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Technological Social Responsibility - Reviewing the Challenges of Technological Adoption for Upgrading Skills and Enhancing Fluid Labour Market

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Abstract – Advancements in technology creates a new work environment and leads to many changes from developing new job roles to mass unemployment. However, for the present study the positive effects of technology are reviewed. Transfer of technological knowledge is crucial in developing the workforce and organization as a whole. This paper attempts to study the challenges to technological adoption. The paper is distributed into different sections analyzing the impacts and changes caused due to development in technology in labour markets, CSR (Corporate Socal Responsibility) activities, innovation and providing competitive advantage to the organizations. A conceptual model is developed based on the literature reviewed which brings out the various aspects that link technology advancement and its impacts in creating technological social responsibility. Further areas of study in this field are also suggested.

Keywords: Technological Social Responsibility, Technological Adoption, Upgrading the Skills, Fluid Labour Market

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1. INTRODUCTION:

Innovation has been an essential component for organizations to have a competitive advantage. Innovation and creativity is a part of the organization which are propagated through the employees of those organizations who exclaim that they possess a superior competitive advantage over others (Tellis, Prabhu & Chandy, 2009). Oldham and Da Silva (2015) studied the impact of technology on generation and implementation of creative ideas in the workplace. The researchers first argued that the employees were influenced by three variables that determined the generation of creativity. Initially, factors such as access and exposure to new and diverse information, full engagement in the work role, and the experience of socioemotional or instrumental support were assumed to be required for the workforce to engage in creativity and innovation. It was seen that along with other aides such as sponsorship and support; digital technology had a greater impact on employees with regard to creativity and innovation.

E-learning systems provide a diverse range of topics and methods for learning and are cost and time effective. They have been proved to be beneficial for both the organizations and employees, as a lot can be learned within a short period (Turvey, 2010). A model connecting the relation between the e-learning systems and job outcomes was proposed by Chen (2010); from the study, it was found that perceived usefulness and user satisfaction in using the e-learning systems to upgrade the employees' skills were important. Also, the E-learning systems' perceived usefulness and satisfaction as the determining factors of employees' attitude towards the adoption of new technologies. Development in technology and human resource occurs simultaneously. A model developed by Hughes (2010) proposed 'people as technology' model and the five values that governed them were location, use, maintenance, modification, and time. Along with these five values, cognitive, behavioral, and/or cultural perspectives of the organization were an integral part of the model. The results from the study proved that these factors provided motivation to the employees to adapt to technological changes and to be proactive in their respective work areas. The integration of technology and organizational values along with the five principle values suggested that technology could help people to transform and help create competitiveness within the organization and indirectly help the growth of the organizations.

The adoption and use of information and communication technologies (ICTs) have become vital methods today for companies to enhance their competitiveness and is particularly crucial for small scale enterprises to be ahead in the competitive markets (Lee, Lim & Pathak, 2011). Adoption of Information and communication technologies in small scale enterprises impacted the enterprises positively. The changes observed were that both the organization as well as the human resources progressed with the implementation of the technologies. The employee skills and creativity were enhanced, HR policies were suitably changed and the employees were encouraged to develop and come up with new ideas; on the whole the performance of the organization was increased (Alonso-Almeida & Llach, 2013). On the other hand the challenges to adopt technology can be due to the negative impacts that were caused by adapting them. For instance, information overload can stress the employees leading to impatient and disorganised attitudes in the workplace (Huda, Maseleno, Jasmi, Mustari & Basiron, 2017). Although technologies have a side effect, the positives of technological development outway, the need for implementing a professional and ethical usage of technology has to be encouraged to avoid the negative impacts/behaviour which was recognized by Huda (2019). The implications of the use of technology is just not restricted to improvement in organization's performance, technology adoption and maintenance of ethical aspects result in improved standard of living of the society at large. The fourth industrial revolution has created a fusion of technologies across physical, digital and biological domains, and the diffusion of these technologies have been faster than ever before. These technologies have improved the lives of many but have also caused fear among people that technology would take away their jobs, making them unemployed; thereby creating both positive and negative impacts (Greve, 2017).

The positive impact of adoption of technology can be seen as increase in productivity, low priced goods which creates a boost in sales. The reduction in prices will induce the customers to buy more goods and easy access to services, this leads to the generation of new kinds of jobs and once there will be demand for manpower (Grusky & MacLean, 2016). The rapid change in technology also creates a demand for skilled labour and only a displacement of workforce will be observed rather than reduction in workforce, therefore an increase in their income will follow.

