

**MANAGING  
THE CHANGE  
FOR BETTER TOMORROW**



**HARJYOT KAUR  
PARAMVEER SINGH**

# Managing The change For Better Tomorrow

By

Harjyot Kaur & Paramveer Singh



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First and foremost, we bow our heads in adoration to the Almighty for providing us with this opportunity to collaborate with the intelligentsia, allowing us to go far beyond our own, limited range of thought and action, and for making our endeavour a success.

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We are also grateful to Dr. Lalita K. Sharma (Assistant Professor, Dept. of Commerce, Guru Nanak Khalsa Girls College Sang Dhesian, Goraya, Jalandhar, Punjab) and Ms. Daljit Kaur (HOD, Department of Computer Science, DIPS Bhogpur) for their continuous support at various stages of this book.

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Once again, our deepest gratitude to one and all.

*Harjot Kaur*  
*Paramveer Singh*

## Preface

The world around us is changing faster than ever before. It is changing politically, socially, technologically (AI, quantum computing, blockchain and IoT coming our way), economically as well as environmentally (climate change). This is a significant challenge for citizens to deal with. Although the coronavirus may not hit global health as catastrophically as the bubonic plague did in the 14th Century, this latest pandemic will certainly change the world. It's likely that all of us experienced the imposition of lockdown as a shock to the system, whether it made us feel lonely or listless or anxious or driven to distraction by the family constantly under each other's heels, or all of the above, all at the same time. As individuals, we've had to make changes – both big and small – to our everyday lives.

The past year has transformed nearly every aspect of our world. Seemingly overnight, the quirky (wearing leggings during a Zoom call with clients!) became mundane. Meanwhile, our friends, family, colleagues, and communities have had their lives changed in critical ways that promise to have much longer-lasting effects. Living through a global pandemic has driven dramatic shifts in our jobs, eating habits, childcare, and even our collective sense of time. Imagining and planning for the future can be a powerful coping mechanism to gain some sense of control in an increasingly unpredictable pandemic life.

The book *Managing the Change for Better Tomorrow* addresses the emerging changes around the world. The book consists twenty-one chapters on the theme and sub themes of the work & personal wellbeing and change management. It entails a deep understanding of different transformations happening around the globe together with all the sources. Further it seeks to provide an explicit insight as to Corona pandemic and also shows at length the precise impact on various sections of society and ultimately it tenders strategies for managing the change so as to ensure human capital have improved attitude toward these dynamic conditions.

We hope this book will serve as a valuable reference to students, managers and the academicians for many years.

As editors we would like to acknowledge all the support we have received and extend our deepest appreciation to the Dr. Lalita K. Sharma (Assistant Professor, Dept. of Commerce, Guru Nanak Khalsa Girls College Sang Dhesian, Goraya, Jalandhar, Punjab) and Ms. Daljit Kaur (HOD, Department of Computer Science, DIPS Bhogpur) who helped significantly in all the practical aspects of completing the book. We also gratefully acknowledge the support given by the academic colleagues by sending their chapters.

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## **FOREWORD**

Change – the invariable aspect of anyone or anything in this universe. Leo Tolstoy once said, “True life is lived when tiny changes occur”. These changes won’t happen if we tend to live in the glory or failure of the past or the current circumstances, changes will work wonder only if we look into the future and move forward accommodating the necessary changes. This is easier said than done and it stands true to people, organizations, and even countries. There is an inherent mechanism that exists in everything and everyone to resist change, which not only prevents us from realizing the mistakes but it also stops us from coming out of our comfort zones. How many times we had heard people saying, “I need a change” but most often very few move along in carrying that into actions. The fear of an unknown path and the future always holds us back in fulfilling our dreams and ambitions. The risk involved and the likely chances of jeopardizing the life of self as well as those who around us, gives depth to self-doubt and resistance to change.

Today we live in a world where changes are the only thing which is constant, surprising that no one notices the same but moves on adjusting to the same without even recognizing that a forced change is happening to each one of us. The question today is, are we ready to take on these changes on our own and can work it out without being forced by nature or the events happening around us? We can always blame others for all this but then is it not our fault that we didn’t recognize the changes required in our life? Today we all are adapting to the coronavirus pandemic situation and are moving ahead with life in ways which none of us thought will ever happen. Our kids are at home and are being home-schooled, families are spending their time within the confines of their home, and safety and precaution have become the new way of life. The large divide between social life and professional life got narrowed with more and more organizations and society, in general, adapt to work from home concept. Changes are happening to us whether we like it or not.

This book is an attempt to bring the various aspects of changes and consequences of those changes that occurred with time especially due to Covid-19 pandemic in a systematic manner. The book has focussed on the different emerging changes, issues and solutions to those changes which demand a special attention such as Covid 19 and

Digital Transformation due to pandemic, AI & technology in healthcare industry, Impact of digital transformation on different parts of society, Future service technologies, major changes in lifestyle, changing role of educators, position of women entrepreneurs in dynamic world, Sustainable rural development, crypto commodities, virtual communication, digitalised and innovative of HR management systems, Role of the pedagogue for the better tomorrow, ethics in changing scenario, technology of augmented reality and computer vision technology etc.

As one of the Author and Reader of the Book, I would like to congratulate the editors of the book Ms. Harjyot Kaur (PG Department of Commerce, S.D. College, Hoshiarpur, Punjab) and Mr. Paramveer Singh (Department of Management, S.D. College, Hoshiarpur, Punjab) for coming up with a book on this most significant topic of change management having relevance with this present-day society. I ensure that this book will enhance the knowledge of readers and researches. This book gives considerable interest in different ways to support adolescents in their digital life, particularly the changes due to current pandemic they are facing. All the chapters are very beautifully and very systematically compiled in this book. This book will surely help the teachers and academicians in planning, organizing, directing, providing knowledge to their students related to different innovative skills and will help their students in their all-round adjustments.

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# CHAPTER 1

## COVID-19 AND DIGITAL TRANSFORMATION: IMPACT ON BUSINESS AND EMPLOYEES

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### **Abstract**

The COVID-19 catastrophe led to a distressing state of affairs across the globe with serious impact on healthcare as well as social and economic system. This crisis has typically compelled the organisations and workforce to alter their usual ways of working. Owing to this pandemic, there has been an unexpected shift in the workplace environment which was triggered as a result of emergency rather than a strategic move. Considering the safety regulations, several employees from different industries were forced to work from home. In this way, the digital transformation of workforce and work environment came into being as a result of covid-19 outbreak. Such digital adaptations are the new normal and seem to continue for an unforeseen period. Here, the most critical factor to consider for any responsible organisation is the management of its human resource as it has an integral role in the functioning of an organisation. The present article attempts to explore the impact of digital transformation led by pandemic on the organisation's business and workforce along with the benefits and challenges faced by employees while working from home. This study intends to highlight both immediate and long term consequences of this unplanned transformation in context of workforce in India. In addition, this article furnishes future implications for both managers and Government regarding human resource management and public policy formulation.

***Keywords:*** COVID-19, Digitalization, Digital Transformation, Workforce, Work from home, Virtual Work Environment, Job Polarization

## 1. Introduction

Digital transformation is an extensively discussed topic due to the dynamic and technology-driven working atmosphere in organisations during the past few years. Despite the rapidly overtaking technological advancements, several organizations were reluctant to adopt new patterns of working and replacing the traditional methods altogether. However, consistent progressions were being made in this regard even though at slower pace by making minor alterations at a time. These strategically planned modifications became mandatory all of a sudden in 2020 when the COVID-19 pandemic transformed everyone's life completely. Things such as telecommuting, work from home and digital transformation became the new normal in working environment (Savic, 2020). These new working conditions essentially require the integration of advanced technologies for carrying out the routine tasks remotely (Spurk and Straub, 2020). Therefore, the outbreak of the COVID-19 crisis has definitely accelerated the pace of digital transformation in organisations (Nagel, 2020). Although the long term implications of this crisis are still unknown, the digital transformation has helped in continuing business tasks at a certain speed instead of completely shutting down the economic mechanism.

Undeniably, the present economy is transforming into a digital one and this concept of digitalisation implies the modern business activities, interactions and economic models are being influenced by digital technologies like the Internet, artificial intelligence (AI), cloud computing, machine learning, robotics, Internet of Things (IoT) and various other developing technologies (Soto-Acosta et al., 2016). The impact of digitalization can be seen in almost all the realms of the economy ranging from production to consumption. The digital technologies have made the distribution of goods a seamless process due to widespread connectivity across the globe and on the other hand, consumers' access to wide variety of goods has also increased tremendously.

The present article emphasizes on how the COVID-19 pandemic has accelerated digital transformation of organizations.

More precisely, the following questions are intended to be answered in this article:

How has the COVID-19 outbreak accelerated digital transformation?

How does digital transformation due to the pandemic affect work and employees?

## **2. COVID-19 and Digital Transformation of Work**

Digital transformation of work refers to digitisation of tasks that were traditionally done manually by workers in an organisation (Eberhard et al., 2017). Herein, the employees possibly work remotely from the employer and this includes usage of digital technologies. In this way, employees can work from different locations or even at home (Wilks and Billsberry, 2007; Sullivan, 2003). In addition, digital transformation involves creating new business models or making significant changes in the existing model with the help of modern technologies in order to improve organisational performance (Fitzgerald et al., 2014; Kaplan et al., 2010; Savic, 2019; Schallmo et al., 2018).

Evidently, the COVID-19 crisis has accelerated the pace of digitalisation of businesses across all industries ranging from retail to education (Nagel, 2020). This has helped in continuing the tasks in organisations even in the lockdown situation. One major aspect to note is that even though digital transformation fosters creation of novel business models or significantly altering the existing models, it does not mean completely abandoning the existing business models. Alternatively, digital transformation includes development of such digital business models that would seamlessly complement the existing ones. Additionally, digital transformation has offered an appropriate solution in the time of crisis which helped in avoiding the total collapse of economy. More and more jobs are being done remotely owing to the pandemic. Despite the fact that digital tools and technologies existed even before COVID-19, the pandemic situation made it mandatory for adopting digital system out of emergency. Considering the situation, business organisations came up with several digital transformation projects that facilitated remote working such as digital platforms for virtual meetings emerged very quickly (Zoom, Google Meet, Microsoft Teams). In contrast, other industries such as entertainment and restaurant business have been profoundly affected by the pandemic. As a result, these businesses implemented digital solutions and increased the sales through online platforms and home deliveries. In this way, these businesses changed the threat of pandemic and mandatory lockdown into an opportunity to adopt digital technologies and expand their business volume.

Undoubtedly, employees are sometimes reluctant to accept and implement new technologies under normal circumstances (Baturay et al., 2017; Gelbrich and Sattler, 2014). While in case of emergency situations like the one presented by COVID-19, adoption and implementation of digital technologies is done at a faster speed than in normal times. As it is mandatory to

follow social distancing guidelines to avoid the contraction of COVID-19, it is not possible for the employees to carry out routinized work at offices. Thus, the need to work from home arose which was the only possible solution to avoid losses in business during lockdown. For the smooth working from home, the need of integrating digital technologies into the routine works increased more than ever before.

### **3. Virtual Work Environment and Its Impact on Organisations**

The COVID-19 pandemic had an adverse impact on the functioning of almost all industries (Kabadayi et al., 2020) in several ways. Companies had to necessarily adopt appropriate measures to continue their activities and also protect their workers and customers. Some service providers, such as hotels and airlines had to halt their business due to lockdown while others businesses such as education, financial services and consulting had to adopt new ways of operation (Tuzovic and Kabadayi, 2020) which involve creation of a virtual work environment in order to continue their businesses uninterrupted (Carnevale and Hatak, 2020). As a prevention measure, Governments instructed the employers to enable employees to telecommute i.e. to work from home (Savić, 2020). Most of the employers and employees did not have much experience with telecommuting prior to the pandemic. Moreover, they were quite comfortable with the conventional mode of working. Due to the COVID-19 outbreak, companies were shocked by the possibility of losing revenue. Here, the concept of telecommuting emerged as a potential solution for the problem at hand. In addition, digital transformation is expected to enhance efficiency and productivity which further helps in gaining a competitive advantage over rivals (Vial, 2019).

