

TECHNO-GLOBALISATION AND LABOUR SUSTAINABILITY IN AN ERA OF THE 4TH INDUSTRIAL REVOLUTION

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Abstract

Capitalism, as it is known is based on the concepts of competition, profit motive, private enterprises (self-interest) and scientific management. These key catalysts set the motion for capitalist expansion, exploration and exploitation. One notable area where capitalism has naturally done exceptionally well based on its characteristics, is within the domain of scientific management, which has spurred technological innovations as well as triggered techno-globalisation. In spite of several warning signs of the impact of techno-globalisation on the sustainability of labour, the world advanced into the 4th Industrial Revolutions, which is also driven by highly sophisticated technological advancements. The 4th IR has unique features, namely, smartphone takeover almost every aspect of business activity; knowledge generation is made possible through big data; robotics may likely replace many human routine activities in the workplace. The new trend will certainly lead to massive job losses as well as create new ones within the industry, which could have detriment effects for labour sustainability. However, some mechanisms have been postulated in this treatise to improve the status quo.

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Introduction

Capitalism as it is known is based on the concepts of competition, profit motive, private enterprises (self-interest) and scientific management. These key catalysts set the motion for capitalist expansion, exploration and exploitation. One notable area where capitalism has naturally done exceptionally well based on its characteristics, is within the domain of scientific management, namely technological innovation, which finally resulted in the triumph of capitalism as the reigning orthodoxy over other economic patterns, namely socialism and communism, which culminated in what is commonly known today as global capitalism or capitalist globalisation. Thus, experts seem to have universally agreed that capitalist globalisation is an inescapable product of innovations in technology (Went, 2000). In other words, it would have been difficult for globalisation to materialise without great technological innovations within the domains of communication, data processing as well as transportation (Scholte, 2000). Certainly, innovation in technology has boosted communication and at the same time, reduced transportation cost (Gomory and Baumol, 2004). For instance, Legrain (2002) noted that the cost of sea freight drastically came down from 1920 onward, and that of air flight came down from 1930 onward and a major part of the importation and exportation in and out of the USA is through aeroplane, in recent times. In that regard, Scholte (2000, also cited in Ukpere, 2010) noted that technology has, indeed spurred globalisation and vice versa.

Indeed, innovations in technology has boosted communication, finance, production and marketing across the globe. New technological innovations in the putative globalist era encompasses e-mails, voice mail, videophones, video conferencing, and etcetera. The advent of broadband technologies, in the form of Integrated Service Digital Network (ISDN) as well as the exceptionally high-velocity Asynchronous Transfer Mode (ATM) invented in 1980s, have enabled fibre-optic cables to carry sound recordings, graphic material, motion pictures, text and massive bulk of digitised data with voice (Scholte, 2000). Processing of data

through digital machine is indeed an additional key domain where innovation in technology has supported global organisations in their day-to-day activities. Global financial organisations for instance, have greatly depended on far-reaching automated management information systems. Advancement in technological innovations has boosted banking operations across the globe as funds can easily be transferred from any branch or bank to the other by simply pressing a computer keyboard. Hence, a key aspect of globalisation, is technological advancements and innovations, which has boosted major economic activities.

Indeed, innovations in technology have played a key role in advancing modern organisation in the era of globalisation. For instance, the velocity of digital processing has rapidly increased, while the internet has significantly impacted the world as never before imagined (Petersen, et al., 2001). Therefore, technological innovations appear to have put everyone and everything on a fast gear (Went (2000). Indeed, technological changes have great impact on companies' demand for labour. As a matter of fact, new technologies have accelerated the pace of globalisation, while at the same time global competition arising from globalisation has stimulated advancement in technological innovations, which has spread across nations through foreign direct investment (FDI) (Intriligator, 2003; Gomory and Baumol, 2004). A majority of organisations utilise modern technologies for cost effectiveness in the domain of production and service delivery.

In recent times spoken words, faxes and computerised data can now reach the nook and cranny of the globe in a twinkle of an eye. Globalisation can therefore be synonymous with techno-globalisation. Schuch (2007) perceives techno-globalisation as a world-wide pervasion in the creation of technological knowledge and the use of innovations that has technological contents. In fact, techno-globalisation has supported social interaction as well as organisational meeting and transactions across the globe. However, rapid innovations in technology may as well come in the way of labour sustainability as constant plant retooling could result in short-term downsizings, and changes in the kind of skills required by workers in the workplace, render them redundant, thereby pushing them in most cases into long-term joblessness.

Problem Statement

There is a growing concern that in few years to come, human labour as it is known may vanish from the production chain due to the incursion of high-powered technological innovations in the age of the 4th IR.

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Research Objectives

The paper explores techno-globalization and labour sustainability in an era 4th Industrial Revolution by giving a deep context to both historical and current pertinent literatures and issues on the subject matter.

Research approach

The times constraints with which the paper was developed made it a conceptual paper that relied majorly on secondary data. It considers techno-globalization from an emic perspective. The paper also entails thick theory building, reviewing of pertinent literature from a historical context and the utilisation of natural scientific approach in analysing divergent perspectives related to the subject matter.

Theory building and thick review of pertinent literatures

The key doctrines of global capitalism, include private enterprise (self-interest), competition, profit motive and Scientific Management. The above doctrines of global capitalism will be illuminated one after another to reinforce discourse on the research focus.

The doctrine of private enterprise (self-interest)

Global capitalism, similar to original capitalism strongly belief in *private enterprises (self-interest)*, with regards to the ownership production and service outlets. In other words, every living soul is responsible to take good care of him/herself, particularly in making rational or irrational financial decisions. Hence, it is the responsibility of every individual to put in hard efforts as well as utilise all available resources towards an economic end, namely profitability (Leatt, et al, 1986; Ukpere, 2010). As a matter of fact, people are born different, as such, society should comprise of different individuals chasing their own respective self-interest based on economic freedom without being constrained by anybody (Hooker, 2004). This doctrine presupposes that self-interest is the oil of good relationships (Hilfiker, 1998). Thus, it was argued that the wealth of a nation depends on all individuals chasing their self-interested goals (Donaldson and Pollin, 1978). That is, individual in an effort to better themselves end up bettering the nation at large. Adam smith was of the view that individually, people do not plan to advance the interest of the public or understand the level to which they are advancing it. He believed that individual interest is also in the interest of the nation. In his view, an individual is naturally prompted by an invisible hand to advance a

course, which was not part of the individual's original plan. Thus, by chasing his personal goals he/she in many instances advance societal goals more effectively than when he deliberately plans to do so (Smith (Wealth of Nation), 1776, Heilbroner, 2002).