Therefore it can be said that it is the responsibility of each organization and individuals to get trained and be ahead in the digital world. The section below presents the objectives of the study and detailed review of the topic.

1.1 Objectives of the study:

1. To study the challenges faced by labourers due to technological changes.
2. To investigate the challenges faced to adopt technological change to enhance the skills of labourers.
3. To review different theories related to CSR and development of labour markets.
4. To develop a conceptual framework for 'Technological Social Responsibility'.

2. LITERATURE REVIEW

2.1 Technological impact of quantitative and qualitative employment

The advancements in technology, growing applications of artificial intelligence, machine learning and robotics have given rise to automation. Technological change in industries causes a change in the working environment that occurs due to technological obsolescence and leads to unemployment (Kergroach, 2017). The pessimistic version of introduction of new technologies at the workplace would mean that there would be a loss of jobs due to the inability of the employees to catch up with the trends in the organizations and environment as a whole. The lack of technological knowledge would create reduced interest among the employees resulting in reduced work efficiency and therefore low income. The low income would further impact the buying behaviour of goods which then would cause a dip in economic activities (Greve, 2017).

Compensation provided to workers forms as one of the motivational factors for them to work in the organizations. Determination of the amount of compensation is based on many variables, among which performance is found to be the most crucial one. A closer look at employee performance of many organizations reveals that many personnel are not content with the present compensation system in the organization. Oluigbo and Anyiam (2014) studied the effect of compensation and employees performance in IT firms. It was found that providing right compensation held the workers' interest, reducing the labor turnover, morale of the workers was reduced when there was no financial compensation. The compensation is expressed as 'theory' which involves several views and is expressed as 'decrease in prices due to machines'. On one hand, process innovations involve the displacement of workers. On the contrary, these innovations have led to a decrease in the unit costs of production and, in a competitive market, this means decreasing prices. In turn, lower prices stimulate new

demand for products, and thus additional production and employment (Vivarelli, 2014). Apart from the decrease in price, compensation is observed in terms of 'increase in new investments'. While it has been argued that the advancements in technology is the reason for loss of jobs in many sectors, the case is not entirely true. According to the compensation theory, new investments and opportunities are available as there is a shift created in the workplace. The implementation of new technologies will enhance competitive convergence and is not an instantaneous process. Innovative entrepreneurs are at the disposal of making decisions to accumulate extra-profits in the duration of time between a cost decrease due to technical progress and a subsequent fall in prices generated by the former. These profits are invested and new productions and jobs are created as a result, thereby improving the development of organizations and economical progression is observed (Bessen, 2016).

2.2 Skill gap based on technology

The accelerated automation of tasks performed by labour instigates concerns that new technologies will make labour redundant (Brynjolfsson & McAfee 2014). A decline in the labor share in national income and the employment to population ratio in the United States (Karabarbounis & Neiman, 2014; Oberfield & Raval, 2014) are often showcased as evidence for the claims that as digital technologies, robotics, and artificial intelligence have created an impact on the economy.

Simultaneously, the claims also indicate that workers would find it increasingly difficult to compete against machines, and their compensation will experience a relative or even absolute decline due to technological changes. Two types of technological changes was recognized: automation allows firms to substitute capital for tasks previously performed by labor, while the creation of new tasks enables the replacement of old tasks by new variants in which labor has a higher productivity. Conversely, the creation of new job roles, job areas increases wages, employment, and the labor share (Acemoglu & Restrepo, 2018).

Occupations and job roles that use computers substitute for other occupations. In particular, occupationgrow at a much slower pace compared to workers in similar industry who use computers the jobs. On a whole, inter-occupation substitution offsets the growth effect so that the relationship between computer use and employment is positive, even if it is small which is recorded at 0.45 percent per year. However, usage of computers is associated with growth in high paid jobs and growth decreases in low-paid jobs, hence with a substantial reallocation of jobs, requiring workers to learn new skills to shift occupations (Bessen, 2017).