Owing to the pandemic outbreak, work from home has become totally inevitable and companies have to quickly develop and deploy new business models. Modifying the business models involve increasing the use of digital technology, making adjustments in the organizational culture, and altering the roles and expectations of the employees. In the present scenario, almost all companies are actively adopting digital technologies to address the need of maintaining social distancing. It cannot be denied that digital systems and technologies such as AI and robotics can easily replace human labour for certain repeated tasks by automating them. Still, companies need to accept that it is hard to replicate human competencies through the usage of technology. The human interpersonal skills including creativity, intuition, judgement, empathy and other problem-solving competencies cannot be replaced by machines or technology. Hence, the purpose of adopting and implementing

digital tools and technologies is to help the employees work in a more effective and safe manner rather than replacing the human effort (Levit, 2018). Here, it is essential for the workforce to develop digital competencies along with technical skills in order to effectively handle the challenging situations and seize different business opportunities. It is worthy to note that automation is not going to replace all jobs but it would just replace the repeated routine tasks where any human skills are not required. In the current situation, firms are heading to digital transformation for adapting to the new normal.

#### **4. Digital Transformation and Employees**

Certainly, COVID-19 has impacted the workforce on multiple levels wherein the nature of work, its volume, and value have also been affected drastically. Evidently, digital transformation is not just related to implementing a new technology as it also needs the employees to develop a “digital workforce mind-set” (Savić, 2020). Consequently, firms encourage their employees to use digital tools while working and also have more autonomy in work. For the process of digital transformation, it is essential that the employees have acceptance for new technology while performing their routine tasks (Momani and Jamous, 2017) as it is very crucial for the successful implementation of any new technology (Molino et al., 2020; Scherer et al., 2019; Taherdoost, 2018; Venkatesh et al., 2003).

Although the concepts like digital transformation are looked upon by employers as a challenge due to the resistance of workers (Bolden and O'Regan, 2016; Vial, 2019), the pandemic forced the employers to adapt to digital work and this further aggravated the challenges to lead the employees (Carnevale and Hatak, 2020; Bartsch et al., 2021). The rapid technological changes due to COVID-19 have led to job polarization and increase in wage inequality as the manual jobs have been impacted adversely due to digitalisation (Autor, 2015). Specifically, the impact of COVID-19 can be seen in case of middle-skill workers who faced job displacement or lower wages. With the increasing digital transformation, old skills get depreciated and obsolete very quickly (Lovász and Rigó, 2013; Ilmakunnas and Maliranta, 2016). The major impact of this crisis can be witnessed in case of informal employment as it is much more vulnerable to displacement, such as wholesale and retail, manufacturing, transportation, storage, and food services. The most affected ones are the rural workers specially women and youth who were engaged in manual tasks in the developing countries.



Although COVID-19 has driven the economy into recession, not all industries are equally affected as some sectors are affected more severely than others. Because of this unequal impact on jobs, the most vulnerable workers are facing the hard hit due to COVID-19 and this requires effective policies to overcome the situation. Since the first industrial revolution, technology is thought to eliminate or replace manual work completely however, this is not the case with all types of jobs. Instead of total elimination of manual labour, automation replaced the traditional jobs with other technical jobs. It cannot be refuted that the demand for labour decreased for tasks that require physical effort or for some repetitive jobs (Acemoglu and Restrepo, 2019). In this way, the unskilled labour has been affected severely in comparison to the skilled labour. Considering the skilled workforce, the evolution of new technologies has led increase in the returns from skill. In various industries, new jobs are being created and the displaced workers are assigned new roles and tasks. As automation has increased, technical and digital skills are needed for working. Hence, the demand for skilled labour has increased dramatically due to digital transformation.

Most importantly, technology and digitalisation led to creation of many other jobs in order to make the digital transformation possible. For example, human involvement is needed to design, build, deploy, manage, and fix a machine or technology. Although digital transformation may replace some low-wage jobs, it creates many other high-skilled jobs. This implies that human cognitive skills are of utmost importance for creativity, innovation, management and timely diagnosis of problems which is not possible for machines. However, technology can always complement the manual work and increase efficiency and productivity.

## **5. Overcoming Challenges Related to Digital Transformation**

Undoubtedly, several challenges had to be faced by employers and employees at work due to COVID-19 crisis. In order to deal with a situation like this in a better way, few methods can be adopted.

### **i. Making investments for increasing digital readiness**

Digital readiness can prove to a key factor for successful containment of a pandemic or virus spread and continuing the routine tasks to the maximum extent possible. Some of the effective methods that are crucial for digital transformation are building digital skills and

education among the workforce. With the advent of telecommuting, official meetings are being conducted online and this has become the new normal. Thus, more investment in digital infrastructure and digital skills development should be done by countries for facilitating digital transformation (Chinn and Fairlie, 2007). For this, public and private partnership is considered fundamental as it helps in enhancing digital readiness through collaborative effort. For the better functioning of digital networks, regulations must be made such as providing cyber security as it is essential while doing business on an online platform. As there are remote areas with poor digital connectivity in developing nations, investment must be done by public and private investors to provide broadband internet connections in order to connect such places with the global network.

ii. Increasing social protection for the vulnerable and unemployed

The COVID-19 has made it clear that effective social protection systems are needed for supporting the unemployed and vulnerable workers. Effective public policies are required for minimizing the impact of unemployment on workers by supporting them with some temporary income support such as insurance schemes for unemployed and social assistance programs by Government. Moreover, creating and implementing better labour market policies including labour exchange programs, labour mobility policies, employee training, etc. can also prove beneficial in this regard. Due to rapid digital transformation, the working style of people and the nature of employment have changed tremendously. Consequently, social protection systems must be adapted to provide appropriate protection to unemployed workers.

iii. Skill development for the digital economy

Countries need to invest more in skills development programs for the low-skilled unemployed as this would help them in finding employment post pandemic. These programs include enhancing the digital skills, providing vocational training or basic skills training. The impact of COVID-19 on education has several implications for the future workforce. Online learning during the pandemic increased substantially, but this facility is not available to every student and it is also seen that e-learning is not a perfect substitute for actual school learning. This is because many students are not able to acquire the basic skills needed in the changing work environment. Hence, it is essential to enhance digital literacy and increase digital inclusion.

iv. Effectively reassessing the workforce requirement

It is important for the organizations to assess their workforce requirements according to the current needs. They must be very mindful while assessing that from where and how to secure the jobs of workers as most of the firms try to lay-off their workers. In this situation, the organisations must consider the long-term effect of laying-off employees in the post Covid-19 period. In addition, companies should always prioritize the health and well-being of their employees instead of giving priority to their profits.

v. Timely recognizing the workplace dynamics

Organizations must recognize and analyse ways to reduce the impact of crisis on the employment of their workforce as it may have a drastic socio-economic effect on the lives of the workers if displaced. Here, the deployment of people analytics is significant in generating quantitative behavioural data about the workers, their working patterns, the probable effect of pandemic on their lives and how their behavioural changes can have an impact on the overall organisational performance. This analysis would prove beneficial while planning and implementing employee policies in the times of crisis.

vi. Realigning the expectations of organisation and employees

It is extremely important for the organisation to align its expectations with that of its workforce. In addition, alignment of the organisational core values with the values of the employees is also crucial for the effective handling of the difficult circumstances like in the Covid-19 pandemic.

vii. Redesigning the organisation

For keeping up with the new normal, companies need to strategically redesign their workplace, employee roles, leadership roles, organizational culture, and organizational structure. This is essential for the smooth functioning of the whole organisation even in the difficult times.

## **6. Conclusion**

COVID-19 has forced everyone to innovate and alter the way of working. The concept of work from home has enhanced the pace of digital transformation of the workforce since the outbreak of the virus. Work has undergone virtual transformation and the traditional way of

working has been replaced by digital means like video conferencing, online marketing, etc. Digital transformation gained widespread recognition due to COVID-19 and it is now accepted by both employers and employees. In order to transform the workforce through digital technology, organizations are striving to enhance their IT capabilities and enable the remotely working employees to give the maximum output while being safe at their places (Savić, 2020).

Owing to the pandemic outbreak, all types of businesses have realized the importance of innovating their business models and business processes. Not only the COVID-19 has affected businesses from the demand side, but also from the supply side as consumers resorted to panic buying during the pandemic which led to serious supply chain problems. For handling this situation, digital transformation became crucial so that the supply chain is not affected and the anxiety of customers can be lowered. Being the income source for their employees, companies strived hard to carry on the routine tasks and minimizing the need to displace workers as this would adversely affect the economic system. Moreover, digitalization helped the companies in availing vast array of opportunities for increasing business value and smoothly integrating with stakeholders even in the crisis situation.

## **7. Implications**

The importance of technology can no doubt be witnessed in mitigating the impact of COVID-19 on economic system. Particularly, advanced technologies such as AI, IOT, big data, robotics, and automated vehicles can be seen as saviours during the pandemic. Even post-COVID-19, these technologies will be essentially used in workplaces, and across other sectors also. More specifically, the post-COVID-19 era would rely heavily on digital tools and solutions.

This article can prove to be beneficial for start-ups and traditional organisations that want to seize new opportunities in the period of digital transformation. Nonetheless, with the increasing pace of digital transformation, challenges such as job polarization and job displacement of workers are also on the rise. The on-going trend indicates that a significant reallocation of jobs is possible in future thus, increasing the need for training programs and better labour policies. Undoubtedly, this trend can even increase inequality and biasness on the basis of skills, particularly affecting the old and low skilled workers. In this context, countries need to be prepared in advance for facing the disruptions in labour market due to

increasing automation. Henceforth, Government and policy makers are required to develop and adopt certain policy strategies that would aid in reducing the adverse effect of post-pandemic structural changes on the vulnerable workforce. This can be done by making investments with regard to increasing digital readiness, skill development for the digital economy, and by strengthening social protection.

## References

- Acemoglu, D. & Restrepo, P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. *Journal of Economic Perspectives*, 33(2), 3–30
- Autor, D. (2015). Why Are There Still So Many Jobs? The History and Future of Workplace Automation. *Journal of Economic Perspectives*, 29(3), 3–30
- Bartsch, S., Weber, E., Büttgen, M. & Huber, A. (2021). Leadership matters in crisis-induced digital transformation: how to lead service employees effectively during the COVID-19 pandemic. *Journal of Service Management*, 32(1), 71-85.
- Baturay, M.H., Gökçeşlan, S., & Ke, F. (2017). The relationship among pre-service teachers' computer competence, attitude towards computer-assisted education, and intention of technology acceptance. *International Journal of Technology Enhanced Learning*, 9(1), 1-13.
- Bolden, R. & O'Regan, N. (2016). Digital disruption and the future of leadership: an interview with Rick Haythornthwaite, chairman of centrica and MasterCard. *Journal of Management Inquiry*, 25(4), 438-446.
- Carnevale, J.B. & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: implications for human resource management. *Journal of Business Research*, 116, 183-187.
- Chinn, M. & Fairlie, R. (2007). The Determinants of the Global Digital Divide: A Cross-Country Analysis of Computer and Internet Penetration. *Oxford Economic Papers*, 59(1), 16–44.
- Eberhard, B., Podio, M., Alonso, A., Radovica, E., Avotina, L., Peiseniece, L., Caamaño Sendon, M., Gonzales Lozano, A. & Sole-Pla, J. (2017). Smart work: the transformation of the labour market due to the fourth industrial revolution (I4.0). *International Journal of Business and Economic Sciences Applied Research*, 10(3), 47-66.
- Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review*, 55(2), 1–12.
- Gelbrich, K. & Sattler, B. (2014). Anxiety, crowding, and time pressure in public self-service technology acceptance. *Journal of Services Marketing*, 28(1), 82-94.
- Ilmakunnas, P. & Maliranta, M. (2016). How Does the Age Structure of Worker Flows Affect Firm Performance? *Journal of Productivity Analysis*, 46(1), 43–62.