In similar vein, Klein (2003) was of the view that the invisible hand works in tandem with the natural law nature, which directs people with self-interest in a way that brings benefit to society. In that sense, the profit an individual receives from an economic endeavour is in most cases proportional to the productivity of his resources, in terms of skill and technology with which he/she can turn raw materials into finished goods. In that vein, Smith (Wealth of Nation), 1776, mentioned in Klein, 2003) noted that, it is not from the kindness of the brewer, the butcher, or the baker that people hope to get their dinner, but through the interest in their personal ventures. Put differently, the 'invisible hand' explains the fact that producers manufacture products to earn surplus income also known as profit motive.

The doctrine of profit motive

The capitalist global economy is totally based on profit motive. On the basis of this notion, profit is considered supreme and, how the earning of such profit affect goods and services as well as human beings as employees in the process of earning such abnormal profit, matters little to the executives of organisations. In other words, the key perimeter for gaging efficiency since the dawn of globalisation, is the total profit that an organisation can earn after deducting expenditures. Under the current dispensation, profit is pursued with reckless abandon (Martin and Schumann, 1997) and, most often than not, the welfare of human beings is forfeited for the sake of profit. For instance, the massive job destruction and poor working conditions of workers in recent times both in the rich and poor countries, could be linked to most organisations' tendency toward making extraordinary profits (Bloch, 1998). According to Martin & Schumann (1997), while corporate profits are increasing in recent times in double digit jumps, salaries and wages of employees continue to go down. Indeed, the chase for profit maximisation could be responsible for the myriad of inferior products and services in the market nowadays (Hooker, 2004). The craze for profit could even prompt some corporations to sacrifice human health simply to earn profit within the global economic setting. For instance, the pollution and effluent by some of the big global corporations have not been addressed till today owing to the supremacy of profit motive (Scholte, 2000). Other instances where the health of humans seem to have been ignored for the sake

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of profit, was the contention and rancour that unfolded between pharmaceutical corporations for the supply of drug that could save lives, such as ARVs for people living with HIV/AIDS. Indeed, it was palpable that power struggle involved in the tussle boils down to their craze for profit maximisation (Sklair, 2002). Hence, capitalist globalisation seems to have triggered a global economy where anything can be put aside to earn profit to remain competitive.

The doctrine of competition

The next doctrine of global capitalism is free competition. Free competition simply means that manufacturers and employees have to compete amongst themselves in an open market. In that way, an individual who can offer quality and quantity of product or services at a cheaper rate than others, have a comparative edge in the market (Leatt, et al., 1986). Hence, tough competition results in determined efforts to outperform other competitors. (Manicas, 2000). Such outlook will encourage people to think innovatively in order to perform effectively, which encourage the use of better techniques in the field of product development and service delivery (Leatt, et al., 1986). This is the only sure way to survive in an open market. The same applies to workers, as highly skilled and efficient workers are remunerated highly because they contribute towards higher performance and productivity (Leatt, et al., 1986). Competition is also based on the idea of natural selection, which infers that in nature, only the fit survives, while the unfit dies a natural death. This idea seems to resonate well with the dictum ‘survival of the fittest’ or ‘struggle for survival’, which forms part of the views of social Darwinism, which believes that in nature, the strong inhabitants survive, whilst the weak ones die off. As such, there is no need to assist the weak to survive under the law of natural selection (Klein, 2003, also see Ukpere, 2007). Therefore, in similar way, with which an entrepreneur acts in order to make profits, an employees may also endeavour to change job that gives him/her a higher income. An individual who gets a wage might out of his free volition, seek a more lucrative job in another organisation. From that perspective, a farm-employee who has meaningful job of food production from the viewpoint of others, might latter consider getting an employment in the factory by producing what people may consider as worthless plastic junks, which in most cases ends up rapidly in the garbage can. In this scenario, the farm worker has acted in similar way in his quest to get additional income like the capitalist, whose interest is to make a supernormal profit. Hence, in of their bid to earn higher income or supernormal profit, they are similarly imbued with acquisitive tendencies in their craving for higher income and profit under a

competitive atmosphere, which is very peculiar with the capitalist mode of operation (Donaldson and Pollin, 1978). From the perspectives of Schumpeter (1976, cited in Stokvis, 2001), capitalism is ever-changing, and this change comes as a result of the rivalry amongst the capitalists and the organisation created by them. The result of their competitive drive is a continuous hurricane of creative destruction according to Stokvis, (2001). From Schumpeterian (2017) perspective, there are five domains of possible competitive advantages, namely process of production, products, resources, markets, and organisation. He posited that any domain that brings a competitive advantage to a firm over its rivals, is germane to the competitive race. Therefore, for people and organisations to grow, there is a need for them to compete with others. In fact, competition within the global village has been likened to a flood tide that has engulfed everyone (Reuter 1993, cited in Martin and Schumann, 1997). The capitalist global system has prompted organisations not just to compete locally but globally. For organisations to survive within the global economic setting, they must not only focus on domestic competition but should be able to compete globally. Competition within the global village is not merely in terms of product quality, prices or services, but in all areas that brings competitive advantage to the firm (Stokvis, 2001).

