> accessed 14 September 2022.

The National Employee Productivity Ratio ('the Ratio') measures the average productivity of a country's workforce in terms of output generated per capita per maximum statutory standard work hours allowed (or man-hour) in the country. Here, output is denoted by Gross Domestic Product ('GDP') based on constant prices or Purchasing Power Parity ('PPP'), which excludes the influence of inflation on output (Real and not Nominal GDP). Statutory maximum standard man-hours are derived by multiplication of size of workforce with the maximum standard work hours per annum allowed under the national labour laws of the country under consideration.

The formulae of the ratio is as follows –

*The National Employee Productivity Ratio = GDP PPP (latest available figure) / [Workforce * Statutory Maximum Standard Work-hours per annum]*

The resultant figure shows us the value addition made by each employee in terms of average contribution to the nation's GDP PPP per hour, if they are expected to work only as much as allowed under the national labour regulations for standard hours of work (without overtime).

3.1.2. Company-wide Employee Productivity Scale

The Company-wide Employee Productivity Scale ('the Scale') is the company counterpart of the above Ratio. It measures the average employee productivity per hour of statutory work allowed under the laws of the country where the company is located. Output of the company is measured in terms of its annual sales revenue while the statutory maximum standard man-hours is computed by multiplying the size of the company's workforce with maximum statutory standard work hours per annum allowed in the country where the company is located. It is a scale in the sense that it takes the company with the highest value addition per man hour as the base and then computes the value addition per man hour of other companies as a percentage of that base figure for ease of comparison. The company with the highest employee productivity is the standard used in the scale to evaluate employee productivity in other companies.

The formulae for calculating the Company-wide employee productivity for each company is as follows –

*Company-wide Employee Productivity = Annual Sales Revenue (Latest Figure) / [Company Workforce * Statutory Maximum Standard Work-hours per annum]*

The resultant figure shows the value addition made by each employee to his company in terms of average contribution to the annual revenue per hour, if they are expected to work only as much as allowed under labour regulations for standard hours of work (without overtime).

For calculating scale % the formulae is as follows –

*Scale % = [Company's Employee Productivity / Highest Employee Productivity among all companies] * 100*

(The scale % of company with highest employee productivity is assumed to be 100%)

3.2. Assumptions

- a) Attempt has been made to make sure that all figures are latest and from the most authentic sources.
- b) The Ratio and Scale do not measure the actual employee productivity but the supposed employee productivity if workers work only for the statutory maximum standard hours allowed under labour laws of the nation. Actual employee productivity requires actual work hours. Actual hours worked is difficult to measure and available data on it may not be reliable. Further, it is outside the scope of this research as the objective here is to study the relationship between the regulated work hours under labour laws and employee productivity. Therefore, standard work hours allowed under statutory laws have been taken in computing man-hours.
- c) The man-hours do not consider overtime allowed under statutory laws. The objective of both, the Ratio, and the Scale, is to assess the supposed employee productivity if employees work for the full standard work hours allowed under statute, no less and no more.
- d) Productivity of employees in national workforce have been measured in terms of their contribution to GDP PPP (Real GDP) on an average. This could be termed as 'Real GDP per man-hour'.
- e) Total workforce size of countries includes all kinds of workers – contractual, non-contractual, formal, informal, and in all sectors of economy, including agriculture, construction, or services. The reasons behind such an approach are the Directive

Principles of State Policy to provide just and humane working conditions, to secure a living wages and work conditions ensuring decent standards of life and full enjoyment of leisure, social and cultural opportunities to ‘all workers - agricultural, industrial or otherwise’ under Part IV of the Constitution.¹⁴ Increased rates of formalisation of employment, expanding the coverage of social security benefit schemes, improved socio-economic conditions of workers, and deeper penetration of labour regulations are perpetual aspirations of the State and steps are being taken to realise them.¹⁵ These aspirations have still not been met due to constraints on economic capacity of the State but need to be incorporated in State policy as goals to be achieved in future.