- Kabadayi, S., O'Connor, G. & Tuzovic, S. (2020). Viewpoint: the impact of coronavirus on service ecosystems as service mega-disruptions. *Journal of Services Marketing*, 34(6), 809-817.
- Kaplan, B., Truex, D.P., Wastell, D., Wood-Harper, A.T., & DeGross, J. (2010). *Information Systems Research: Relevant Theory and Informed Practice*. Springer, Heidelberg.
- Lovász, A. & Rigó, M. (2013). Vintage Effects, Aging and Productivity. *Labour Economics*, 22(C), 47–60.
- Molino, M., Cortese, C.G. & Ghislieri, C. (2020). The promotion of technology acceptance and work engagement in industry 4.0: from personal resources to information and training. *International Journal of Environmental Research and Public Health*, 17(7), 2438.
- Momani, A.M. & Jamous, M. (2017). The evolution of technology acceptance theories. *International Journal of Contemporary Computer Research*, 1(1), 51-58.
- Savić, D. (2019). From Digitization, through Digitalization, to Digital Transformation. 43/2019, 36-39.
- Savić, D. (2020). COVID-19 and Work from Home: Digital Transformation of the Workforce. *Grey Journal*, 16(2), 101-104.
- Schallmo, D., Williams, C.A., & Boardman, L. (2018). Digital transformation of business models-best practice, enabler, and roadmap. *Int. J. Innov. Manag.* 21(8), 1740014.
- Scherer, R., Siddiq, F. & Tondeur, J. (2019). The technology acceptance model (TAM): a meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers and Education*, 128, 13-35.
- Soto-Acosta, P., Popa, S., & Palacios-Marques, D. (2016). E-business, organizational innovation and firm performance in manufacturing SMEs: An empirical study in Spain. *Technological and Economic Development of Economy*, 22(6), 885–904.
- Spurk, D. & Straub, C. (2020). Flexible employment relationships and careers in times of the COVID-19 pandemic. *Journal of Vocational Behavior*, 119, 2-4.
- Sullivan, C. (2003). What's in a name? Definitions and conceptualisations of teleworking and home working. *New Technology, Work and Employment*, 18(3), 158-165.
- Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, 22, 960-967.
- Tuzovic, S. & Kabadayi, S. (2020). The influence of social distancing on employee wellbeing: a conceptual framework and research agenda. *Journal of Service Management*, 32(2), 145-160.
- Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Vial, G. (2019). Understanding digital transformation: a review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118-144.

Wilks, L. & Billsberry, J. (2007). Should we do away with teleworking? An examination of whetherteleworking can be defined in the new world of work. *New Technology, Work and Employment*, 22(2), 168-177.

## CHAPTER 2

# ARTIFICIAL INTELLIGENCE IN THE HEALTHCARE INDUSTRY IN INDIA

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### **Abstract**

The use of AI in healthcare in India is increasing with new start-ups and large ICT companies offering AI solutions for healthcare challenges in the country. Such challenges and solutions include addressing the uneven ratio of skilled doctors to patients and making doctors more efficient at their jobs; the delivery of personalized healthcare and high-quality healthcare to rural areas; and training doctors and nurses in complex procedures. Companies are offering a range of solutions including automation of medical diagnosis, automated analysis of medical tests, detection and screening of diseases, wearable sensor based medical devices and monitoring equipment, patient management systems, predictive healthcare diagnosis and disease prevention. In developing these solutions, a commonly cited challenge has been the lack of comprehensive, representative, interoperable, and clean data — something that is intended to be addressed through the Electronic Health Records Standards developed by the Ministry of Health and Family Welfare in 2016. Other challenges include access to open medical data sets and adoption by practitioners. This report explores the state of AI in the healthcare industry in India. The research adopts three broad functions derived from an interview, that AI is being used for in the healthcare industry: prescriptive, descriptive, and predictive.

### **Introduction**

The emerging use cases of Artificial Intelligence (AI) in the healthcare sector can be seen as a collection of technologies enabling machines to sense, comprehend, act and learn so they can perform administrative and clinical healthcare functions, as well as be used in research and for training purposes. Unlike legacy technologies that only complemented human skills, health AI today can significantly expand the scope of human activity. These technologies include, among others, natural language processing, intelligent agents, computer vision, machine learning, expert systems, chatbots and voice recognition. These technologies can



also potentially be used to compensate for a physician's cognitive biases (such as "recency bias," where one is more likely to allow the last case one treated to inform the course of treatment for the next patient.) This use and adoption of AI can be seen at varying levels across the healthcare ecosystem. Machine learning can be used to address the issue of reporting in siloed Electronic Health Records (EHRs) and instead redirect these reports toward analysis and predictive modelling. This technology can also be applied to preventative health programs. Machine learning can be used to merge an individual's -omic (genome, proteome, metabolome, microbiome) data with other data sources such as EHRs to predict the likelihood of developing a disease, which can then be addressed through timely interventions such as preventative therapy.

AI addresses the issue of information overload often faced in healthcare by employing machine learning to make sense of otherwise overwhelming volumes of healthcare data, which can otherwise threaten the adoption of evidence-based practice. This phenomenon is known as "filter failure", where the main problem is not too much information, but how such information is analysed. This is exemplified by inadequate information retrieval systems for point-of-care settings, difficulty identifying all relevant evidence in an exceedingly diverse landscape of information resources, and lack of basic health information literacy. Programs such as IBM's Watson for Oncology extensively evaluate medical literature to prescribe the best course of treatment. Researchers have used smart algorithms to extract information from radiology reports contained in a repository spanning multiple institutions.

### **Use of AI in Healthcare:**

The use of AI in the healthcare industry is diverse across sub-sectors. To understand the type of 'AI' that different solutions are being developed around, the uses of AI in healthcare can be categorized into the following broad categories as:

#### **Descriptive:**

Descriptive AI is the most widely used in healthcare technology today, and holds the most promise in terms of short-term potential. It quantifies events that have already occurred and uses this data to gain further insights, such as detecting trends and minor changes that may otherwise escape detection by medical professionals. For instance, such technology can be used to identify patterns in fracture detections and skin lesions. Additionally, these technologies have been shown to outperform humans in detecting subtle wrist fractures.

**Predictive:**

Predictive AI can perform the functions of a clinician, possibly substituting for human labour. Large parts of India presently face a shortage of primary care clinicians. Healthcare programs are limited by the lack of availability of clinicians and limited capacity. AI can help fill this gap. Artelus seeks to use AI to help in primary screening in rural areas that are understaffed. Apps such as Wysa are able to monitor and predict mental health issues. This technology can also be high touch (where each patient is given personal attention). There is no possibility of communicating unintended non-verbal cues such as judgment, and no sense of the usual hierarchy often found in clinician-patient relationships. As a result, patients are more likely to be honest with virtual humans and more compliant with their coaching and care plans.

**Prescriptive:**

Prescriptive AI furthers the purpose of predictive AI, and not only detects trends that may not be predicted by humans, but also suggests possible treatments based on nuances in the diagnosis. This decision-making ability makes prescriptive AI the most interesting and the most controversial use case in the near term.

**State of AI in the Indian Healthcare Industry:**

Emerging markets such as India also face a skills gap. Tools that are AI-enabled can potentially help less-skilled people make difficult decisions. Consulting highly skilled doctors can be left for cases where the AI tool concludes that the confidence in a decision is low, which allows the expert to devote his time only to important cases. Examples of these include mental health assistant applications such as Wysa, which is a chatbot that allows certain cases to be escalated to a human assistant depending on need. In these markets, AI also tackles issues of accessibility and affordability by helping unaddressed demographics access low-cost healthcare. Additionally, since India is rich in data, it is also an important testing ground for new artificial intelligence solutions.

**AI and Healthcare Segments in India:**

The healthcare industry in India is made up of a number of segments. Through a review of companies developing AI solutions for health, health practitioners using AI, and researchers looking into the potential of AI and health, it was found that AI is employed in a variety of ways across the different segments including:

## **1. Hospitals:**

These include government hospitals, including healthcare centres, district hospitals and general hospitals; and private hospitals, which include nursing homes and mid-tier and top-tier private hospitals. From a review of solutions adopted it appears that hospitals in India are employing descriptive and predictive AI.

For instance, the Manipal Group of Hospitals has tied up with IBM's Watson for Oncology to aid doctors in the diagnosis and treatment of 7 types of cancer. Watson for Oncology is used across its facilities, where more than 2,00,000 patients receive cancer care each year. Here, AI is used to analyse data and research evidence and improve the quality of the report, in turn increasing patient trust. Importantly, patients are fully aware of the process and provide their express consent. Due care is also taken to preserve patient anonymity. However, at the global level, Watson has recently come under fire from physicians across the world for allegedly posing as "a 'mechanical turk' - a human-driven engine masquerading as an artificial intelligence." It was reported that instead of using AI, it actually works by convening a small panel of cancer experts, who formulate recommendations for specific patients.

Aravind Eye Care Systems is presently working with Google Brain, after previously helping Google develop its retinal screening system by contributing images to train its image parsing algorithms. After successful clinical trials to detect signs of diabetes-related eye disease, it is now attempting to put it to routine use with patients.

## **2. Pharmaceuticals:**

These include manufacturing, extraction, processing, purification and packaging of chemical materials for use as medications for humans or animals. From a review of solutions adopted it appears that pharmaceuticals in India are employing descriptive and predictive AI with prototypes for prescriptive AI being developed and tested. The most common use of AI in pharmaceuticals is in drug discovery, where AI is mobilised to scan through all available literature on a particular molecule for a drug (eg. targeted molecule discovery), which would otherwise be impossible for even a group of people to manually carry out.

In addition to streamlining the process of drug discovery, the application of AI in pharma offers additional advantages such as identification of both tangible and intangible enhanced value proposition, enhanced competitor differentiation, optimal resource allocation for maximum market share gain, revenue and profit, ability to maximize growth, customizing

sales and marketing messaging for greater customer engagement, and automation of sales and marketing messages and channels. Abbott Healthcare has used India as a testing ground for new tech innovations such as apps for the heart and liver, as well as vertigo exercises (which use augmented and virtual reality).<sup>49</sup> Pharmarack<sup>50</sup> is a software-as-a-service (SaaS) based application that utilises AI to automate the pharmaceutical supply chain management.

### **3. Diagnostics:**

These comprise businesses and laboratories that offer analytical or diagnostic services. In addition to bigger companies such as Google and IBM, India is also host to startup companies that specialise in harnessing AI to diagnose disease. From a review of solutions adopted it appears that diagnostics in India are employing descriptive and predictive AI.

For example, Niramai Health Analytix uses thermal analytics for early-stage breast cancer detection, while Advenio Tecnosys detects TB from chest x-rays and acute infections from ultrasound images. Qure.AI uses deep learning technology to help diagnose disease as well as recommend personalised treatment plans from healthcare imaging data, and Orbuculum uses AI to predict diseases such as cancer, diabetes, neurological disorders, and cardiovascular diseases through genomic data.

Cureskin diagnoses six types of common skin conditions – pimples, acne, scars, dark spots, pigmentation, and dark circles – and recommends treatment regimens through a mobile app. It claims that its deep learning algorithms are at dermatologist level accuracy for the six skin conditions it works on at present.

According to the WHO, India is home to over five crore Indians suffering from depression, and is a major contributor to global suicides. However, seeking help for mental health issues is still stigmatised. Firms are addressing this issue by using technology to help deal with mental health issues, usually in the form of chatbots that offer counselling while maintaining privacy.

In India, AI is being employed through chatbots such as Wysa that provide mental health support. A person can chat anonymously with an AI-enabled system, and the chatbot is intended to provide empathetic support and suggest practitioners to consult. However, these chatbots have not been designed to provide diagnosis or deal with more serious issues (these are transferred to doctors). The advantage of these chatbots is the potential anonymity and privacy they could provide if designed with a privacy enhancing approach – there is no need

to sign up, and no personal information needs to be collected. Chatbots have also been presented as an interface which is non-judgmental and consequently, more empathetic towards the concerns of patients. This could encourage people to open up without hesitation. One such example is the outlet provided by such apps for displaced workers from India's IT industry to vent their fears about potential job losses in the upheaval facing the industry at present.