Knowledge as well as information has a powerful role to play when it comes to competition, because it helps firms to become well-versed in the competitive tussle taking place within the global village. Awareness is obtained through information required for innovation that could improve the competitive drives of a particular organisation above others. Hence, information that results in a better wealth creation, is utilised for innovative activities in the rivalry between firms (Stokvis, 2001). Global competition, for instance, has made some corporations to utilise innovation, based on information and knowledge, in developing some array of technologies to increase their competitiveness. Hence, a comparatively small business enterprise with few workers, assets or sales volume, could indeed hold a leading position as a distributor of vital goods and services owing to its superiority in the use technology more than its rivals (Skclair, 2002). As aforementioned, global competition seems similar to the process of natural selection (Dennett, 1995) where the not so strong fizzles away and the very strong remains. In that case, any corporation that is unprepared and unaware to respond to the current global competition, will end up losing its market share and profit within a global economic platform. Hence, in order for a company to subsist, it is crucial for it to be more flexible in adapting to the dynamics of the current competitive environment (Kirkbride, 2001).

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The current global competition has triggered new corporate ways of achieving efficiency such as merger and acquisition, re-engineering, downsizing, lean manufacturing, and outsourcing, all of which are directed towards job destruction. Unemployment has worsened in many regions as many corporations are downsizing in response to stiff competitions within the global economy (Slabbert, 1996; Scholte, 2000). More than that, the ever-increasing company mergers and acquisitions (M&A) have in most case resulted in huge job losses. The activities of M & A have significantly flourished in response to global competition. In the pharmaceutical industry for instance, the merger of Glaxo and Wellcome caused about 11% contraction of the workforce. Another example was the merger of Pharmacia and Upjohn, which led to the closure of 40% of their plants (FT, 7 March 1996:1 cited in Scholte, 2000). The merger of Chase and Chemical Bank in response to global competition resulted to the termination of 12000 workers job, due to redundancy (FT, 1 April 1996:23, Scholte, 2000). The current outlook seems to make some section to conclude that global competition has made most organisations to become leaner and meaner (Harrison, 1994; Scholte, 2000). Now it is time to progress to the doctrine of scientific management.

The doctrine of Scientific Management

The capitalists' quest for new techniques of production, their interest in resources accumulation and overambitious tendencies, activated a powerful interest in science and technology. From that perspective, Leatt, et al. (1986) noted that the developments made people to think that the progress confronting humanity was endless. In similar vein, Queen Victoria of England during an excursion in 1851 to have a look at some of the new scientific discoveries, described what she saw in her diary as follows: "*June 7. To the exhibition: went to the machinery part, where we remained 2 hours, and which is excessively interesting and instructive, and fills one with admiration for the greatness of man's mind, which can carry out and devise such wonderful inventions, contributing to welfare and comfort of the whole world...we are capable of doing anything. Here indeed was the concrete evidence of what capitalism could do. Here were displayed the means by which economic growth was being achieved, how production was expanding to increase the nation's wealth*" (cited in Donaldson and Pollin, 1978:28). These renewed enthusiasm towards science and technology, triggered what was considered as 'Industrial Revolution'.

The Industrial Revolution, which commenced around the late 18th and early 19th century in England triggered a major shift on how labour is managed and utilised in the field of production. What actually transpired was that the steam engine irreversibly transformed the workplace, and turned both horse, buggy and man, into less sought-after commodities, in spite of the warning of then eminent industrialist, Robert Owen (1771-1858), who laid emphasis about the pre-eminence of human beings in the field of production. According to him, the return on investments in human beings are far greater and better than investments in machineries and equipment. As such, managers must put workers first in all they do and provide them with information because an enlightened employee is a productive employee (Prasad, 2004).

Opposed to the position of Owen, other authorities such as Charles Babbage (1792-1871), who was the inventor of the earliest computer, were focussed on developing ideas relating to the efficient use of human resources in the workplace. In his treatise, 'The Economy of Machinery and Manufacturing', he emphasised the need to measure work activities, considers efficient use of tools and machines, specialisation, proper ways of remunerating workers and a need to discover new methods of minimising cost (Bedi, 1998). In fact, Babbage was of the view that technological advancement in production can be gauge by the level at which the task of each employee is simplified and harmonised with the task of other employees, in order to reduce the price companies, pay for employing workers as well as the necessary time to learn each job, so as to weaken workers' bargaining power in order to reduce the wage bills of organisation (Giddens, 1995).

Max Weber (1864-1920) considered the ways various profit ventures and non-trading businesses work and postulated that '*bureaucracy*' is the best way to manage them (Kumar, 2000:40). Following that, the world witnessed the dawn of the '2nd Industrial Revolution' around the middle of the 19th century and some periods within twentieth century. In fact, while steam engines triggered the '*First Industrial Revolution*', the second one was activated when electricity and oil were both discovered (Slabbert, 1996), which brought about major new inventions and developments. The introduction of machinery in production ushered in the factory system of organising industrial activities and ownership of big businesses moved from a single entrepreneur to joint stock companies, which brought about some new breed of capitalists and factory workers. This period also witnessed the

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replacement of the rule-of-thumb with more scientific approaches to management (Kumar, 2000).

Although others might have contributed but the most famous contributor to scientific management was Frederick Taylor (1911), a mechanical engineer. Taylor believed that company's aim at high productivity at a reduce cost of production, as well as employees' hopes for higher remuneration, could be harmonised by examining every single parts of a given job in order to establish the most effective ways of doing that job by chosen the best employee for a given job, and training him/her on one best approach to execute task by providing additional incentives for higher performance (Bergh and Theron, 2005). In fact, Taylor's scientific approach of managing workers was greatly accepted under the factory system and popularly referred to as Taylorism. Scientific Taylorism was propounded with a view that human beings are economically rationale. The concept of Taylorism was also based on the precept that human beings are innately lazy, unpredictable, and incompetent, and as such, only monetary rewards can induce them to perform, while their weaknesses should be addressed through standardised training (Bergh and Theron, 2005). In a nutshell, Taylorism believed that scientific methods can be effectively applied in the management of people in the workplace (Bedi, 1998)

Taylor initially believed that his scientific management approach would lead to 'mental revolution' for both the managers and workers. Nonetheless, his prediction of mental revolution failed woefully, in spite of the contribution of his ideas to management thinking. Apart from Taylor, other noteworthy contributors to management in scientific ways, include authorities, such as Henry Fayol, who conceived the idea of a universality of the management principles, Henry Gantt, who examined the behaviour of people within the workplace, Frank & Lillian Gilbreth whose work contributed significantly within the domain of time and motion study, and Harrington Emerson whose treatise advocated for efficacy and proper standard in the workplace (Kumar, 2000). As aforementioned, Taylorism was latter objected by the industrialists, trade unionist, and the general public. The anger towards Taylorism was so terrible to the extent that Taylor was summoned by a special US congressional committee in 1912 to defend his scientific management (Worsfold, 2004).