3.3. Limitations

- a) Inclusion of agricultural workers or farmers and informal sector workforce distorts the figure for employee productivity of formal sector employees who are mostly the subjects of contractualization of employment. However, the work conditions in informal or agricultural sector are either similar or worse than contractualized employment in formal sector. Further, Constitutional mandate under Part IV on Directive Principles of State Policy, as mentioned in last section, covers all workers, from all walks of life, with no exclusion.
- b) Measuring employee productivity in terms of GDP PPP in the Ratio and in terms of sales revenue in the Scale is too simplistic and gross measure of employee productivity. However, given the available options, it seems to be the best one. It excludes distortions caused by inflation and organisational hierarchies.
- c) The exclusion of overtime hours allowed under statute could artificially magnify employee productivity. However, that happens only when actual hours worked on an average in a nation exceeds the statutory limit on standard work hours. This happens very rarely and out of the 10 countries covered under this research, only France and China have average actual hours worked of more than the statutory ceiling on standard work hours (highlighted in crimson). In all other nations, the actual hours worked on average is lower than the statutory limit on standard work hours. In fact, in OECD nations, the average actual number of hours worked is much lower than what their statutes allow for standard work hours. Given below is a table that depicts the actual

¹⁴ Constitution of India 1950 (India), Article 39, 42 & 43.

¹⁵ ‘Measure of Labour & Employment’ (*Press Information Bureau*)

<<https://pib.gov.in/Pressreleaseshare.aspx?PRID=1705409>> accessed 11 November 2022.

work hours on an average and the statutory ceiling on maximum work hours, for better clarity. The statistics on average actual work hours have been taken from the ILO's website.

Groups	Countries	Maximum Standard Number of Hours Allowed	Actual Number of Hours Worked¹⁶
OECD	USA	40	35.9
	Japan	40	37.8
	Germany	48	34.2
	UK	48	35.9
	France	35	35.9
BRICS	China	44	46.1
	India	48	47.9
	Russia	40	37.8
	Brazil	44	35.1
	South Africa	45	39.8

Table 2: Actual hours of work v. the statutory maximum standard hours allowed in OECD and BRICS nations

As can be seen from table 2 above, the actual number of hours worked in OECD nations is far lower (on average of 36 hours of actual work per week) than the statutory maximum ceiling on standard work hours (on average of 42.2 hours in OECD countries), except in France. In case of Germany, the actual hours worked is 13.8 hours lower than statutory standard maximum allowed of 48 hours or the actual hours worked is 28.75% lesser than the maximum work hours allowed under its statute. Even in BRICS nations, the actual number of hours worked do not exceed the statutory maximum number of hours allowed, except in China. Therefore, overtime provision under statutory laws have been ignored due to their insignificant impact.

¹⁶ 'Statistics on Working Time' (*International Labour Organisation*) <<https://ilostat.ilo.org/topics/working-time/>> accessed 14 September 2022.

4.0. Impact Assessment Of Work Hour Regulations On Employee Productivity

4.1. Research Objectives, Variables and Hypothesis

This research is aimed at assessing the impact of work hour regulations on employee productivity in nations and companies. This is done with the help of the M.L.S. Framework on employee productivity. The two variables are number of standard work hours allowed under statutory laws of nations (independent variable) and employee productivity measured in man-hour terms (dependent variable). It is hypothesised that employee productivity has a negative relationship with the number of standard work hours allowed under statute and that work hour regulations have a positive influence on employee productivity at the national and company-wide level. The results are then to be interpreted and analysed to diagnose the causes behind the relationship between the two variables. The following section demonstrates the application of the M.L.S. Framework on Employee Productivity to assess the impact of work hours regulations on employee productivity in nations and companies.

4.2. Impact Assessment on National Workforce (Using the National Employee Productivity Ratio)

Groups	Countries	GDP PPP (Mil) (2021) ¹⁷	Workforce (Mil) (2021) ¹⁸	Annual Standard Number of Hours Allowed (X) ¹⁹	Employee Productivity Ratio (Y)	Rank
OECD	USA	20932281	164.79	2080	61.1	1
	Japan	5124017	68.22	2080	36.1	4

¹⁷ 'GDP, PPP (Constant 2017 International \$) – India' (*The World Bank*)

<<https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.KD?locations=IN>> accessed 14 September 2022.

¹⁸ 'Labour Force, Total' (*The World Bank*) <<https://data.worldbank.org/indicator/SL.TLF.TOTL.IN>> accessed 14 September 2022.