#### **4. Medical Equipment and Supplies:**

This includes establishments primarily manufacturing medical equipment and supplies, e.g. surgical, dental, orthopaedic, ophthalmologic, laboratory instruments, etc. From a review of solutions adopted it appears that companies developing medical equipment and supplies in India are employing descriptive and predictive AI. Niramai (which is an acronym for "Non-Invasive Risk Assessment with Machine Intelligence") uses a high-resolution thermal sensing device that scans the chest area like a camera, and uses cloud-hosted analytics solutions to analyse the thermal images for early signs of breast cancer. Ten3T has created a wireless patch that can be worn by heart patients. This patch continuously monitors vitals and transmits this data via the cloud, which can then be tracked by doctors in real time. AI is also being used to monitor patients' vital signs in ICUs, and notify the doctor in the event of any anomaly, as in the case of Philips IntelliSpace Consultative Critical Care. It can also be used therapeutically, as in the Implantable Cardiovascular Defibrillator (ICD) that monitors heart rates and automatically administers shocks in case of an abnormality.

#### **5. Medical Insurance:**

This includes health insurance and medical reimbursement facilities, covering an individual's hospitalisation expenses incurred due to sickness. From a review of solutions adopted it appears that companies offering medical insurance in India are employing descriptive and predictive AI. Machine learning is able to automate claims management by analysing vast amounts of data in less time, which reduces processing time and handling costs and improves customer experience. Identifying suspicious patterns in data can also help identify fraudulent claims, which could speed up settlement of genuine claims. By combining big data with AI, insurers can identify the lifestyle habits of customers to provide them customised offerings. Big data can also be harnessed to enable insurers to identify early-stage illnesses and reduce the risk of treatment-related complications.

At present, insurers in India are limited to managing operations. Bajaj Allianz General Insurance uses Boing, a chatbot that addresses customer queries on motor and health insurance. ICICI Lombard uses its chatbot platform MyRA to sell insurance policies. HDFC Life's email bot Spok claims to be first in India to automatically read, understand, categorise, prioritise and respond to customer emails.

## **6. Telemedicine:**

Telemedicine utilises electronic communications and software to remotely provide clinical services to patients. It is frequently used for follow-up visits, management of chronic conditions, medication management, specialist consultation and other clinical services that can be provided remotely via secure video and audio connections.

This bypasses barriers of time and space and serves to provide isolated communities with speedy delivery of medical expertise.<sup>66</sup> From a review of solutions adopted it appears that companies developing telemedicine platforms in India are employing descriptive and predictive AI. Telemedicine can help meet the challenges of healthcare delivery to rural and remote areas in addition to performing other functions in education, training and management in the health sector.

However, telemedicine currently faces infrastructural challenges, and is dependent on the quality of services provided by the medical professional. By doing away with the human component, AI standardizes the quality of care. SigTuple can analyse blood slides and generate a pathology report without assistance from a pathologist. This service can be utilised in remote areas at a fraction of what it would usually cost.

Microsoft has teamed up with the Government of Telangana to use cloud-based analytics for the Rashtriya Bal Swasthya Karyakram program by adopting MINE (Microsoft Intelligent Network for Eyecare), an AI platform to reduce avoidable blindness in children.

## **Government Initiatives:**

### **1. National eHealth Authority (NeHA)**

NeHA was proposed by the Ministry of Health and Family Welfare in 2015 as an authority to be responsible for the development of an integrated health information system in India. It will be the nodal authority that will develop an integrated health information system along with the application of telemedicine and mobile health by collaborating with various stakeholders.

2. The Ministry of Health and Family Welfare according to news items has reportedly worked with National Law School of India University, Bangalore to prepare a draft legislation on a Health Data Privacy and Security Act Electronic which substantively deals with issues of confidentiality, privacy, ownership of health data as well as the establishment of NeHA. As a note, at the time of writing this report, the researchers were unable to access a public copy of the draft legislation. As per reports, the health ministry discussed the initial draft with the legal experts from the university in June 2019, and the draft legislation was submitted to the ministry in July 2019.

### **3. Artificial Intelligence Task Force**

The ‘Task Force on AI for India’s Economic Transformation’ was set up by the Ministry of Commerce and Industry in 2017 to explore possibilities to leverage AI for development across various fields. It will submit concrete and implementable recommendations for government, industry and research institutions. It consists of experts, academics, researchers and industry leaders, as well as government participation through representatives of the NITI Aayog, Ministry of Electronics and Information Technology, Department of Science & Technology, UIDAI and DRDO.

### **4. Policy Group on Artificial Intelligence**

The Ministry of Electronics and Information Technology has recently formed a “policy group” to study aspects of AI technology and formulate a policy framework and road map for its adoption. The policy group will consist of representatives from academia as well as NASSCOM for an industry perspective, and will focus on aspects such as privacy, security, liability and skilling the workforce.

### **Electronic Health Records Standards, 2016:**

The EHR Standards, 2016 are an attempt to regulate data ownership and privacy standards around the storage of health data collected from patients. This includes data from medical establishments as well as data from medical devices and self-care devices and systems. The government has recognised the need for standardisation of such data, and has accordingly laid down standards relating to information capture, storage, retrieval, exchange and analytics, including images, clinical codes and data. These include ISO and other national standards to be used for EHRs.

Open Data Policy The National Data Sharing and Accessibility Policy (NDSAP) was formulated by the Ministry of Science and Technology and implemented by the Ministry of Electronics and Information Technology in the form of an Open Data Platform. The NDSAP is designed to enable the sharing of non-sensitive data which has been generated using public funds, and is either in digital or analogue form. Access to this data is open, registered or restricted depending on the level of authorisation required.

### **Medical Devices Rules, 2017**

The Medical Device Rules, 2017 have been drafted with the intention to distinguish between medical devices and pharmaceuticals for the purpose of regulation. The Rules define what shall be classified as medical devices, and the scope of these Rules is limited to those devices that fall within its ambit. The Rules have introduced a risk-based classification system, which categorises medical devices into Low (Class A), Low Moderate (Class B), Moderate High (Class C) and High (Class D). Classification according to risk shall be carried out by the manufacturers in accordance with the framework decided by the Drug Controller General of India.

### **Challenges to AI in India:**

The main data challenges that arise relate to consent for collection, and ensuring that the data is clean and uniform. Obtaining parental consent for conducting research on children is often easier than obtaining adult consent, since showcasing good intent and fully apprising parents of all details is sufficient to obtain consent.

Though India has adopted an EHR policy, implementation of this policy is not yet harmonized - leading to different interpretations of 'digitizing records (i.e taking snapshots of doctor notes), retention methods and periods, and comprehensive implementation across all hospital data. India also lacks a formal regulatory regime around anonymization.

This has provided companies with more flexibility<sup>1</sup>, and has led start-up companies to adopt the self-regulatory practice of anonymising data they receive before using it further. The lack of regulation around data can be a double-edged sword, as on the one hand, it is easier for start-ups to collect data, however the regulatory vacuum causes uncertainty about what future changes might be in store.



## **Conclusion:**

Artificial Intelligence has a range of applications across the healthcare sector. By performing descriptive, predictive and prescriptive functions, AI in healthcare in India is currently augmenting human capacity rather than to replacing human labour altogether. However, AI-powered applications are accompanied by certain challenges – they require an effective framework of laws to govern privacy and data integrity, while dealing with issues of cultural acceptance, informed consent, liability and explain ability. India presently is in a unique position to be a driver in the AI and healthcare space for national and international companies.

Yet, many barriers still stand in the way of widespread adoption and implementation, arising out of a lack of regulatory clarity on issues of data, design and certification and lack of resilient and ethical data collection and processing systems. A robust open data policy, a comprehensive privacy legislation, greater investment in AI research and development, robust national infrastructure, equipping labour forces with the necessary skills to adopt AI and to be prepared for the changes that AI could bring, and a regulatory framework that ensures transparency and accountability but does not hinder innovation, are some of the measures required for the establishment of a flourishing AI healthcare ecosystem in India.

## **References:**

- Alaa, A.M, and van der Schaar, M. "AutoPrognosis: Automated Clinical Prognostic Modeling via Bayesian Optimization with Structured Kernel Learning," International Conference on Machine Learning (ICML), 2018.
- Alaa, A.M., Ahuja, K., van der Schaar, M.: A micro-foundation of social capital in evolving social networks. *IEEE Trans. Netw. Sci. Eng.* 5(1), 14–31, 2018.
- Goldstein, Larry B., Gregory P. Samsa, David B. Matchar, and Ronnie D. Horner. "Charlson Index comorbidity adjustment for ischemic stroke outcome studies." *Stroke* 35, no. 8 (2004): 1941-1945.
- <https://www.independent.co.uk/news/health/coronavirus-europe-intensive-care-beds-ventilatorsa9403981.html>
- <https://www.nytimes.com/2020/03/21/us/coronavirus-medical-rationing.html>
- <https://www.wired.co.uk/article/coronavirus-testing-uk>

- Jiang, Fang, Liehua Deng, Liangqing Zhang, Yin Cai, Chi Wai Cheung, and Zhengyuan Xia. "Review of the clinical characteristics of coronavirus disease 2019 (COVID-19)." *Journal of General Internal Medicine* (2020): 1-5.
- Lee, Changhee, William R. Zame, Jinsung Yoon, and Mihaela van der Schaar. "Deephit: A deep learning approach to survival analysis with competing risks." In *Thirty-Second AAAI Conference on Artificial Intelligence (AAAI)*. 2018.
- Wang, Minhong, Qianyi Zeng, Wenjun Chen, Jeff Pan, Honghan Wu, Cathie Sudlow, and Dave Robertson. "Building the Knowledge Graph for UK Health Data Science." *ERA* (2020).
- Yoon, Jinsung, Ahmed Alaa, Scott Hu, and Mihaela Schaar. "ForecastICU: a prognostic decision support system for timely prediction of intensive care unit admission." In *International Conference on Machine Learning*, pp. 1680-1689. 2016.
- Yoon, Jinsung, William R. Zame, and Mihaela van der Schaar. "Estimating missing data in temporal data streams using multi-directional recurrent neural networks." *IEEE Transactions on Biomedical Engineering* 66.5 (2018): 1477-1490.
- Zhou, Fei, Ting Yu, Ronghui Du, Guohui Fan, Ying Liu, Zhibo Liu, Jie Xiang et al. "Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study." *The Lancet* (2020).

## CHAPTER 3

### THE EFFECTS OF TECHNOLOGY ON HEALTH

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#### **Abstract**

Laptop use, touchpad checking, two-thumb texting, and smart phone listening all impact your back, eyes, ears, and brains in subtle ways. From obsessive texting to checking emails more frequently than a stockbroker scans the Dow, technology has infiltrated every aspect of our lives. According to University of California academics, we now consume three times more information per day than we did 50 years ago. At home, we spend 12 hours in front of the television and computers. Is all this technological toiling, then, unhealthy for us? Medical experts believe it depends on the devices you use and how often you use them. Nobody expects you to put down your phone and live like our forefathers and mothers. However, scientists are divided on whether the effects of media are beneficial or harmful to our brains. They do agree that it is affecting how we think, which isn't worrying in and of itself.

**Keywords:** *Health, Mental illness, technology, future work, 21<sup>st</sup> century.*

#### **Introduction**

Many people are said to suffer from mental disease symptoms such as insomnia and exhaustion. While these symptoms do not match the diagnostic criteria for a mental illness, they do have an influence on people's ability to perform efficiently (Lelliott et al., 2008). Poor mental health has major personal, societal, and economic implications, and it is currently the primary cause of decreased work performance, sickness absence, and long-term work incapacity in developed countries (Black, 2008; Harvey et al., 2009; Whiteford et al., 2013). These expenditures are increasing at worrisome rates (Harvey et al., 2017), thus it's critical to consider whether technology-driven workplace changes are contributing to the problem or solving it.