Reflecting on the opposition against Scientific Taylorism, Bergh and Theron (2005), noted that the opposition was that it was perceived as another form of

workers' exploitation, which failed to take the individual psychological needs of employees into consideration. Taylorism was also perceived to be promoting job destruction as workers became narrowly focussed on a particular job, which gave them no room to change to alternative job. This outlook impacted negatively on their own initiatives and growth. In concordance with the above, Kumar (2000) noted that workers were demoted to become an appendage of the machines in the factories of production. Their work became strictly narrowed to their specific areas of specialisation. It negatively affected their pride and involvement at work. Hence, Taylorism's approach dehumanised the workers as they were demoted to humans without emotion and a mere production factor similar to the machine. As a matter of fact, Scientific Taylorism terrorised the working man and turned him into a simple impersonal cog in the machine of production, merely trained to undertake only what he or she is good at, and forced to focus on that throughout his/her work life, while managerial function is at different location in the organisation (Worsfold, 2004). For the fact that employees were not allowed to initiate ideas as well as show skills, but expected to work exactly according to supervisor's specifications, their initiative became marred, resulting in boredom and monotony, which finally triggered an industrial action by unions (Kumar, 1993:48). With regards to the flaws of Taylorism, Beundex (cited in Kumar, 2000) noted that as the activities of capitalists expands, the craftsmen regressed; as the common people are brought low, the masters are highly elevated, and, as such, there exists no human connexion between the capitalists and their workers. As a matter of fact, Taylor himself was sincere to put forward three reasons for the outburst towards scientific management, namely 1) workers perceived that a rise in productivity led to increase unemployment; 2) the system led to employees' restriction of their contribution and outputs, also known as systematic soldiering; 3) the routine work activities adversely affects initiative and innovation. The displeasure and anger towards Scientific Management led some experts such as Eton Mayor to start rationalising other better way to manage people in the workplace, which birthed the "Human Relation Approach" of management. However, for the fact that this section is focussed on the scientific management as a doctrine of global capitalism, one will be guided not to dabble into entirely a different topic but focus on scientific management within the context of techno-globalisation, which prompted some experts to paint a gloomy picture of a world without work.

The soothsayers of the 4th Industrial Revolution and projection of a grim future for labour

As far back as 1995 Jeremy Rifkin painted a gloomy picture of the future of labour in his famous treatise, “The end of work”. Rifkin (1995) forewarned that before the next century mass labour in the marketplace may disappear in almost every advanced country across the globe. He further warned that the coming revolution would not only affect blue collar workers but white-collar worker as well. While buttressing his point, Rifkin used the USA as an illustration, where 33% of the general employees worked in the production sector within the 1950s. That number declined to 30% around 1960s and came down to 20% around the 1980s and diminished further to about 17% in 1995 (Rifkin, 1995). Compared with Canada, which recorded 23.5% of the labour force in manufacturing in 1966, which declined to about 17.2% around 1986, and came down further to 14.7% around 1991 before finally coming down to 14.2% in 1996 (Statistic Canada, cited in www.ucs.mun.ca/~alatus/2801/FutureofWork.html). Rifkin further drew the world attention to the Moravec’s Universal Robots, which is a new technological invention, predicted to replace the human mind altogether (Rifkin 1995). From that vintage point, Leontief Wassily (as seen in Rifkin, 1995) postulated that the special role of human beings as a key factor of production, will certainly shrink in the manner the role of horses in farming initially declined before it was discarded when tractors were introduced into the farms. Rifkin (1995) posited that for certain individuals, notably engineers, scientists, and owners of industry, a world without work will usher in a new epoch in the history of mankind where humans are finally freed from a life of laborious work and monotonous boring activities. However, for other individuals, a society without work invokes a perception of a gloomy future of high-level global joblessness and mass destitution.

As a matter of fact, global job losses is burgeoning since the dawn of globalisation (Ukperere & Slabbert, 2009). The population of those who have lost their jobs have sharply increased as multitude of employees who enter into the labour force suddenly realised that they have been displaced by the introduction recent technological innovations, in the form robotics, super computers, telecommunications, and leading-edge technologies, which has encroached into government, production, finance, retail, agriculture, as well as transportation (Rifkin, 1995). More than that, Rifkin (1995) was of the view that our world has speedily been divided into two conflicting forces, namely an info elite who are in charge of and dominating the high-tech worldwide economy; and on the other pole,

a growing population of perpetually sacked workers, who with little hope or prospects of getting reasonable job in an aggressively computerised work space. He pointed out that, from the origin of civilisation, humans' daily subsistence had been organised, to a great extent, around what is known as work. Nevertheless, in recent times in the history of mankind, human labour is steadily being removed from major economic activities. Hence, work, as people know it, may likely be a thing off the past in a majority of the advanced nations of the world (Rifkin, 1995 cited in The Job Letter, 2003).

The origin of the current trend was initiated when big multinational organisations decided to spend over a trillion dollars around 1980s and at the beginning of 1990s on telecommunication satellites, computers, robotics and other automated devices (Shah and Mehta, 1998). Those massive investments are beginning to materialise in recent times, which has brought about huge cost reduction, higher productivity and profitability. Nevertheless, the new trend seems to be producing some calamitous effects on labour. A notable case was when the first interstate Bankcorp reorganised its business operations to accommodate the current logics, which led to the destruction of about 9,000 jobs. Another example was when Motorola took the decision to re-engineer its manufacturing, as well as admin and distribution structures to become leaner and slimmer, over 10,000 workers lost their jobs in 1998. Other organisations such as GTE, Scott Paper, IBM, NYNEX Corp and Arvin Industries have also pursued similar aggressive labour elimination policies within those periods (Rigdon, 1994).