¹⁹ See Section 2.3. (NOTE: Standard work hours per week taken from section 2.3. To arrive at annual standard number of hours, we multiply the weekly work hours by 52).

	Germany	4400100	43.85	2496	40.2	3
	UK	3086193	34.65	2496	35.7	5
	France	3050123	30.97	1820	54.11	2
BRICS	China	24861343	792.08	2288	13.72	9
	India	9301492	471.3	2496	7.9	10
	Russia	4080294	71.77	2080	27.33	6
	Brazil	3127524	99.4	2288	13.8	8
	South Africa	788112	22.67	2340	14.9	7

Table 3: The National Employee Productivity Ratio for OECD and BRICS nations and ranking

This section uses the formulae for computation of the Ratio, as laid down in the section 3.1.1. The product of the application of formulae is nothing but employee productivity in a nation or the GDP PPP per man-hour. This is employee productivity when employees work for the statutory maximum number of standard hours allowed. For instance, an employee in India on an average contributes \$7.9 per hour towards India's GDP PPP. While, in the U.S., the average employee contribution towards U.S. GDP PPP is \$61.1 per hour. This is nothing but the National Employee Productivity expressed in per capita per hour (man-hour) terms, calculated using the formulae for the Ratio. All the OECD nations (highlighted in green) rank high from 1-5, while the BRICS nations (highlighted in crimson) rank the lowest from 6-10. While the average number of maximum standard hours allowed in OECD is 42.2 hours, the figure for BRICS nations is 44.2 hours. This means that BRICS nations have a statutory maximum standard hour of 2 more than OECD, on an average. Despite this, the average ratio (or average employee productivity) in the OECD nations is 45.44 as against 15.53 in BRICS. To conclude, while the BRICS nations are legally allowed to work for 4.75% higher number of hours than the OECD nations, average employee productivity in BRICS nations is 66% lesser than that of the OECD nations or one-third of the OECD nations. To put it differently, while the OECD nations are legally allowed to work for 4.5% fewer number of hours than the BRICS nations, the employee productivity in the OECD nations is 192.6% higher than that of BRICS nations or thrice as much as in the BRICS nations.

The Pearson correlation coefficient between standard maximum work hours (X) and employee productivity (Y, calculated applying the formulae of the 'Ratio') is -0.5478, depicted pictorially in Figure 1 below. This proves that the two variables are negatively correlated. Thus, an increase in standard maximum work hours by 100% under labour laws will cause a fall in employee productivity in the national workforce by 54.78% on an average and vice-versa.