First, we examine the research on workplace mental health and how it has evolved over the last few decades. The need of considering mental health in the context of the future of work is then discussed. Following that, we'll go through two important workplace changes and the evidence for their positive and bad effects on mental health. The first trend is the impact of automation and advanced technology in the workplace, such as artificial intelligence, on how we work. The second trend is the rise in flexible work arrangements enabled by advancements in telecommunication technology and how they are influencing where and when we work. We also analyse the impacts of these changes on workplace culture and social fabric, as well as how these influences may affect employee mental health negatively or positively. We discuss the implications for future research, industry, government, and education after evaluating these developments and their possible effects on mental health.

Mental health, according to the World Health Organization (2007), is "a condition of well-being in which each individual realises his or her own potential, can cope with typical stressors of life, can work successfully and fruitfully, and can contribute to her or his community." Researchers have studied the role of employment in boosting well-being during the last 30 years, as well as how the workplace might aid a person's rehabilitation from mental health issues (Joyce et al., 2016). A increasing body of evidence suggests that working is good for your mental health and well-being in the long run (Claussen et al., 1993; Modini et al., 2016; Waddell and Burton, 2016). Given that the average employee spends almost a third of their waking hours at work, the nature of their job is likely to have a substantial impact on their overall physical and emotional health.

Similarly, research on the effects and causes of unemployment emphasises the importance of work in one's overall well-being. Unemployment is linked to a variety of mental health issues. For example, a meta-analysis of 42 studies found that mental illness symptoms are frequently the effect of unemployment rather than the cause of it (Paul and Moser, 2006). However, not all jobs are good jobs, and not all unemployment is terrible unemployment (Johnson and Jackson, 2012). There is likely to be a continuum, with well-planned work in a supporting environment providing the best chance for happiness, whereas badly designed and unsupported employment might aggravate or even cause poor mental health (Butterworth et al., 2011; Harvey et al., 2017).

People with mental illnesses, as well as their caregivers, are among the most stigmatised and marginalised groups in the workplace. They frequently miss out on the many benefits that

effective work can provide, as many businesses believe that people with mental health disorders are incapable of working successfully (Paul and Moser, 2006). Indeed, mental illness has surpassed physical sickness as the major cause of workers' compensation and long-term disability claims (Harvey et al., 2017).

Governments, organisations, and policymakers are currently wrestling with this difficult topic, looking for intellectual direction as well as practical solutions. There has been a significant amount of academic research done on workplace mental health risk factors and interventions (Harvey et al., 2017; Joyce et al., 2016). Based on this research, we know that organisations may be positive forces, and that, while employee mental health may not be their primary purpose, all organisations have a legal and moral obligation to safeguard their employees from physical and psychological harm. Fulfilling the letter of the law is not the same as meeting community norms, as the recent Royal Commission into banking malfeasance in Australia demonstrated. Managers and leaders in organisations must evaluate how rapid changes in the workplace not only generate potential for profit and success, but also have implications for their employees' mental health. Every company faces its own set of problems, and there is no one-size-fits-all answer or recipe for building a mentally healthy workplace. However, there are likely to be risk factors that may be avoided and protective aspects that can be strengthened within every organisation (Harvey et al., 2017). The issue for businesses is to identify and manage these aspects within the complex working ecosystem (Harvey et al., 2017; Petrie et al., 2018).

### **Effects of Technology on Health #1: Failing Memory**

You drive while on the phone, text while on a conference call, and surf the web on your iPad while watching TV. Multitasking has become the new normal, and while it may appear that we are more productive, research demonstrate that it has the opposite impact. Participants who multitask had a harder time filtering out unnecessary information than those who focused on one task at a time. Multitaskers also took longer to switch tasks, juggle difficulties, and waste time looking for new information when they already had better, more trustworthy information. According to research published in science magazine in 2011, students from Columbia and Harvard universities retained things better when they knew they couldn't acquire them from a computer. They just remembered how and where to get the information if they knew they could get it later online.

## **Effects of Technology on Health #2: Emotional Instability**

Most adults don't need 450 Facebook friends to feel validated. Teens, however, are emotionally more vulnerable to the effects of rampant texting and online sharing, psychologists and physicians say.

*Sleep deprivation:* Teens need about 9 hours sleep each day, but often text late into the night, says Sherry Turkle, director of the Initiative on Technology and Self at the Massachusetts Institute of Technology (MIT) and professor of the school's Social Studies of Science and Technology department. That means they can't focus at school and cope well with social pressures.

## **Effects of Technology on Health #3: Strained Vision**

According to a 2008 poll by the American Optometric Association, almost 40% of optometrists' patients suffered eye strain owing to computer vision syndrome (problems connected to "near work"), and 45 percent complained of neck and back pain associated with computer or handheld device use (AOA). According to the group, many computer users adopt uncomfortable positions to better position their eyes for greater performance. Light sensitivity, dry eye, blurred vision, double vision, weariness, and headache can all be symptoms of close computer use.

## **Effects of Technology on Health #4: Hearing Loss**

Is it possible for you to hear me now? If you listen to music through earphones for long periods of time, you're probably not doing well, says Brian Fligor, D.Sc., M.S., director of diagnostic audiology at Children's Hospital in Boston and a Harvard Medical School instructor. Ear wear and tear is common in seniors, resulting in partial hearing loss. What you do early in life, though, sets the tone for how well you'll hear as you become older, according to Fligor. Hearing loss can start in your 20s if you wear ill-fitting earbuds, go to loud concerts frequently, or shoot weapons for target practise. Teenagers, in particular, turn up the volume on their iPhones to drown out traffic noise, conversation, and even background music. In metropolitan areas, around half of college students are at risk of hearing loss.

## **Effects of Technology on Health #5: Muscle and Joint Pain**

According to a 2010 Nielsen Company survey, we send and receive text messages 3,339 times each month on average. Around 3.8 million thumb-typists in the United Kingdom reported pain from identical tasks. According to a 2006 poll by Virgin Mobile, a British cell-phone carrier, over 38% indicated they had aching wrists and thumbs as a result of repetitive movements. However, not all researches agree that thumb tiredness exists.

## **Effects of Technology on Health #6: Heart Trouble**

According to physiologist Marc Hamilton, Ph.D., a professor at Pennington Biomedical Research Center in Baton Rouge, the longer you sit in front of a computer or TV, the more likely you are to die early — even if you exercise weights, jog, or swim for 30 minutes a day. According to a report published in 2015. According to an American Cancer Society study that followed 123,000 adults for 14 years, women who sat for more than six hours per day were 37 percent more likely to die during the study period than women who sat for less than three hours per day.

## **Automation and advanced technology changing how we work: the effect on mental health**

There have been major advancements in automation, digitalisation, machine learning, artificial intelligence, and other technology over the last few decades (Makridakis, 2017). Artificial intelligence, often known as machine intelligence, has pushed the boundaries of what is currently feasible with automation and robotics (Frank et al., 2019). Many manual labour roles have been replaced or transformed as a result of these innovations in the industrial industry. Manufacturing, for example, was the largest industry sector in Australia in the 1990s, employing 15% of the total. It now employs 7% of the workforce, which is lower than six other industries (Department of Jobs and Small Business (DJSB), 2018).

Technology has altered not only the kind of occupations available to us, but also the nature of work undertaken. Jobs have become more service-oriented, as well as more cognitively challenging and demanding. A high percentage of employees today work in a knowledge-based or service-oriented environment. For example, according to the US Central Intelligence Agency (2017), the service industry generates 63 percent of global GDP. The Australian

Bureau of Statistics (ABS) (2011, 2017) found that between 1997 and 2017, there was a considerable growth in white-collar jobs in Australia, including community and personal service workers, professionals, and managers, with professionals accounting for about 25% of the total (DJSB, 2018). Clerical and administrative personnel have seen the most reduction in Australia over the last five years, with advertised openings approximately half of what they were in 2007, while machinery operators and drivers have seen a similar trend (DJSB, 2018). Figure 2 depicts changes in employment by skill type in Australia during the mid-1980s, demonstrating a distinct reduction in routine work and a rise in non-routine labour, both cognitive and manual, since that time (DJSB, 2018).

### **Harmful to one's mental health**

The evidence for the influence of these changes on employees' mental health is examined in this section. We examine how the four changes discussed above (job types, task types, pace and breadth of labour, and career trajectories and patterns) affect workplace characteristics at the individual, group, and collective levels, as well as the detrimental impact on mental health. We then look at how innovations in technology can benefit workplace mental health if they are well-designed and implemented. In most companies, technology is used to boost productivity and improve organisational outcomes, with little thought given to the impact on personnel. The pervasive presence of technology, for example, has been related to higher perceived demands, excessive performance and productivity expectations, and feelings of increased mental tiredness (Perlow, 2012). According to studies, technology can increase employee stress, overload, weariness, and burnout by speeding up job processes (Barley et al., 2011; Chesley, 2014; Maier et al., 2015; Murray and Rostis, 2007; Su and Mark, 2008). In a recent study (Chesley, 2014), greater work tempo, multitasking, and job interruptions were connected to higher degrees of workplace strain and distress in a nationally representative poll of US employees. Higher email use was also linked to employee strain due to increased work expectations, according to Barley et al. (2011). Employees felt pressured to react to emails, even if it meant taking work home or working outside of their paid hours, according to the survey.

The widespread use of technology in the workplace is also associated with an increase in screen time and sedentary workplace behaviour (Waters et al., 2016; Yang et al., 2017), both of which have been linked to poorer physical health outcomes, such as an increased risk of developing physical health problems like diabetes, heart and cardiovascular disease,



musculoskeletal disorders, and obesity, which are often associated with poorer physical health outcomes (Duncan et al., 2012; Ford and Caspersen, 2012; Wilmot et al., 2012). Long periods of screen usage and sedentary working behaviours have also been connected to mental health difficulties, such as increased self-reported depression and anxiety symptoms (Machav et al., 2017). Artificial intelligence is rapidly being used by businesses to complete tasks that were previously completed by humans. Many companies, for example, now deploy automated "intelligent self-service" systems that allow customers or clients to co-produce services, assuming that they have the necessary skills, training, or assistance. Ordering food through mobile phone applications, checking baggage at the airport, reserving hotel rooms online, and using self-service checkouts at the supermarket are all examples. While many consumers like the convenience and time saved, the systems may not always work as intended and are often limited to standard customer requests and needs. As a result, when a customer or client engages with an employee in many service professions, they are more likely to suffer significant levels of aggravation, rage, and sometimes disappointed expectations (Groth and Grandey, 2012). Employees are more likely to have to deal with client maltreatment and emotional labour as a result of this, which increases their workload (Groth et al., 2019). These increased demands, both internal and external, can deplete personal resources and resilience, putting employees at risk of burnout and poor mental health (Schaufeli et al., 2009), as well as increasing employee withdrawal behaviours like increased sick leave (Nguyen et al., 2016), turnover (Goodwin et al., 2011), and employee sabotage against customers like abusing customers (Goodwin et al., 2011). (Wang et al., 2011). Technology can degrade the quality of interpersonal interactions between employees and the social capital inside organisations, in addition to its effects on individual employees' work experiences. Interactions within an organisation are increasingly mediated by systems and technology for many personnel. For example, we use a portal to track work-related health and safety issues; we don't phone anyone, and emails are sent from systems accounts with the subject line "do not reply" and no contact information. This is likely to be especially harmful when employees are in desperate need of assistance. Social support and being a part of a supportive workplace culture are clearly crucial, according to the findings (Grant et al., 2010). High psychological demands and little social support were the strongest and most consistent characteristics related with an elevated risk of depression, according to an analysis of 14 longitudinal studies (Netterstrom et al., 2008). Furthermore, a lack of work-related social support is linked to an increased risk of mental health issues and/or extended sick leave (de Lange et al., 2003). In a prospective cohort study of 9631 male employees of France's

national gas and electricity company, low satisfaction with social interactions and low social support at work were linked to a 10%–26% increase in sick leave that lasted for six years (Melchior et al., 2003). Poor work relationships have been linked to a higher risk of poor mental and physical health. Positive interpersonal contacts, on the other hand, have been linked to improved cardiovascular, immunological, and neuroendocrine responses (Heaphy and Dutton, 2008).