The growing amount of job destruction linked to corporate downsizing and recent work patterns such as working from home, part-time, flexi-work and self-employment, has multiplied the profitability of corporations from one perspective, but at the same time led to a global economy that destroys jobs (Shah and Mehta, 1998). Some big companies that have adopted modern technological innovation are suddenly beginning to lose their talented employees. The current automation, corporations and managerial approach are set to force a majority of blue-and white-collar employee into impermanent jobs as well as unemployment positions (The Job Letter, 2003). Computer aided technologies have diminished the desire for human labour in all production activities. For instance, as far back 1991 and 1995, IBM eliminated 85,000 jobs due to the introduction of some high-powered technology. In the same period AT&T destroyed 83,000 jobs, Nynex eliminated about 22,000, while Kodak removed about 14,000 jobs (Head, 1996, cited in Matthews, 1998). There seems to be no end in sight in the introduction of new cohorts of high-level automated technologies into an extensive range of job

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circumstances. It was predicted then that within a decade not more than 12% of the labour force in USA will be working in the factory, and that by the year 2020, a majority of the global labour force may not be utilised in factory work any longer. It was then predicted that within a quarter of a century, blue-collar as well as mass assembly-workers would almost disappear from the manufacturing lines (The Job Letter, 2003).

Based on huge data, Robert Lawrence of Harvard and Paul Krugman of Stanford, have forewarned that the apprehensions generally express around the 1950s and 1960s that worker in industry would be out of job due to automation is beginning to come into reality (The Job Letter, 2003). In concordance, Peter Drucker, (cited in The Job Letter, 2003) averred that the fading of human labour, as a major production function, will emerge as the final onslaught of capitalism. For instance, US steel, which is the biggest integrated steel company with 120,000 employees in 1980, had manufacture approximately the same quantity of steel utilising merely 20,000 employees after adopting automation in the company in the 1990s (Kenney and Florida, 1993). The current increasing rate of corporate re-engineering, job destruction through the introduction of technology and falling income, is reflected in the current stagnant goods that lie in warehouses and slow pace of growth, which successively triggers renewed calls for re-engineering and downsizing.

Re-engineering

With regards to reengineering, previous work titles and organisational structures such as divisions, departments, unit, groups, etc., becomes irrelevant and outdated. What is crucial for managers when taking a decision to reengineer their workplace, is the current market demands and the influence of modern technological innovations.

Currently, technology such as telecommunication and computer systems, play a major role in organising business operations. Re-engineering places emphasis on the necessity to streamline work methods in other for organisations to achieve their goals in an effective and cost-efficient manner. As a matter of fact, re-engineering was originally considered as an approach of restructuring the organisation, with the aim of doing more things with less resources by discarding the old-fashioned ways of achieving organisational efficiency, which merely placed emphasis on work simplification and division of labour or replacing employees with machines (automation). Different from previous ways of achieving efficiency, re-engineering is focussed on using high powered electronic data processing and communication

technological innovations with an intension to cut down the number of employees by simplifying the organisational chain of command through the creation of elastic labour forces that is capable of responding to fast-changing organisational requirements.

As Meiksin (1996) observed, re-engineers forbid engineering as long as it linked with work simplification and welcome it as long as it linked with sophisticated technology and computerisation. However, it is pertinent to mention that the main reason for corporate re-engineering is for the purpose of achieving efficiency by reorganising tasks in order to provide better services, and increased productivity at a reduced cost. For instance, previously middle managers were responsible for co-ordinating the top and lower level of the organisational pyramid. Nevertheless, due to the incursion of new technologies, those works have become redundant and eliminated (Turban et al., 1996, cited in Shah and Mehta, 1998). Hammer and Champy (1993) were of the view that any organisation considering re-engineering must execute it in a big scale and not in a small and cautious manner because re-engineering enables an organisation to overcome inefficiency as well as outdated ways of operation that does not guarantee survival (Rosenberg, 1993).

Indeed, one remarkable example of organisational re-engineering was IBM's Credit Corporation that used to offer credit facilities to IBM clients. Previously, specialists were in charge of each phase of the operation of the business. For instance, a particular division of competent office worker and supervisors register the credit applications, and another division organises a special condition for specific clients; and another division takes decision on the rate of interest; the fourth unit capture all the data needed for the quote letter, etcetera. From this outlook, IBM Credit Corporation can be considered as massive assembly line, which takes many weeks to transmute a given set of forms into another. Nevertheless, currently, one single worker, known as a deal structurer, can carry out the whole operation within a twinkle of an eye, and only in unusual circumstances, should an expert be approached for an advice. In that case, the deep-rooted assembly line turned to a software package in a computer on each stage of the transaction, and most of the knowledge and experiences of the previous system clerks and supervisors have been digitalised. In fact, the most shocking aspect was that outputs at IBM's Credit Corporation increase by not merely 100% but skyrocketed by 10,000%. In other words, one single deal structurer has replaced every hundred workers and supervisors that were previously employed at

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IBM's Credit Corporation (Davis, 1996). Certainly, re-engineering amounts to an effort to restructure corporations for the Information Age.

Of course, re-engineering can be regarded as a powerful management apparatus. Slabbert (1996) observed that the revolution taking place in traditional organisational structure as well as rising productivity levels and supernormal profit margins could be attributed to re-engineering activities in most corporations. According to the Wall Street Journal (1993b, cited in Slabbert, 1996), the 2.8% increase in output in 1992 in the USA could be linked re-engineering. The focal point of re-engineering according to some experts was to restructure the corporate designs in such a way for the organisation to willingly embrace supercomputer. Consequently, the previous managerial hierarchies in organisations are compressed and certain jobs are eliminated. As worker are prompted to become multi-skilled and administrative structures destroyed, productivity increases become inevitable. Regrettably many corporations seem to have abused the concept of reengineering, by deliberately destroying jobs in order to make supernormal profit for their shareholder (Reh, 2007).