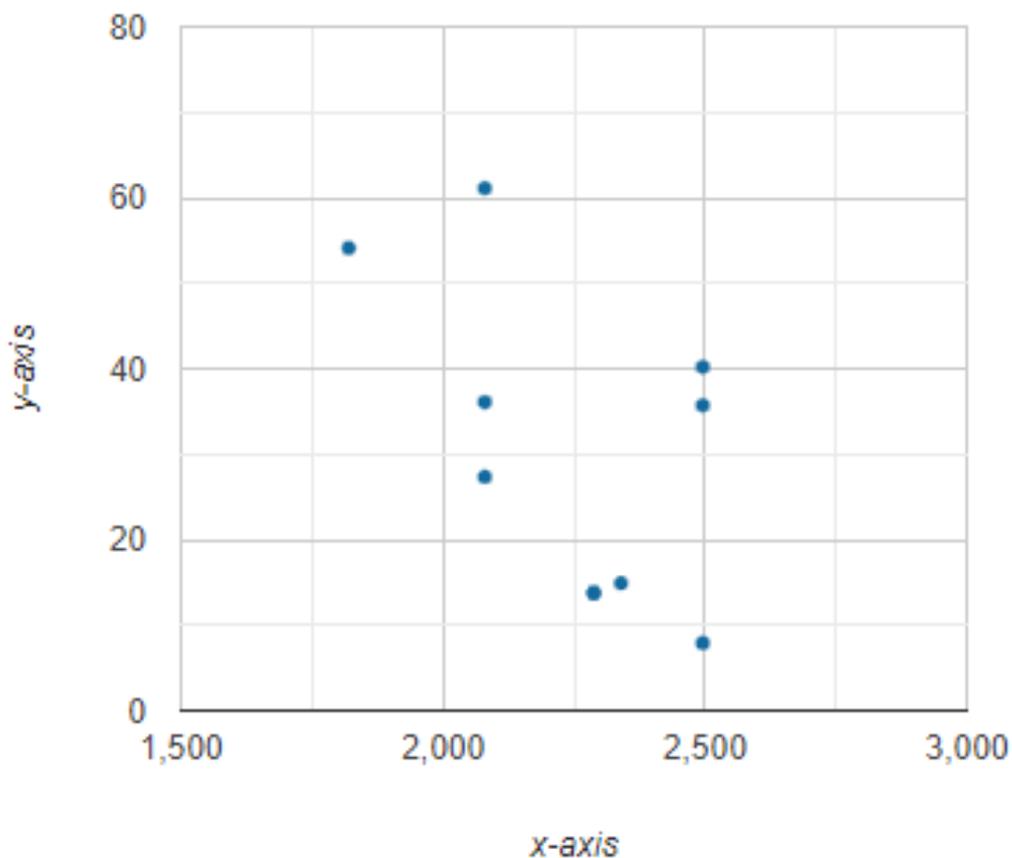


Figure 1: The scatter plot corresponding to Table 3, where the X-axis depicts the standard maximum work hours allowed under labour laws of nations and Y-axis depicts the National Employee Productivity Ratio or Employee Productivity calculated in accordance with the M.L.S. Framework

4.3. Impact Assessment on Company Workforce (Using the Company-wide Employee Productivity Scale)

Country	Companies	Revenue PPP (Mil) (2021-2022) ²⁰	Workforce (Mil) (2022) ²¹	Annual Standard Number of Hours Allowed (X)	Company-wide Employee Productivity (Y)	Scale & Rank	
USA	Apple	387540	0.1540	2080	1210	100.0	1
	Google	278130	0.1740	2080	768.5	63.5	2
	Microsoft	198270	0.2210	2080	431	35.6	4
	Meta	120200	0.0836	2080	691	57.1	3
India	TCS	87500	0.6063	2496	58	4.8	6
	Infosys	56000	0.3352	2496	67	5.5	5
	Wipro	33000	0.2586	2496	51	4.2	7
	Tech Mahindra	17000	0.1580	2496	43	3.5	8

Table 4: The Company-wide Employee Productivity Scale in 4 IT companies from the USA and India

The first 4 companies are the 4 largest Information Technology ('IT') companies by market capitalisation in the USA (highlighted in green). While the next 4 companies are the 4 largest IT companies in terms of market capitalisation in India (highlighted in crimson). To arrive at Annual Revenue for Indian companies in PPP terms, their nominal revenues for 2022 (same cited source as that of American companies have been used for nominal sales revenues of Indian companies) have been multiplied by a factor of 3.45 (a number obtained by dividing the current dollar-rupee exchange rate by the PPP Conversion Rate²²). This converts the nominal sales revenues of Indian companies into PPP ones for better comparability with the American companies. This is because \$1 has a purchasing power equal to rupees INR 23.14 in India. The

²⁰ 'Companies Ranked by Revenue' (*Companies Market Cap*) <<https://companiesmarketcap.com/largest-companies-by-revenue/>> accessed 14 September 2020.

²¹ 'Companies Ranked by Number of Employees' (*Companies Market Cap*) <<https://companiesmarketcap.com/largest-companies-by-number-of-employees/>> accessed 14 September 2022.

²² 'PPP Conversion Factor, GDP (LCU Per International \$)' (*World Bank*) <<https://data.worldbank.org/indicator/PA.NUS.PPP>> accessed 14 September 2022.

USA has the best employee productivity among all OECD nations, and its companies are some of the largest in the world in the IT sector. The scope of this assessment has been kept limited to IT sector only, as the sector resorts to contractualization quite frequently and has one of the highest concentrations of formal jobs. The formulae for employee productivity at company level and the scale point has been laid down in the section 3.1.2. The company-wide employee productivity is nothing but average contribution made by each employee in \$ terms per hour to his/her company's annual revenue. For instance, employees at Infosys on an average contribute \$67 per hour towards Infosys's annual revenue. While employees at Apple contribute \$1,210 per hour on an average to Apple's annual revenue.