Overall, technology is having a detrimental influence on mental health in the workplace in a variety of ways, including increasing demands, lowering resources, and changing how employees envision the future, all of which have hidden and direct consequences for both companies and employees. Workplace characteristics such as poor job design, excessive job demand, limited job management, and high effort–reward imbalances are now linked to a higher risk of developing common mental health problems, according to extensive research (Harvey et al., 2017). According to job design theories such as the job characteristics model (Hackman and Oldham, 1980) and Job Demands and Resources theories (Schaufeli et al., 2009), we need to create occupations with resources to help balance or respond to high demands in order to improve mental health. Control, support, high-quality feedback, and learning opportunities are all linked to work-related happiness. Fortunately, there are a variety of ways that technology can and has been utilised to successfully design work that protects people' mental health. We'll now look at how automation and technological advancements have aided mental health in the workplace.

### **Research Implications and Recommendations**

It is critical that we investigate the influence of these opportunities on mental health as technology continues to generate 'affordances' or possibilities for how/where we work. Technology's impact on workplace mental health is determined by how it is implemented, organisational norms surrounding its use, and employee views of its impact on their job. We need deeper collaboration between researchers, psychologists, user experience specialists, industry, and government bodies to obtain a better knowledge of the influence of technology via different lenses — not just the lens of productivity — to design workplaces where employees benefit from it. This partnership would benefit from a proactive approach driven by job design concepts. We also ask for further longitudinal study to look at the long-term consequences of technology on mental health, as many studies in the current literature rely on cross-sectional data. Due to the prevalent difficulties of negative reaction and attribution bias,

this is especially troublesome with mental health outcomes. Reverse causality occurs when people with low mental health report seeing unfavourable environmental consequences.

More properly planned intervention trials are also required. While a growing number of companies are putting employees in flexible work arrangements (Shin et al., 2000), the consequences of this sort of work arrangement are challenging to study because people who choose (or are offered) flexible possibilities are likely to do so on their own (Gajendran and Harrison, 2007). Only one trial (Bloom et al., 2015) has randomly assigned individuals to work from home, and it was undertaken in China with a very particular group of people/job roles. Employees' use of flexible work arrangements is expected to vary, and more has to be learned about "dose" effects, the impact of work design, organisational leadership, and individual characteristics.

Researchers could look into whether giving employees a say in the design and implementation of flexible working arrangements could help to moderate changes in happiness. Furthermore, researchers may want to explore using more robust approaches like the stepped wedge design, in which all participants get the "treatment or intervention" in waves or steps. Because all participants will be switched randomly from control to treatment condition at  $t$ , this is especially useful for evaluating staged geographical or sectoral rollouts of changes or where it is not possible or desirable to assign participants to a 'control condition' (for example, where the intervention is expected to have positive outcomes or the intervention is a scarce resource). Beyond pre-post and case studies, these design techniques—which are commonly employed in large-scale health service and implementation science—can increase the quality of evaluations (Bauer et al., 2015).

In order to effectively build norms surrounding conscious use of technology in the workplace and at home, more research is needed, particularly for young people who enter the workforce with engrained technology habits. Such research might look into the effects of incorporating features inside technology-based work platforms such as halting the delivery of work messages at important times (at night or after hours of continuous use) or promoting awareness of harmful technology usage. It would also be helpful to investigate the advantages of the flexibility provided by technology, such as employing digital resources in the office to accomplish tasks that would previously have been completed during leisure time (shopping, social media etc).

When combined with psychological and biophysical markers like cortisol levels and heart rate variability, experience/event sampling methods (ESM) can give a rich, dynamic, ongoing assessment of an employee's experience and mental health. Indeed, new technology allows researchers to administer micro-interventions utilising non-invasive wearable devices or commonplace technologies such as smart phones. Detecting when mental health is deteriorating and employing Just-in-Time adaptive interventions to provide support, promote behavioural change (Lind et al., 2018; Nahum-Shani et al., 2017), or prompt early help seeking behaviour (Gärtner et al., 2013), for example, can be extremely beneficial. While this passive mobile sensing strategy has numerous benefits (unobtrusive, customised, and scalable), it is not without drawbacks, as it can be costly, pose hazards (Goldman et al., 2018), and create privacy and security problems, such as who controls the data, especially in the workplace. As a result, in order to perform this critical research, there must be clear mechanisms in place for informed permission, data management, data sharing, and the actions that follow.

Finally, when utilised in conjunction with well-designed RCTs with longer follow-up periods, workplace mental health interventions can provide much-needed insight into the long-term benefits of these programmes. Cost–benefit studies (using absence/productivity data) will also assist organisations in determining the potential return on investment. Obtaining organisational buy-in is currently a big problem in adopting research in the workplace, as organisational leaders do not necessarily value high-quality research. As a result, researchers must be more effective in expressing the necessity of high-quality research, what it entails, how any disruptions will be handled, and the expected costs and rewards to organisations in order to increase collaboration.

## **Conclusion**

Mental health in the workplace and in management studies is becoming increasingly relevant. Academics, practitioners, and policymakers are all eager to learn more about how fundamental shifts in when, where, and how we work in rapidly changing workplaces, combined with evolving technological developments and demographic shifts, affect employee mental health and well-being in Australia and around the world. By reviewing the literature on mental health and workplace developments, this essay advances the agenda on workplace mental health. We evaluated contemporary workplace mental health and examined how it has evolved over the years. We talked about the ramifications for mental health when

we're dealing with tremendous changes and extraordinary challenges in the workplace. We talked about why mental health is crucial in the context of the future of work, and we identified two significant trends in how we work (in the context of automation and advanced technology in the workplace), as well as where and when we work (in the context of technology enabled telework arrangements).

This article contributes to the existing literature by reviewing the potential impact on mental health, both positive and negative, as well as implications for future research and important stakeholders such as industry, government, universities, and schools. There has been a general lack of integration across the different literatures on mental health. To improve the academic and practical agenda for workplace mental health, we combined rather different literatures on mental health in psychiatry, psychology, occupational stress, management, and the future of work. Although the future of workplace mental health may appear depressing at first, as technology accelerates the pace of work, blurs the lines between work and life, and potentially increases social isolation and loneliness, there is much about the future of workplace mental health that is bright and full of opportunities.

The importance of organisations in shaping and maintaining employee mental health and well-being is a prominent issue. However, few organisations presently employ existing workplace mental health research findings to improve job design. Although our assessment shows that companies can do a lot to improve employee mental health and well-being, it also shows that there are still a lot of research issues to be answered in order to fully comprehend the influence of these critical workforce trends on mental health. To solve these critical concerns, there is a clear need for more cross-disciplinary collaboration.

Overall, mental health must be prioritised on the work agenda in order to handle future difficulties. New and exciting questions will continue to emerge, but the real future of workplace mental health will be determined by how work is created and incorporated in the future to provide individuals with meaning and purpose at work.

## **References**

Allen TD and Shockley K (2009) Flexible work arrangements: Help or hype? In: Crane R and Hill J (eds) *Handbook of Families and Work: Interdisciplinary Perspectives*. Lanham, MD: University Press of America, pp. 265–284.

- Baines S and Gelder U (2003) What is family friendly about the workplace in the home? The case of selfemployed parents and their children. *New Technology, Work and Employment* 18: 223–234.
- Barber LK and Jenkins JS (2014) Creating technological boundaries to protect bedtime: Examining workhome boundary management, psychological detachment and sleep. *Stress and Health* 30: 259–264.
- Barley SR, Meyerson DE and Grodal S (2011) Email as a source and symbol of stress. *Organization Science* 22: 887–906.
- Bauer MS, Damschroder L, Hagedorn H, et al. (2015) An introduction to implementation science for the nonspecialist. *BMC Psychology* 3: 32.
- Belanger F and Allport CD (2008) Collaborative technologies in knowledge telework: An exploratory study. *Information Systems Journal* 18: 101–121.
- Chesley N (2014) Information and communication technology use, work intensification and employee strain and distress. *Work, Employment & Society* 28: 589–610.
- Chisholm D, Sweeny K, Sheehan P, et al. (2016) Scaling-up treatment of depression and anxiety: A global return on investment analysis. *The Lancet Psychiatry* 3: 415–424.
- Claussen B, Bjørndal A and Hjort PF (1993) Health and re-employment in a two year follow up of long term unemployed. *Journal of Epidemiology and Community Health* 47: 14–18.
- Groth M, Wu Y, Nguyen H, et al. (2019) The moment of truth: A review, synthesis, and research agenda for the customer service experience. *Annual Review of Organizational Psychology and Organizational Behavior* 6: 89–113
- Kirchmeyer C (1995) Managing the work-nonwork boundary: An assessment of organizational responses. *Human Relations* 48: 515–536.
- Modini M, Joyce S, Mykletun A, et al. (2016) The mental health benefits of employment: Results of a systematic review. *Australasian Psychiatry* 24: 331–336.
- Monge P, Rothman LW, Eisenberg EM, et al. (1985) The dynamics of organizational proximity. *Management Science* 31: 1129–1142.
- Sullivan C (2003) What's in a name? Definitions and conceptualizations of teleworking and work at home. *New Technology, Work and Employment* 18: 158–165.

## CHAPTER 4

### PREVALENCE OF MUSCULOSKELETAL PAIN IN STUDENTS AND ITS ASSOCIATION WITH THE USE OF PHONE AND COMPUTER (DESKTOP/LAPTOP) AMIDST COVID -19 PANDEMIC

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#### ABSTRACT

This study is an attempt to estimate prevalence of computer related health problems/musculoskeletal discomforts among school students and to investigate association of health problems/musculoskeletal discomforts with duration of computing. 500 students were studied from Punjab state of India who are working phone and computer (desktop/laptop) with the help of Google form for surveys. Majority of students were female, studying in secondary classes and fall in 10-15 years age group, use android phones and work on computer 8+ hours and take never break during working on phone and computer. Chi Square test and 'T' test was used to test the hypothesis. There is association between musculoskeletal problems due to phone and Computer usage and years of working on computer and between musculoskeletal problems due to computer usage and hours of working on computer. Health related problems/Musculoskeletal discomforts are independent of gender except lower back pain which is more in females. There is no difference in health-related problems/musculoskeletal discomforts between phone and computer users.

***Keywords:*** *Health, Computer and students*

#### INTRODUCTION

Computer use among college students has increased dramatically in the last few months due to COVID -19 pandemic. All academic programs now require an android phone, computer and computer literacy for enrollment and completing the course i.e. for making

assignments and notes. In every field, one cannot think without work from home through cloud. It has decreased work load in offices, college, school and business sector but has increased the duration of users on internet. Android phones and Computers has become a connecting and communicating media these days.

Computer work involves repetitive moment of upper limbs, adapted postures using laptops in bed and using desktop sitting on a chair. Same in case of smart mobiles, where students watch constantly their lecture videos and makes notes, assignments and submit quizzes. There are changes in musculoskeletal structures causing tightness, fatigue, neck ache other joint symptoms.

Studies done by different researchers have found that up to 80% people experience physical discomfort during or after computer work.

## **NEED OF THE STUDY**

There is insufficient data on musculoskeletal pains related to computers and android mobiles use among Indian population. Concentrating the differences in academic schedule in college program and duration of computing, there is need to evaluate health related and musculoskeletal complaints (MSK) related to computer and mobile use among students.

## **Research Design**

The research design framed so that overall plan can be explained in a logical way and ensuring that research problem effectively addressed. It contains the blueprint for the collection, measurement, and analysis of data.