It is germane to clarify that re-engineering represent a business term such as 'trimming the excess fat'. This explains reason why any pronouncement that an organisation will embark on re-engineer signals the termination many jobs. A very good illustration was when IBM terminated the employment 63,000 workers when the management decided to re-engineer the corporation in 1993. Another good example was Sears Corporation's destruction of 50,000 jobs when they reengineered. Also, Boeing eliminated 28,000 employees during their reengineering; Digital Equipment destroyed about 20,000 jobs during their 1994 re-engineering. Lockheed Martin retrench about 15,000 job holders in 1995 as a result of their reengineering. More than that, AT&T discarded 40,000 employees in the course of their re-engineering around January 1996. In other words, approximately 216,000 jobs were destroyed in merely six corporations within a period of three years in the USA due to reengineering. It is pertinent to mention that these job eliminations taking place are not simply discharges of regular production line employees as a result of short-term falls in demand, as both demand and production have increase astronomically. In addition, these are not works that have been moved to China or India in search of cheaper labour, but these jobs that have disappeared overnight, include white-collar and highly paid jobs with many at managerial level (Davis, 1996).

As a matter of fact, even managers in charge re-engineering are in many instances wary of their own jobs since those in middle managerial hierarchy are in

most cases the targets when an organisation decides to embark on corporate re-engineering (Meiksin, 1996). In similar vein, Davis (1996) observed that the fear of a majority of board members in most organisations, including senior managers and previous CEOs of production organisations, suggested that re-engineering has not merely destroyed the jobs of younger employee, which have no rank in the organisation and have better prospect elsewhere, but has as well destroyed jobs at senior managerial level. Most of those managers have invested all their lives in the corporation with the hope of a fulfilled retirement at the ripe age. All these like one are pushed back into the labour market as a result of reengineering in their respective organisations. In this regards, Meiksin (1996) noted that as the craze for re-engineering continues to grow, many corporations have come to realise that in their desire to destroy jobs in order to become more competitive and flexible, they have ended up losing key experienced professionals that are difficult to substitute as well as costly to hire on contract basis.

In spite of the fact that a majority of the reengineering lead to a rise in corporate shares/stock (Martin and Schumann, 1997), it is destroying a key component of enterprise existence, that is, employment creation. The scenario prompted Rifkin (1995, cited in Slabbert, 1996) to predict that corporate re-engineering is capable of destroying about one million to two million five hundred thousand jobs annually. According to Attali (1991, cited in Slabbert, 1996), the impact of re-engineering was mostly felt in the production industry, where machines have now been recognised as the new working class. Undeniably, the decrease in production jobs have come a long way, particularly from the times managers started replacing humans with machines in the workplace. For instance, around 1950s, about 33% of the total employees in the USA were working in production companies. However, currently below 17% of the workforce is employed in production companies (Drucker, 1993; Job Letter, 2003). In addition, in spite of the fact that production jobs have dropped, productivity seems to have grown. For instance, yearly production, which was increasing at approximately 1% per annually at the start of 1980s, has skyrocketed to over 3% as a result of re-engineering (Shah and Mehta, 1998). As noted by Flint (1993), beginning from the year 1979 to the year 1993, production has accelerated by 35% in the productive industry, at a time the labour force has declined by 15% in the same industries. More than that, it has been projected that 25% of the USA workforce will be on impermanent employment, and that the figure will rise to more than 35% in few years to come (Vogl, 1995). Some expects contended that in some nations impermanent jobs will exceed the

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USA figure (Shah and Mehta, 1998). Considering the current trend, Slabbert (1996:44) succinctly posited:

“If retrenchment and re-engineering are viewed as processes with parallel results, the logical conclusion is that unemployment will dramatically increase during the next decades. The concept of the workerless world is receiving increased attention in diverse application fields- indeed, a world without work is often considered to be the logical end result of the forces, which have been set in motion, and which are, for all purposes, not reversible in nature. Protesting voices have been raised, but conclusive evidence mounts that the trickle-down effect is, indeed, a trickle and not the required flood, which is necessary to balance the forces at play in the equation”.

Indeed, it seems as if re-engineering has simply become another ploy by executives to manipulate and control engineering (Meiksin, 1996). As a matter of fact, engineers have over the years made efforts to improve efficiency in organisation. Taylor’s studies on ‘time and motion’ are notable examples where engineering made earnest efforts to alter production lines so as to become more efficient. Conversely, re-engineering has prompted a new area of engineering. However, what seems to separate it from the previous engineering fields, are the massive increases in efficiency at the expense of discharged worker (Davis, 1996). At present, re-engineering seems to have become an ever-present term, and has infiltrated into other field, such as customer care and marketing, and what is noticeable is that it is as well killing jobs within those domains. From that above stance, Harmer and Champy (1993) have cautioned:

“It would be nice to say that re-engineering is a win-win program that leaves everybody better off; it would be nice but it would be a lie; re-engineering isn’t to everyone’s advantage...some people will lose their jobs and some workers may be unhappy with their jobs”.

In concordance with the above Slabbert (1996) opined:

“The concept of the lean-production method of management, first introduced by the Japanese, in conjunction with the just-in-time principle, is making an impact in every industry. These phenomena are actively altering the traditional methods of business management and, in the process, millions of jobs and hundreds of jobs categories are eliminated”.