As can be seen from the table above, employee productivity in US IT companies is very high in comparison to Indian companies. The average employee productivity in US IT companies per man hour is 775 (expressed as sales revenue per employee per hours of standard work hours allowed) in comparison to 54.75 in Indian IT companies. This is even though Indian companies are legally allowed to work for 8 standard hours more than their USA counterparts in a week. This means that while Indian companies are legally allowed to work for 20% higher number of hours than the US companies, their employee productivity is 93% lesser than that in the US IT companies. In other words, while the US IT companies are legally allowed to work for 16.7% fewer number of hours than their Indian counterpart, their employees have productivity of 1315% higher than that of Indian IT companies or 14 times as much as that in Indian IT companies.

The scale provides the relative measure of employee productivity in various companies. For instance, employee productivity in the most productive Indian company, which is Infosys, is only 5.5% that of employee productivity at Apple, which is the most productive company in the USA and overall, in this study. Once again, a highly negative correlation between standard maximum work hours allowed under labour laws of the country where companies are based (X) and company-wide employee productivity (Y) has been discovered. The Pearson Correlation Coefficient between the two variables is -0.8759. This implies that if the standard maximum work hours allowed in the country where companies are located is increased by 100%, employee productivity in such companies would fall by as much as 87.59% and vice-versa. The correlation has been pictorially depicted in figure 2 below.

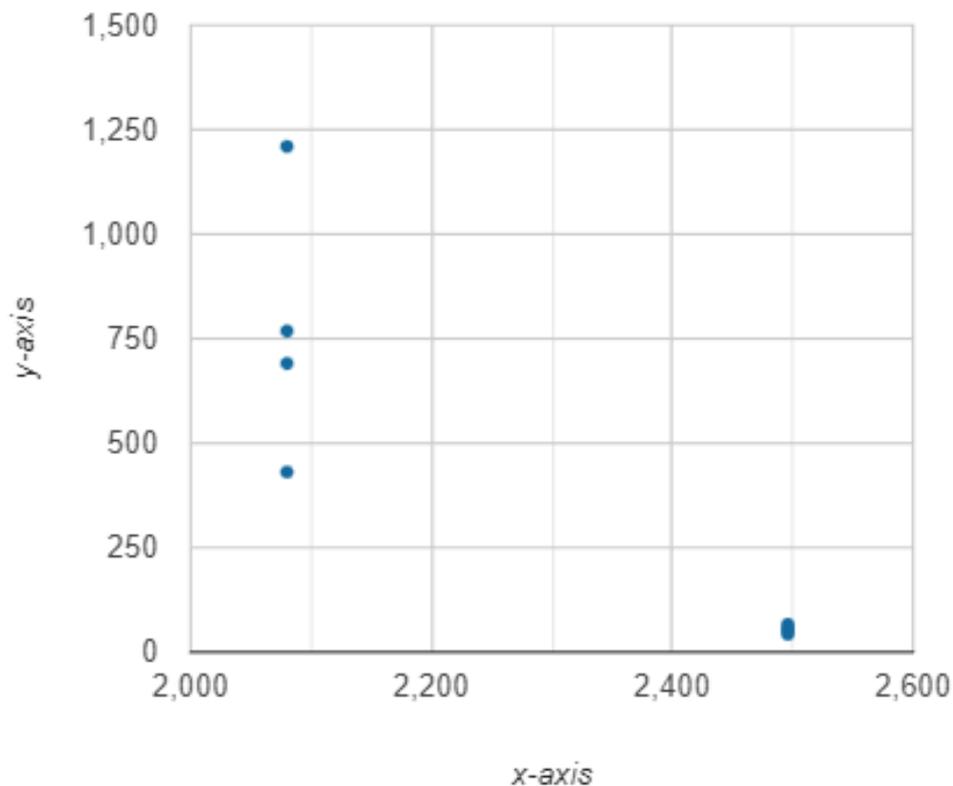


Figure 2: A scatter plot corresponding to Table 4, where the X-axis corresponds to standard maximum work hours allowed in the country where companies are located and the Y-axis corresponds to company-wide employee productivity.