## **Objectives of Study**

1. To estimate prevalence of Mobiles and computer (desktop/laptop) related health problems/musculoskeletal discomforts among students during COVID -19
2. To identify nature and distribution of problems associated with computer usage during COVID-19
3. To investigate association of health problems/musculoskeletal discomforts with years, duration of computing and frequency of breaks during using phones and computing.



**Hypothesis:**

H0<sub>1</sub>: There is no association between Health-related problems/Musculoskeletal discomforts and hours of working on phone and computer (desktop/laptop) in a day.

H0<sub>2</sub>: There is no association between Health-related problems/Musculoskeletal discomforts and years of working on phone and computer (desktop/laptop) in a day.

H0<sub>3</sub>: There is no association between Health-related problems/Musculoskeletal discomforts and Frequency of taking breaks from working on phone and computer desktop/laptop in a day.

H0<sub>4</sub>: Perception of students regarding Health-related problems/Musculoskeletal discomforts is independent of Gender.

H0<sub>5</sub>: There is no difference in Health-related problems/Musculoskeletal discomforts between desktop users and Laptop users.

**Source of Data:**

Primary data was collected from students using Google Form. Google form was sent to Various Social Networks whatsapp, Facebook, Facebook messenger, Google+, Instagram, Linkedin, Snapchat, Twitter, Wechat, WhatsApp and Youtube. A thorough review of the existing empirical literature has been conducted. Articles published in various online databases and search engines such as Social Science Research Network (SSRN), JSTOR, Pubmed, Emerald, Repec Archive, Science Direct and Google Scholar were reviewed. In addition, an attempt was made to trace references cited in published articles.

**Definition of Study Subjects and Sample Size**

- 500 Students who are using computer for study purpose (Android phones, laptop and desktop) selected as subject in the current study.

**INCLUSION AND EXCLUSION CRITERIA:****Inclusion Criteria:**

- Student in the age group to >25 years (reporting Mobile/computer use).
- Students of both genders reporting use of phones and computer (desktop and laptop).

**Exclusion Criteria:**

- Uncooperative students.

- Don't use any android phones, computer (desktop and laptop).
- Structural deformities of spine or upper limb.

**Sample Design:** Convenient Sampling Technique

**Method Of Collection Data:** Survey by questionnaire method using Google form.

**Parameters used for comparison and statistical analysis used:** The collected data is analyzed by Percentage, chi – square test and t – test.

**Duration of study:** Three Months (March to May, 2020)

**Data Collection:** Google form was distributed among students to measure computer related health problems/musculoskeletal discomforts. Student reporting computer related health problems/musculoskeletal discomforts were asked questions in survey to obtain details in nature, distribution, duration and other contributing factors.

## DATA ANALYSIS

### Sample characteristics

**Table 2**  
**Demographic Profile of Students**

Demographic Variables		Frequency	
Gender	Male	128	25.60
	Female	372	74.40
Age (Yrs)	10-15 Years	252	50.40
	15-20 years	125	25.00
	20-25 Years	123	24.6
	Secondary	240	48
Education Level	Sen. Secondary	120	24
	Graduate	80	16
	Post Graduate	70	14

*Source: Compiled from Primary Data*

As far as the demographic profile of the students is concerned, the sample comprised of variety of students belonging to different educational background. The demographic background of the sampled students is presented in Table no. 2. Table reveals that majority of students were female. The table also shows that the majority of the students (50.40 per cent)

belonged to the age group of 15-20 years of age. The next largest category comprised of students between 20-25 years of age (24.60 per cent). It brings out that 48 per cent of the students were of Secondary classes followed by under Sen. Secondary (24 per cent). The next category comprised of students who were graduates (18 per cent). While 14 per cent of the students' perusing post graduates.

**Table 3**  
**Type of Hardware/Equipment Used for browsing/typing/downloading**

<b>Computer Used for browsing/typing/downloading</b>	<b>Frequency</b>	<b>Percentage</b>
Smart Phone	200	40
Desktop	180	36
Laptop	120	24
Total	500	100

*Source: Compiled from Primary Data*

Table 3 indicates that 40 per cent of students were used Smart Phone followed by desktop (36 per cent) and Laptop (24 per cent) for browsing/typing/downloading contents, data files and to use social media platform to share their thoughts and to stay connected with others.

**Table 4**  
**Years of Working on Phone and Computer (Desktop/Laptop)**

<b>Years of Working on Desktop/Laptop</b>	<b>Frequency</b>	<b>Percentage</b>
<1 Years	137	27.40
1-2 Years	95	19.00
2-3 Years	84	16.80
3-4 Years	72	14.40
4-5 Years	67	13.40
>5Years	45	9.00
Total	500	100

*Source: Compiled from Primary Data*

Table 4 indicates that majority of students were working on Phone and Computer (Desktop/Laptop) for <1 years, followed by 1-2 years, followed by 2-3 years, 4-5 years and >5 years.

Table 5 indicates majority (43.40 per cent) of students were work 8+ hours per day on phone and Computer (Desktop/Laptop), followed by 6-8 hours, 4-6 hours and 2-4 hours. While just 4 per cent students worked 0-2 hours Phone and Computer (Desktop/Laptop).

**Table 5**  
**Hours of work on Phone and Computer (Desktop/Laptop) per day**

Hours of work on Computer/Laptop per day	Frequency	Percentage
0-2 Hours	43	8.60
2-4 Hours	67	13.40
4-6 Hours	79	15.80
6-8 Hours	94	18.80
8+ Hours	217	43.40
Total	500	100.00

*Source: Compiled from Primary Data*

**Table 6**  
**Frequency of taking breaks from working on the computer**

Frequency of taking breaks from working	Frequency	Percent
More than once an hour	37	7.40
Only after 2 hours work	39	7.80
Once every 1-2 hours	91	18.20
At least once an hour	132	26.40
Never	201	40.20
Total	500	100

*Source: Compiled from Primary Data*

Table 6 indicates majority (40.20 per cent) of students took break never, followed by at least once an hour (24 per cent) once every 1-2 hours (18.20 per cent), only after 2 hours work (7.80 per cent) and more than once an hour (7.40 per cent).

**Table 7**  
**Type of social media platform by students**

Posture	Yes		No		Total	
	Frequency	%	Frequency	%	Frequency	%
Facebook	499	99.80	01	00.20	500	100
Facebook messenger	495	99.00	05	01.00	500	100
Google+	460	92.00	40	08.00	500	100
Instagram	475	95.00	25	05.00	500	100

WhatsApp	500	100.00	00	00.00	500	100
Snapchat	471	94.20	29	5.80	500	100
Youtube	369	73.80	131	26.20	500	100
Wechat	375	75.00	125	25.00	500	100
Linkedin	374	74.80	26	25.20	500	100
Twitter	369	73.80	131	26.20	500	100

*Source: Compiled from Primary Data*

As concerned to type of social media platform used by students to share their thoughts and to stay connected with others large portion of sample population (students) using various popular social media platform. Majority of students were using WhatsApp followed by Facebook. Facebook Messenger and Instagram were also quite popular among students.

**Table 8: Position of Phone and Computer screen**

Position of Phone and Computer screen	Frequency	Percentage
At same level	94	18.80
Upward	182	36.40
Downward	224	44.80
Total	500	100

*Source: Compiled from Primary Data*

Table 8 indicates majority 18.80 per cent keep their computer screen at same level. While 44.80 per cent keep computer screen downward.

**Table 9: Place of reference material while typing**

Place of reference material while typing	Frequency	Percentage
Between Monitor/screen and Keyboard	101	20.20
Above the Monitor/screen	168	33.60
Sides of the Monitor/screen	231	46.20
Total	500	100

*Source: Compiled from Primary Data*

Table 9 indicates the place of reference material while typing on computer. Majority (46.20 per cent) respond they kept it sides of the monitor/screen, 33.60 per cent kept above the monitor/screen and 20.20 per cent kept between monitor/screen and keyboard.

**Table 10: Body Posture during using Phone and Computer (Desktop/Laptop)**

Posture	Yes		No		Total	
	Frequency	%	Frequency	%	Frequency	%
Thigh horizontal	167	33.40	333	66.60	500	100
Feet on floor or on foot rest	245	49	255	51	500	100
Lower leg kept vertical	75	15	425	85	500	100
Arms and forearms at right	161	32.20	339	67.80	500	100
Wrist rest on keyboard	225	45	275	55	500	100

*Source: Compiled from Primary Data*

Table 10 reveals that body posture during using desktop/laptop. Majority of students respond that they did not keep their thigh horizontal, feet on floor or on foot rest, lower leg kept vertical, arms and forearms at right angle and wrist rest on keyboard. It clearly indicates that body posture while using phone and computer (desktop/laptop) is not proper. They don't take care of it while engaged online or offline.

**Table 11****Occurrence of musculoskeletal problems/pains due to phone and computer usage**

Posture	Yes		No		Total	
	Frequency	%age	Frequency	%age	Frequency	%age
Finger pain, wrist & hand	397	79.40	103	20.60	500	100
Shoulder, Elbow pain &	352	70.40	148	29.60	500	100
Numbness/tingling over	347	69.40	153	30.60	500	100
Neck pain	369	73.80	131	26.20	500	100
Back pain	375	75.00	125	25	500	100
Lower backache	389	77.80	111	22.20	500	100
Leg pain	387	77.40	113	22.60	500	100
Thigh pain	389	77.80	111	22.20	500	100
Knee pain	374	74.80	126	25.20	500	100
Numbness/tingling over	369	73.80	131	26.20	500	100
Burning feet	399	79.80	101	20.20	500	100
Overall Average	75.40 %					

*Source: Compiled from Primary Data*

Table 11 clearly reveals that majority of student were suffering from musculoskeletal problems/pains due to phone and computer usage. Overall percentage of students suffering from musculoskeletal problems is found 75.40 per cent.

## Chi-Square test

**Table 12: Association between years of working/using Phone and Computer and suffered /suffering from any musculoskeletal problems**

Years		<1 Years	1-2	2-3	3-4	5-6	>6Years
suffered /suffering from any musculoskeletal problems due to Computer Usage	Yes	123	84	73	64	57	33
	No	14	11	11	8	10	12
Total		137	95	84	72	67	45
Contingency Coefficient (Approx. Sig.) 0.043							

*Source: Compiled from Primary Data*

Table 12 shows the association between years of working/using Phone and Computer and suffered /suffering from any musculoskeletal problems on the basis of student's report. Chi-square analysis (Contingency Coefficient=0.043) showed that the correlation between health related/ musculoskeletal discomfort/pain and the reported years of working on phone and computer was significant ( $p > .05$ ). Therefore,  $H_{01}$  is rejected and there is association between musculoskeletal problems due to phone and computer usage and years of working on phone and computer.

**Table 13**  
**Association between hours of working/using Phone and Computer and suffered /suffering from any musculoskeletal problems**

		Hours of working on Computer/Laptop					Total
		0-2 Hours	2-4 Hours	4-6 Hours	6-8 Hours	8+ Hours	
Suffered /suffering from any musculoskeletal problems due to Computer Usage	Yes	33	59	67	89	201	449
	No	10	08	12	05	16	51
Total		43	67	79	94	217	500
Contingency Coefficient (Approx. Sig.) 0.033							

*Source: Compiled from Primary Data*

The relationship between the existence of phone and computer-related musculoskeletal discomfort/pain and time spent using a phone and computer was assessed based on student's report of desktop/laptop use in a "typical" day (0-2 hours/day, 2-4 hours/day, 4-6 hours/day, 6-8 hours/day or 8+ hours /day).