Downsizing

Around 1996, the concept of downsizing, which emerged from reengineering concept, became very popular, and led to big companies declaring huge cut down

of their labour force. Most of the downsized workers do not, in most cases, get new jobs with the previous salaries they are paid before downsizing. As a matter of, older workers are worse affected as they may have to wait for a longer time before getting any other job after being downsized. A majority of the organisation that have embarked on downsizing, in most cases, substitute senior employee in most of those job positions with poorer paid employees. In that case, they have substituted more experienced older worker with less experience and younger workers who are favourably dispose to lower pay packages. Under such circumstances, only executives receive very fabulous pays (Crotty, 2006). This trend has tendency to expand inequity in most societies. More than that, there is a strong possibility that many of the employees that have been downsized, may never recover again from financial and emotional trauma. In actual fact, research have revealed that even retained worker who survives the axing, also endure emotional and health challenges, as a majority of them perceive members of their workplace as family members and feel a sense of lost without them. This has a de-motivating effect on the surviving employees, leading to low morale and disloyalty. As a matter of fact, the distrust between management and employees have accelerated in recent times, as worker who survive have tendency to defraud or sabotage the organisation. More than that, a majority of the workers who survive the downsizing are in most case engaged in very long hours with heavy workloads, to the extent that some regret their retention at all by the company (Tripod, 9 January 1999). In recent times, with a growth the high-tech industries, notably in the telecommunications and computer companies, downsizing or rightsizing (as some may choose to call it) have, undeniably, accelerated the pace of job destruction, which has not abated since the dawn of the Fourth Industrial Revolution.

The dawn of the Fourth Industrial Revolution and the future of labour

The dawn of fourth industrial revolution (4th IR), which is also sometimes known industry 4.0, is marked by an accelerated deployment of digitalised technology and cyber-physical systems (CPS) by corporations (Liu & Xu, 2016). The concept of 4th IR was first initiated in 2016 during the World Economic Forum (Peters, 2017), by Professor Klaus Schwab. While giving context to the phenomenon, he stated:

“We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the

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response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society”, (Schwab, 2016).

For more than two hundred years, since the advent of the Industrial Revolution, the world economy has been progressing very fast as a direct result of new technological inventions. For each new technological advancement, there is a positive effect on productivity, economic growth and opportunities for different types of new businesses. In fact, the 4th IR entails the alteration of all production processes within an organisation. Such alteration is made possible through the fusion of numeric as well as the internet in the field of production (Stăncioiu, 2017). In other words, the current 4th IR is a product of a blend of diverse technological innovations, such as cloud computing, machine learning, nanotechnology, biotechnology, big data and so on in production activities (Frederick, 2016). In the words of Schäfer (2018), the 4IR, also referred to as the digital revolution is a distinctive blend of human capabilities and technological innovations through algorithms, which are self-learning, robotics, self-driving cars, big data, just to mention a few. Kessler (2020) was of the view that the 4th IR is a phenomenon of progressive scientific sagacity, which promises a change from outdated methods and approaches to a seamless data-supported outcomes. In other words, businesses and workers from the analogue-age. In order words, businesses and workers must not be restricted under the current dispensation in following the lanes toward their own progress.

Mokyr (1997) observed that a true Industrial revolution is not merely in the area of technological advancements but entails innovations that is capable of making a profound difference in organisations. It is pertinent to note that the 4th IR and industry 4.0 are in most cases used interchangeably to mean the same thing. In spite of the fact that the two ideas are closely associated, they do represent two different concepts. While Industry 4.0 originated from Germany in-between 2011-2015, with a focus on digitalisation in production, the 4th IR, conversely, is emblematic of major shifts and changes in political, social, and economic spheres (Nicholas, 2019), and has been triggered by technological innovations.

The 4th IR has unique features, namely, smartphone takeover almost every aspect of business activities; Knowledge generation will be made possible through big data; robotics may likely replace many human routine activities in the workplace; and mass consumers spread across the globe will be attracted (Hyun

Park, Seon Shin, Hyun Park, & Lee, 2017). Hyun Park, et al. (2017) further observed that the 4th IR took the globe by surprise. In similar vein, Davis, (2019) noted that the current revolution is momentous and posited that it will create new prospects for corporations and their workers alike, through the use of artificial intelligence, the internet of things and high-level computing as well as effective optimisation of systems within the organisation (Davis, 2019). The current 4th IR is definitely going to affect how people carry out their daily routine in organisations. The key new trends, include digitisation and automation, which are bound to affect the ways people relate with machines, while engaging with their works. This will as well influence how managers manage employees in organisations. The new trend will certainly lead to the loss of many jobs as well as create new ones within industries (Hirschi, 2018). The 4th IR is bound to trigger a major shift in the future of jobs roles within organisations. As a matter of fact, the advent of new jobs will displace old ones (Park et al., 2017). Moreover, the requisite skills-set for jobs will certainly change and affects current and prospective employees. The current development will certainly affect labour relations and human resources management due to the new relationship and interaction between humans and machine. This has certainly triggered a new uncertainty in organisations as far as job security is concerned (Pereira & Romero, 2017; Nam, 2019). Now the big question is whether technological innovation in the current 4th IR leads to job destruction or mass unemployment.

The answer to the above question is quite diverse. For instance, the research by Kristina, Matuzeviciute, and Karaluite (2017) found no link between technological innovation and joblessness in countries in Europe. The above view was supported by Liso and Leoncini (2011) who observed that technological innovation creates new avenues for higher earning for skilled employees owing to a rise in demand for goods and services. Hence, as Vivarelli (2014) claims, technological innovations lead to numerous market compensation mechanisms, such as new ventures, new machineries, lower prices and poorer wages. The foregoing is not far from other theories (Piva and Vivarelli, 2005) that spoke about compensation mechanisms, which stems from prices and new demands that ultimately absorb unemployment. The above is not very far from the position of Say (2009) and Schumpeter (2017) that advancement in technology brings about product and process innovation, which, ultimately result in employment creation. Also, the findings of Marcolin et al. (2016) that, technological advancement has a positive effect on job creation seems to reinforce the above views that technological progress leads to job creation

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instead of destruction. In between the protagonists and antagonist are experts who chose to seat at the middle point. For example, the research of Harrison et al. (2008) as well as Vivarelli (2014) distinguishes between two main aspects of innovation, namely product and process innovations. In their view, while product innovation offers new products to the marketplace, which motivates new demands and brings about positive connection between technological innovations and job creation (Vivarelli 2014; Marcolin et al. 2016), process innovation triggers an adverse effect on the workforce owing to the substitution of labour with new machineries and tools that increases production and efficiency in organisations (Peters 2004; Pianta 2004; Vivarelli 2014)

Also seating on the fence, Alonso-Borrego and Collado (2002) were of the view that technological advancement is a major source of job creation as well as destruction. There are also perceptions that technological advancement favours the developed as opposed to the developing nations.