5.0. Analysis / Interpretation Of Results

5.1. The Relationship between Work Hour Regulations and Employee Productivity

The relationship between the two variables – number of maximum standard work hours allowed under statute and employee productivity per man-hour may be summarised as follows

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- a) The M.L.S. Framework on Employee Productivity demonstrates that standard maximum number of work hours allowed under labour laws and employee productivity in countries and companies are negatively correlated. The hypothesis thus stands proved.
- b) If the maximum standard work hours ceiling is brought down, both nations and companies would reap higher employee productivity per man hours.

- c) Countries with lesser number of maximum standard work hours do not have lower employee productivity. In fact, such countries, mostly OECD nations (all OECD nations, except UK and Germany have a 40-hour or less work week), have a high employee productivity.
- d) Countries with higher number of maximum standard work hours do not have higher employee productivity per man hour. In fact, these countries, all BRICS nations, have low employee productivity.
- e) Employee productivity do not increase by increasing the number of maximum standard work hours allowed under statute. In fact, there is a negative relationship between the two, i.e., lesser the ceiling on maximum standard work hour, higher the employee productivity per man hour.
- f) Working for longer hours will not guarantee higher output. This can be understood by an example of India and USA, which have an average employee productivity of 7.9 and 61.1 per man hour respectively, while their standard work hour ceilings are 48 and 40 respectively (refer Table 3). To achieve an average output per week equal to that produced by an average worker in USA, an Indian worker would've to work for 309 hours in a week! This is impossible, as a week has only 168 hours at maximum.
- g) Among companies, the inferences are quite similar as in case of nations. US IT companies have high employee productivity per man hour compared to Indian companies, despite lower ceiling on standard work hours allowed in the US. A TCS worker in India would've to work for at least 790 hours a week to produce the same weekly output as an average worker at Apple. This is because the average employee productivity of a worker at Apple per man hour is 21 times than that of a TCS worker. Once again, this is impossible, as a week consists of 168 hours at maximum.
- h) Companies cannot expect higher output in terms of sales revenue or turnover by making their employees work longer. It is a self-defeating exercise. What matters more is employee productivity per man hour and efficiency of employees, which is a factor of training, education, work environment, financial and non-financial incentives, leisure, technology, innovation, etc. Mere long hours of work cannot make Indian firms outcompete their US counterparts in a globalised business environment of 21st century.

Thus, work hour regulations under labour laws have a positive impact on employee productivity, both at national and corporate levels. Work hour regulations with liberal or lower ceiling on standard work hours have led to higher employee productivity in OECD nations and in the case of US companies. While, work hour regulations that allow for higher number of standard work hours ceiling have not led to higher employee productivity in BRICS nations and in the case of Indian companies.

5.2. Diagnosis of Reasons Behind the Relationship

The reasons behind the negative relationship, established by the M.L.S. Framework on Employee Productivity, could be explained in terms of several socio-economic and health related dimensions, summarised as follows –

a. Psychological

Lesser number of work hours and prevention from overtime work without pay improves the psychological wellbeing of workers. They get more time for leisure, social and cultural opportunities as intended under Article 43 of Constitution of India. They can generate better ideas, think innovatively and creatively, behave responsibly and work productively, if their mental and psychological wellbeing at work is taken care of. More time with family, friends and for oneself makes sure that workers are sufficiently motivated and rejuvenated frequently, possess better mental health, higher energy, enthusiasm, and productivity at work. The general attitude of employers and employees in nations with strict work hours regulation changes favourably. They emphasise on work quality rather than work quantity and employee productivity per man hour rather than the length of work shift or hours spent at work. This also cuts down the need of employers to record-keep work hours spent by workers or in supervising the workers. Performance is accordingly measured based on quality, efficiency, and the pace of work done. Such countries/companies have a happy workforce that is committed to work productively. Happy minds are the nurseries of invention, innovation, and creativity. They are fertile fields of disruptive ideas. Work related pressure can erode creativity and innovation and deteriorate mental health of workers.