Though market entities ensure the stability of the BGP (Balanced Growth Path), they do not necessarily generate the efficient composition of technology. If the elastic labour supply relationship results from rents (a gap between the wage and the opportunity cost of labour persists), there is a crucial new distortion: since firms make automation decisions according to the wage rate, not the lower opportunity cost of labour, there is an inherent bias toward excessive automation. Both automation (which offsets the tasks previously performed by low-skill labour) and the creation of new tasks (which directly benefits high-skill labour) increase inequality (West, 2015). Nevertheless, the long-term implications of the creation of new tasks could be very different, because they are later standardized and used by low-skill labour. If this standardization effect is sufficiently powerful, there exists a BGP in which not only the factor distribution of income (between capital and labour) but also inequality between the two skill types stays consistent (Acemoglu & Restrepo, 2018).

2.3 Relation between CSR and an enterprise's technological innovation investment

CSR and Competitiveness have always been linked to the companies' performance. Marin, Martín and Rubio (2017), in their study, found that CSR had little contribution to bringing about the competitiveness of the firm. It was observed that the CSR had a direct influence on innovation and investment. An empirical study was conducted, and the results showed that the CSR activities help the companies to innovate their product and system and indirectly help the companies to have a competitive advantage over its competitors. It was also observed that CSR driven innovation had positively contributed to the performance of the company. The growing significance of corporate social responsibility (CSR) and its impact on a company's value is sometimes perceived as a shift in the management paradigm. On the one hand, the growing importance of CSR is easy to identify, when looking at reports on social and environmental activities that are more and more widely published. Most often, in scientific research, innovation occurs jointly with SCR (Social Corporate Responsibility) in the context of the relationship between CSR and CFP (corporate financial performance). Among many explanations for that phenomenon, one of the most frequently indicated is innovation (Hull and Rothenberg, 2008; Wagner, 2010; Kurapatskie and Darnall, 2013; Rodgers et al., 2013). Therefore, it can be said that the increasing CSR activities in the corporations have made individuals think creatively. The support provided by various technologies have only made innovative activities increase, thereby, investments in this regard have also increased (Huda et al., 2017).

2.4 Enhancing fluid labour market

Fluidity is measured by flows of jobs and workers across employer. However, labour markets became much less fluid in recent decades. Insufficient diffusion of new technologies has been quoted as one possible reason for weak productivity performance over the past two decades (West, 2015). The rising discrepancies in the labour market due to constant updation of the technologies can be solved at the individual, local, national, and international levels. At the individual level, the globalization narrative needs to include the household benefits of globalization and access to objective and accurate information from reliable sources. Education and skills acquisition need to be both encouraged and subsidized because without them, avaliability of job opportunities is limited. These factors gain imporatnce due to the disruptive nature of technology, and the pace at which the technology is making progress how it impacts various industries. At the local level, depressed areas and lagging regions require valid transfers and investment. National policies can learn from successful experiences in search for practical solutions. Government spending on innovation (e.g. R&D/GDP) compared with expenditures on economic adjustment (e.g., active labour market spending/GDP) may be a useful indicator of the relative effort placed on creating new industries versus managing the impact of declining ones (Leipziger, 2016).

2.5 Conceptual framework

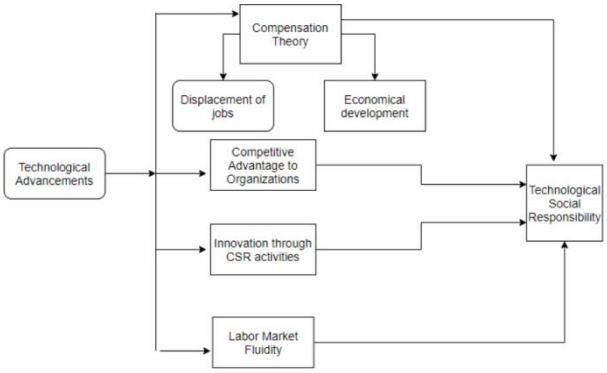

Fig1. Conceptual Framework for Technological Social Responsibility

Source: Author

Fig 1 represents the conceptual framework to Technological Social Responsibility. Various factors contributing to the development of TSR has been portrayed. Firstly, there is a constant updation in technology seen as the introduction of new technologies at regular intervals which have been creating a ripple effect by changing the entire course of conduction of businesses and government operations. Different theories are applied to advancement technologies that have impacted the labour market seeing a variation in demand for labour, economic development and compensation effect also suggests that there will be a displacement in the workforce and fluctual variation in wages. Another factor that has contributed TSR is that technologies have given rise to further creative ideas and are given back to society in the form of CSR activities. These CSR activities have helped individuals, organizations and the economy as a whole. All these have thus given a sense of technological social responsibility as technology has become the main driver for the change in attitude, thoughts and overall productivity of the workforce.