On the other side of the pole are those who are adamant that technological innovations in the era of 4th IR is destroying jobs, and as such causing mass unemployment. For instance, as Feldmann (2013) study showed, technological innovations increase joblessness in the short-run. In fact, Wood (2004) and Feldmann (2013) argued further that technological innovation has the capability of increasing unemployment. In the same vein, Piva et al. (2006) posited that technological innovations have negative impact on skilled as well as unskilled labour. According to the Marxist thinking, it is implausible to conceive that newly created labour-saving technologies would create enough jobs to absorb the number of workers who have been displaced by machine (Wood 2004). Hence, it is simply a fact that labour-saving technological innovations does trigger technological unemployment. Certainly, since technological innovations enables organisations to manufacture at lower costs, the immediate effect of innovation is technological joblessness. This position seems to contradict Schumpeterian argument that technological advancement leads to product and process innovation that logically results in the creation of jobs (Ziemnowicz, 2013).

Hence, politicians, economists, and technology gurus have unanimously accepted that the world is facing an era of technological unemployment. The sudden change in opinion is mainly owing to automation that is capable of removing human beings as a factor of production. This new position diminishes the compensation effects, which enabled traditional technologies to become sources of job creations. The Classical schools of thought that technology accelerates unemployment, was also of the view that technology will not cause long term

joblessness in a society (Khan, 2016). However, there are now constraints to the classical mind-set that technology cannot cause long term unemployment. The initial perception was that technological innovations cannot cause long term unemployment (The Economist, 2018) based on the ‘Lump of Labour’ theory. Nevertheless, the recent outlook of rising productivities in manufacturing, accompanied by declining employment in some sectors challenge this theory (Waters, 2014). For instance, a professor of economics at Stanford University, Nick Bloom, noted the above as the reason for a major change in opinion on technology as a major source of unemployment. Former American President Barak Obama has added his voice to the current growing debate and argued that technological innovation is a primary threat to job creation. In his view: *“The next wave of economic dislocations won’t come from overseas. It will come from the relentless pace of automation that makes a lot of good middle-class jobs obsolete”* (cited in Rotman, 2017). Based on the above, there is a need for society to consider new mechanisms to sustain labour in the 4th IR in the face of technological job destructions.

The way forward towards labour sustainability and conclusion

Right from the beginning of capitalist expansion it is very obvious that the owners of capital intend to achieve maximum profit at minimum production cost. From the first Industrial revolution till the current, the capitalist mode of operation remains the same with the exception that the Fourth industrial revolution may witness a total replacement of human labour with machines, culminating in the end of work, which amounts to unsustainable labour. In order for labour to be sustainable, it may be worthwhile to proffer the following recommendations:

1. There is an urgent need to regulate technologies that eliminates job faster

In order for the government to guarantee lasting employment, there will be a need to regulate some of the technologies that eliminate jobs faster and cause havoc for the working class. Technology should enhance the well-being of the working class and not eliminate them entirely from the production chain. In other words, technologies, which dehumanise the working man and render him obsolete should be controlled. Hence, technological innovations should be created to serve and support the working man and not the other way round, because it is very unjustified for what is created to dominate the creators. Higher taxation on technologies that destroy jobs faster could be one way of regulating such

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technologies so that their prices can skyrocket. When that is done, human labour would become more valuable, and expensive technologies and automation would become less profitable. Moreover, before initiating new technology into the organisation, management must endeavour to make sure that there is an alternative in the organisation to deploy workers that have been displaced by technology. More than that, the capitalists and philanthropists sponsoring the development of technologies should also endeavour to give back to society in the form of social responsibility of business to workers.

2. A policy and commitment towards the creation and sustainability of decent work for economic growth by public and private organisation across the globe

There is an urgent need for a policy and commitment towards the creation of more decent jobs through public and private partnership across the globe for economic development and growth. In that case, instead of flexibilization of employment relationship, efforts should be made towards the creation of and sustenance of permanent employment. Therefore, the public sector must work in harmony with the private sector to ensure that more jobs are not destroyed but rather created. Hence, government and private organisations' interests should be directed more towards job security and creation. No longer should the working class bear the brunt of organisations' craze for abnormal profits. Hence, any policy that is opposed to the above ideals should be critically evaluated as well as curtailed. Instead of pushing workers back into the labour market through job destruction, many of them can be trained to become entrepreneurs and small business owners to start their own businesses and become employers of labour. This will certainly address the issue of rising unemployment in many nations across the globe as well as help to spur new phase of sustainable economic development and growth.

3. A need for more ethical and emotionally intelligent leaders and captains of industry

Finally, there should be a need for more ethical and emotionally intelligent leaders and captains of industry. An ethical leader should be someone who strives towards the general public goods. An ethical leader should be a moral leader and not someone who will resort to job destruction at a time when the organisation is still making super-normal profit. An ethical leader and captain of industry will

always work towards the benefit of the wider stakeholders, such as the employees, communities, suppliers, the government, etc., rather than working only in the interest of shareholders. An ethical leader is as well an emotionally intelligent leader, who will consider the plight of employees before taking a decision that affects them. More of such leaders are needed in organisations in the current era of globalisation and the 4th IR. Such leaders are level five leaders who take the interest of employees into consideration above their own selfish interests, and considers the emotions, feelings, and moods of the people in the organisation in everything they do. Such leaders rely more on participative approach and consult widely before introducing any new course of action into the organisation. In fact, leaders with empathy, compassion, patience, understanding and love for humanity will be the best authentic leaders to stir the ship of industries and nations in the current 21st century and should be desired and headhunted to lead in the current dispensation. Such leaders will see to it that the sustainability of labour is guaranteed.

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