The World Health Organisation ('WHO') defines health as a state of complete physical, mental, and social well-being and not merely absence of diseases or infirmity.²³ Thus, mental health is one of the factors that affect employee productivity or work performance. Mental health at work is now part of an evolving international best practices on occupational safety and health of workers. WHO has released a *Guideline on Mental Health at Work* in September 2022, that recommends actions against mental health risk factors with an aim to make the work environment less stressful.²⁴ International Labour Organisation ('ILO') and WHO have jointly released a policy brief titled, 'Mental Health at Work' that lays down policies for governments, employers, and workers to prevent mental health risks and to protect and promote mental health at work.²⁵ Some of the most progressive countries on Earth are taking the issue of occupational mental health seriously. Canada, for instance, pioneered mental health protection and promotion at work by framing its *National Standard of Canada for Psychological Health and Safety in the Workplace*, in 2013.²⁶ International Standards Organisation ('ISO') has framed ISO 45003 standard on *Occupational health and safety management – Psychological Health and Safety at Work – Guidelines*.²⁷ Thus, mental, or psychological health of workers are increasingly being recognised as a relevant factor in creating a productive work environment.

b. Physiological

Rationalised number of hours at work means more time for leisure and self-care. Physical and mental health is taken as much care of as financial health. A statutory ceiling on standard work hours puts a legal bar on employers from resorting to excessively long hours of unpaid work that may deteriorate employee health in long term and lead to occupational diseases or hazards. Such longer hours of work could lead to decreased alertness, increased fatigue, lower cognitive functions, declining vigilance or diligence in work, poor sleep quality, burnout, and increased number of accidents or injuries. Shorter shifts of work on the other hand are associated with

²³ 'Mental Health: Strengthening Our Response' (*World Health Organisation*) <<https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>> accessed 28 October 2022.

²⁴ 'WHO Guidelines on Mental Health at Work' (*World Health Organisation*) <<https://www.who.int/publications/i/item/9789240053052>> accessed 28 October 2022.

²⁵ 'Mental Health at Work: Policy Brief' (*WHO & ILO*) <https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_856976.pdf> accessed 28 October 2022.

²⁶ 'National Standard' (*Mental Health Commission of Canada*) <<https://mentalhealthcommission.ca/national-standard/>> accessed 29 October 2022.

²⁷ 'ISO 45003:2021' (*International Standard Organisation*) <<https://www.iso.org/standard/64283.html>> accessed 29 October 2022.

better sleep quality, alertness, and better mental health status in general.²⁸ Lesser number of work hours could also mean less accidents and injuries, more vacations, more rest and better work-life balance.

c. Socio-economic

Lesser number of standard work hours set as ceiling under labour laws, paid at minimum statutory wage rates, could guarantee a basic level of income security to workers. Workers can then freely decide to spend the remaining number of hours either working overtime at higher rates of overtime payment (most jurisdiction mandate a 25-300% overtime premium) or engaging themselves in any supplementary vocation, business, or profession. Workers could even use this surplus time for learning, up-skilling, and career growth. All such efforts bring higher income to the households and improve their standards of living. If the statutory ceiling on standard work hours is sincerely implemented at a guaranteed minimum wage rate, it could make it difficult for employers to exploit labour by paying them wages less than the minimum statutory wage rates or making them work overtime without any overtime pay. Overtime work at higher pay (at premium) improves the bargaining power of workers and leads to redistribution of income to some extent, thus marginally reducing the income inequalities between those who own capital and those who provide labour. This could also lead to a more amiable and peaceful industrial relationship. Improved socio-economic conditions of workers further improves their productivity at work, as they can invest more in education, learning, vacations, rejuvenation and can afford better standards of living due to higher income levels and more leisure time.

d. Ethical

Companies which deal with their labour in a dignified manner can attract and retain employees with the best ideas, talent, and skills. Employee turnover or attrition is low and employee morale is high in such companies. Such companies are seen as ethical and socially responsible enterprises and are preferred by employees themselves. Countries with statutory maximum labour hours that are not excessively high, are preferred by migrants across the world, who bring the best ideas and skills with them. Fair pay for fair work, overtime pay at higher rate for excess work and strict enforcement of work hours and minimum wages regulations make the

²⁸ 'Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries, and Health Behaviours' (U.S. Department of Health and Human Services Centre for Disease Control and Prevention) <<https://www.cdc.gov/niosh/docs/2004-143/pdfs/2004-143.pdf>> accessed 15 September 2022.

labour market in these nations more ethical and fairer in relative terms, giving them a competitive advantage over their rivals in the global market. This brings the best employees to such nations and their companies and thus improves their employee productivity.