3. FINDINGS AND DISCUSSION:

The review of literature has given insights to technological social responsibility. It was observed that technological change has both positive and negative aspects. In this context, the positive side of technology is that it has influenced the employees to be more creative which gives them a space of their own to develop new things. The main challenge for adopting technology in the labor market is due to the fear of decreased wages. Compensation theory suggested that the advancements in technology will induce a displacement of work that will give rise to investments. Competitive advantage and CSR activities form a prime role for the companies/organizations to succeed and are entirely dependent on the labor force. The laborers were driven to excel in their respective fields and the CSR activities are found to influence the society positively as technology has helped the employees to be proactive and contribute more to society. Hence, digital technologies and industrial revolution 4.0 have given rise to the term technological social responsibility.

Table 1: Summary of papers and concepts reviewed

Authors	Title	Concepts Reviewed
Acemoglu, D., & Restrepo, P. (2018	The race between man and machine: Implications of technology for growth, factor shares, and employment.	Growth of labour, labour share amidst increase in technology
Alonso-Almeida, M. D. M., & Llach, J. (2013)	Adoption and use of technology in small business environments.	Csr activities and competitiveness
Bessen, J. E. (2016).	How computer automation affects occupations: Technology, jobs, and skills	Skills improvement and training
Brynjolfsson, E., & McAfee, A. (2014).	The second machine age: Work, progress, and prosperity in a time of brilliant technologies	Progress of technology and work, increased standard of living

Chen, H. J. (2010)	Linking employees'e-learning system use to their overall job outcomes: An empirical study based on the IS success model.	Technology skill enhancement through e-learning
Greve, B. (2017)	New technology: what is new?: The Impact on Labour Markets and Welfare States. In Technology and the Future of Work.	Labour markets
Hughes, C. (2010)	"People as technology" conceptual model: Toward a new value creation paradigm for strategic human resource development.	strategy , competitive advantage got by adoption of technology
Huda, M. (2019	Empowering application strategy in the technology adoption: insights from professional and ethical engagement	Skill enhancement due to technology upgradation
Huda, M., Maseleno, A., Jasmi, K. A., Mustari, I., & Basiron, B. (2017)	Strengthening interaction from direct to virtual basis: insights from ethical and professional empowerment.	strategy , competitive advantage got by adoption of technology
Karabarbounis, L., & Neiman, B. (2013)	The global decline of the labor share.	Labor share and labor markets
Kergroach, S. (2017)	Industry 4.0: new challenges and opportunities for the labour market	Challenges faced by advancement in technologies
Marin, L., Martín, P. J., & Rubio, A. (2017)	Doing good and different! The mediation effect of innovation and investment on the influence of CSR on competitiveness.	Effect of technology on csr activities and competitive advantage
Oldham, G. R., & Da Silva, N. (2015)	The impact of digital technology on the generation and implementation of creative ideas in the workplace	CSR activities to impact technology and innovation investment
Vivarelli, M. (2014).	Innovation, employment and skills in advanced and developing countries: A survey of economic literature	Employment skills lead to innovation and economic development

Source: Author

4. CONCLUSION

The present paper was directed at studying the challenges and the impacts that technological advancements have made in the labour market. The enhancement of skills of the workforce was discussed using the compensation theory. The study brought out different dimensions to the changes that occurred due to constant refinement and advance technologies that were implemented in different industries. It was observed that although technology was perceived as a threat to growth and development of employees, the right support and tools enhanced the living conditions of the workers. Additionally, the CSR activities enabled the workers to explore and innovate things and contributed to the society. The contributions made through CSR activities also helped the organizations to achieve a competitive advantage. Furthermore, the technology advancements saw increased economic activities as the price of the goods decreased, purchasing power increased by maintaining the workforce demand. All these aspects saw an upward trend in the enhancement of labour skills. The future scope of the current study can be in analysing TSR towards employment generation and poverty reduction. Future studies under technological social responsibility can be in the field of creating an impact on the economic conditions of development in the developing nations. Also, the TSR can be studied within specific organizations as to how they have created an impact in the society and lives of the employees. Technological Social Responsibility can be viewed as a solution to both socio-economic problems faced by counties, particularly the underdeveloped and developing nations. Furthermore, value created through TSR can be investigated in generation of new and improved technological developments, improvement in standard of living of people, skill enhancement of employees, poverty reduction, and many more.

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