e. Technical

Having a lower statutory ceiling on standard work hours compels employers to resort to technical aids to speed up the work flow and processes to compensate for the man-hours lost due to such laws. Technology amplifies the productivity of employees per man-hour, by improving their efficiency at work, automating the processes, and reducing errors and wastage. Employees end up delivering more output at work in lesser number of hours with the aid of technology. Also, in countries/companies that aim at productivity improvement rather than maximising work hours of labour, investment in technological advancement and human resource development is relatively higher. For instance, all the top 10 universities in the world are in the OECD nations.²⁹ 8 out of 10 biggest companies by market capitalisation in the world are technology-based corporations and have their origins and base in OECD nations, predominantly in the U.S.³⁰ The overall attitude or atmosphere in these nations is to think out of box, scientifically, and rationally about how to get the work done most efficiently and effectively rather than the length of time spent at work. This approach rewards efficiency, prioritises productivity, and incentivises creativity to get the work done in quickest possible time. While the approach of hour maximisation and record-keeping is bureaucratic and inbreeds inactivity, monotony, and conservatism among employees.

6.0. RECOMMENDATIONS

The following recommendations could be made to strengthen work hour regulations with an aim to maximise employee productivity in nations and companies -

- a. Countries should set a ceiling on the standard number of hours allowed for workers. This standard work hour should be paid at a guaranteed minimum wage rate which should be strictly implemented. Any work done beyond this standard ceiling must

²⁹ 'QS World University Rankings 2022' (*QS World University Ranking*) <<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>> accessed 10 November 2022.

³⁰ 'Biggest Companies in the World by Market Cap' (*Investopedia*) <<https://www.investopedia.com/biggest-companies-in-the-world-by-market-cap-5212784>> accessed 10 November 2022.

compensate the workers at a higher rate, preferably a minimum of 150% of normal wage rate (or an overtime premium of 50% over the normal wage rate).

- b. The overtime premium should be paid to employees immediately and without delay, as workers resort to overtime work often to meet certain exigencies or compulsions.
- c. Implementation should be strict and across all sectors, regardless of whether employment is contractual or regular. Even informal and self-employed sections of workforce should be encouraged to follow such statutory limits, so that productivity becomes part of work culture rather than counting the hours spent on work.
- d. Fines should be imposed on employers who make their employees work overtime without an overtime premium payment. Such penalties recovered from employers should be handed over to employees who worked overtime without pay.
- e. There should be dual system of reporting of work hours, both by employers and employees, to ensure against any falsification of worktime records by either party.
- f. A culture of maximisation of productivity per hour rather than working for longer number of hours should be cultivated in the workforce, right since their training in educational institutions. Emphasis should be on placed on thinking out of box, leveraging technology, and seeking creative or innovative solutions/methods to get the work done most efficiently and economically. The culture of excessively long hours of work should not be glamorised or promoted at the cost of productivity, innovation, and creativity at work and employee health and wellbeing.
- g. The ceiling limit on standard work hours at minimum wage rate should not be too high. The American standard (40 hours a week) or the French norm (35 hours a week) seem to be the best. Lower ceiling ensures that employees get higher pay in the form of overtime wages, leading to more equitable distribution of business gains between capital and labour.

Conclusion

A lower ceiling on statutory standard work hours at minimum wage rates not only prevents employees against excessively long unpaid work but also improves their productivity at work in man-hour terms. Overtime work beyond this statutory ceiling on standard work hours improves the socio-economic conditions of workers and gives a boost to their bargaining power in the tug of war between labour and capital. Improved socio-economic conditions can further

lead to higher employee productivity, as workers spend more on their health, education, and career advancement. With higher employee productivity, they can deliver higher aggregate output or value addition to their countries/companies in relatively lesser number of hours of work done. This leaves them with more time for leisure, rejuvenation, and recovery of lost productivity. Work hour regulations also persuade employers to invest in technology, innovation, and creativity to accommodate for lesser number of labour hours allowed under statute. This adds to productive capacity of countries/companies and fuels future growth in a sustainable manner, without compromising with the health and safety of the workforce. Therefore, work hour regulations and its stricter implementation can have a positive impact on employee productivity at national and corporate levels.