**Table 14****Association between suffered /suffering from any musculoskeletal problems due Phone and Computer (Desktop/Laptop) Usage and Frequency of taking breaks**

		Hours of working on Phone/Computer (Desktop/Laptop)					Total
		More than	Only after 2	Once every	At least	Never	
Suffered /suffering from any musculoskeletal problems due to Computer Usage	Yes	08	31	85	56	189	369
	No	29	08	06	76	12	131
Total		37	39	91	132	201	500

Contingency Coefficient (Approx. Sig.) 0.047

*Source: Compiled from Primary Data***Table 15****Independent Samples t-Test**

		Levene's Test for Equality		t-test for Equality of	
		F	Sig.	t	Sig.(2-tailed)
Finger pain, wrist & hand pain	Equal variances assumed	0.028	0.523	-0.235	0.984
Shoulder, Elbow pain & arms pain		0.552	0.424	0.125	0.852
Numbness/tingling over hand		0.676	0.492	0.745	0.656
Neck pain		0.356	0.456	-0.654	0.741
Back pain		0.010	1.564	-0.352	0.632
Lower backache	Equal variances not assumed	0.245	0.342	-2.456	<b>0.020</b>
Leg pain	Equal variances assumed	1.282	0.265	0.654	0.954
Thigh pain		0.166	0.890	-0.452	0.874
Knee pain		0.123	0.753	-0.937	0.563
Numbness/tingling over		0.111	0.898	0.220	0.745
Burning feet		1.124	0.250	1.294	0.231

*Source: Compiled from Primary Data*

	Gender	N	Mean
Lower backache	Male	128	1.8563
	Female	372	2.0256

*Source: Compiled from Primary Data*



Chi-square analysis (Contingency Coefficient=0.033) indicated that the correlation between health related/musculoskeletal problems and the reported number of hours per day of computer use was significant ( $p>.05$ ) and  $H_{02}$  is rejected here. Therefore, there is association between problems due to phone and computer usage and hours of work on phone and computer.

The relationship between the existence of phone and computer (Desktop/Laptop) related musculoskeletal discomfort/pain and frequency of taking breaks while using phone and computer (Desktop/Laptop) was made based on student's report of having breaks during working on phone and computer (Desktop/Laptop). Chi-square analysis (Contingency Coefficient=0.047) indicated that the correlation between health related/musculoskeletal problems and frequency of taking breaks was significant ( $p>.05$ ). Therefore,  $H_{03}$  is rejected and there is association between problems due to phone and computer (Desktop/Laptop) usage and frequency of taking breaks while working on phone and computer (Desktop/Laptop).

**Table 16**  
**Independent t –test**

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Sig. (2-tailed)
Shoulder, Elbow pain & arms pain	Equal variances assumed	1.562	.0276	0.847	0.658
Numbness/tingling over hand	Equal variances assumed	0.605	0.440	0.524	0.845
Neck pain	Equal variances assumed	2.301	0.136	0.987	0.985
Back pain	Equal variances assumed	1.811	0.185	0.854	0.756
Lower backache	Equal variances assumed	0.642	0.589	0.365	0.841
Leg pain	Equal variances assumed	5.254	0.312	0.564	0.621
Thigh pain	Equal variances assumed	2.156	0.322	1.874	0.852
Knee pain	Equal variances assumed	4.642	0.436	1.546	0.951
Numbness/tingling over feet	Equal variances assumed	.565	0.456	0.354	0.753
Burning feet	Equal variances assumed	.313	0.579	-0.642	0.843

*Source: Compiled from Primary Data*

Table 16 indicates that  $p>0.05$  so  $H_{05}$  is not rejected therefore, there is no difference in Health related problems/Musculoskeletal discomforts between desktop users and Laptop users.

## **CONCLUSION, DISCUSSION AND FINDINGS**

Musculoskeletal symptoms are quite common, headache and back pain being most common symptoms. These symptoms are associated with prolonged use of computer and internet and often left unreported and unrelated.

- Majority of students were female, studying in secondary class and fall in 10-15 years age group, use phone and computer (desktop/laptop) and work on phone and computer (desktop/laptop) 8+ hours and take at least once a hour break during working on computer.
- There is association between musculoskeletal problems due to phone and computer (desktop/laptop) usage and years of working on computer.
- There is association between musculoskeletal problems due to phone and computer (desktop/laptop) usage and hours of working on computer.
- There is association between musculoskeletal problems due to phone and computer (desktop/laptop) usage and frequency of breaks while working on phone and computer (desktop/laptop).
- Health related problems/Musculoskeletal discomforts are independent of Gender except lower back pain which is more in females.
- There is no difference in Health related problems/Musculoskeletal discomforts between desktop users and Laptop users.

## **RECOMMENDED ERGONOMICS FOR STAYING COMFORTABLE AT COMPUTER**

This study strengthens the findings that musculoskeletal problems/pain is common among school and college students. Based on findings some recommendations have been suggested as follows:

- Sit up tall.
- Sit close to your keyboard.
- Adjust the keyboard height.
- Adjust the tilt of your keyboard based on your sitting position.
- Position the source documents in front of you, and use an in-line copy stand.
- Take small breaks during your workday to release some muscle tension.

## **SCOPE FOR FUTURE RESEARCH**

Future research should continue on larger students' sample to better understand the musculoskeletal complaints, physical activity and computer use and to find whether these factors are related.

## **BIBLIOGRAPHY**

- Eric B. Schlossberg, Sandra Morrow, Augusto E. Llosa, Edward Mamary, MS, Peter Dietrich, and David M. Rempel, (2004), "Upper Extremity Pain and Computer Use Among Engineering Graduate Students", *American Journal of Industrial Medicine* 46:297–303. <http://dx.doi.org/10.2486/indhealth.40.135>.
- Karen Jacobs (2002), "Middle School Children and Their Use of Interactive Media", The Proceeding of the XVI Annual International Occupational Ergonomics and Safety Conference '2002.
- Ketola, R., Toivonen, R., Hakkanen, M., Luukkonen, R., Takala, E. and Viikari-Juntura, E. (2002) Effects of ergonomic intervention in work with video display units, *Scandinavian Journal of Work, Environment & Health*, 28, 18-24. <http://dx.doi.org/10.5271/sjweh.642>
- Rajagopal, V., Rosli, R. M., Rintai, P., Rustim, N., Benadus, R. & Usai, W. (2012). The Prevalence of Computer-Related Musculoskeletal Pain Among College Students-a Cross-Sectional Study. *Current Research in Medicine*, 3(1), 33-36. <https://doi.org/10.3844/amjsp.2012.33.36>
- S. McMahan & R. Lutz (2003), "Computer Use, Workstation Design Training and Cumulative Trauma Disorders in College Students", *Californian Journal of Health Promotion*, Volume 1, Issue 4, 38-46.
- Sotoyama, M., Bergqvist, U., Jonai, H. and Saito, S. (2002), "An ergonomic questionnaire survey on the use of computers in schools" *Industrial Health*,40, 35-141.

## CHAPTER 5

### VALUE CREATION THROUGH FUTURE SERVICE TECHNOLOGIES

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#### **Abstract**

**Purpose** – The purpose of this paper is to propose a framework for understanding, predicting and analyzing how future service technologies can lead to value co-creation at different stages of a value chain.

**Design/methodology/approach** – For organizations, future service technologies are growing in importance and will become a crucial means to survival. It is clear that future service technologies will increase the opportunity to reduce costs and create efficiency, but it is not equally clear how future service technologies enable value creation for customers and users. On this premise, the study proposes a conceptual framework.

**Findings** – The framework illustrates how future service technologies can lead to value creation for customers. The paper also portrays opportunities and potential pitfalls with future service technologies for organizations.

**Originality/value** – Several researchers are focusing on innovative technologies. Many business companies are talking about how to implement them and increase their profit. However, less attention is devoted to the ways in which future service technologies will lead to benefits and the experience of service for customers and users using them. This paper represents an original attempt to illustrate that.

**Keywords:** *Customer value, Innovation, Service co-creation, Service dominant logic (SDL)*

#### **Introduction**

The standpoint for the commentary to this special issue is how customer and user value can potentially be improved by future service technologies. The commentary proposes the key message that future service technologies is not so much about the technology itself as it is

about the benefits and the value it is intended to co-create. This key message implies that for new service technologies to be successful, the organizations implementing these services need to consider how they can benefit both the customer and the organization. The paradox is that if an organization focuses only on the benefits to itself, the benefits to customers are less likely to appear, which will have negative consequences for the organization.

Negative consequences for the organization. Evidently, the rapid growth of future service technologies translates into a multitude of new opportunities for organizations, as well as for customers and users. The speed of technological advancement shaping today's services stresses the importance of rethinking how managers can diagnose and solve real-world problems and maintain customer-centricity. Thus, future service technologies have the opportunity to change how users are creating value in a dramatic way. By future service technologies I refer to new technological opportunities that improve the ability to co-create service with users. Value creation refers to how users (i.e. various kinds of actors, such as business customers, consumers, patients, citizens, etc.) are positively benefitting from usage of one or a combination of resources (e.g. offerings).

To assist organizations in the challenging situation that future service technologies imply, researchers can investigate how customers can (self-) diagnose and solve problems that will be beneficial for themselves in their everyday lives. Researchers can also help by analyzing how future service technologies may increase the likelihood of personalization and be just the means to an end that customers need but may not always be capable of articulating (Huang and Rust, 2017). Researchers can also examine how business managers, with the help of new service technologies, can identify, monitor, regulate and solve important problems for customers, users, societies and the planet. Thus, research within this area is important and Kunz et al. (2019) have called for research that, while the rapid development of new service technologies is ongoing, can further advance our understanding of how technology can improve the lives for individuals and organizations. In response to Kunz et al.'s (2019) important call, this commentary presents a reflective framework aimed at examining how various future service technologies can accomplish customers to experience value creation.

### **The future roles of new service technologies**

It is difficult to say how new service technologies will play an important role in customers' lives in the future. Consider the following: In a market research survey commissioned by AT&T to McKinsey in the 1980s, users were asked to predict their need for a mobile phone

in the future and the estimation turned out to be less than 1 per cent of the actual figure (economist. com). Consumers expressed that mobile phone had no place in their lives. Today we know that things turned out to be in the opposite direction. In a similar way, Gordon Moore, the founding CEO of Intel, noted that most of Intel's revenue came from a microprocessor that Intel internally did not regard as one of its top 50 market applications (Chesbrough, 2006). Kristensson et al. (2015) found that nurses predicted the value of new telemedicine equipment as low before usage. When they actually trialed the new technology for the first time, they rated the value significantly higher. Two weeks after the trial, the nurses again reported that they remembered the technology as less valuable. Thus, a possible conclusion is that future technologies may affect people in ways that are unthinkable in advance. We are simply too fixated to our current knowledge of how things are being done today to plan for the future in an innovative way (Kahneman and Tversky, 1979).

When it comes to future service technologies, there is a counter-intuitive flip side regarding innovation and its relation to value creation for customers (Snyder et al., 2016). Perhaps most notable is the somewhat neglected circumstance that technological innovation, when it involves a new offering, does not necessarily have to translate into any detectable value for a customer. For example, the latest iPhone with new OLED display, called super retina, provides more accurate color, referred to as "HDR" (high dynamic range), with true black nuances. For the general customer, however, this may only appear as an incremental improvement in picture accuracy, which likely is difficult to discern and therefore represents only a very small increase of experienced value for a customer. In addition, the history has given us an abundance of examples of new technologies that never created any value for customers or the innovating company. Conversely, Uber, a new form of taxi that is radically changing how customers are choosing to travel, involves very little new technological innovation. Instead, Uber introduced a new business model in combination with a mobile phone app. The story behind the success is easily available taxis at affordable prices that save customers time and money.

In this way, developing and implementing future service technologies always implies a balancing act for companies and organizations. As hinted above, the balance is between focusing too much on the technology in itself, where technology takes the representation of being the end rather than a means to an end, and customer or user value, where technology simply represents a means to an end. Although most marketers probably would point toward the latter, many researchers, not to mention managers, have focused on the technology itself

and how to make it better. How the customer can have an improved life as a result of the technology is something that has been treated as self-evident or up to the customer. There is justification toward the former, as new technologies represent something new and exciting that we have not seen functioning or possible to make previously, while customer value typically remains the same, for example, saving one's time, saving money, providing safety, finding information and having fun.

There is a common problem when it comes to the introduction of new technology, most of which is the result of old and successful traditions in manufacturing. The old school of thought informed companies to ask themselves how they can make better products and how they can get customers to adopt these at an increasing rate. However, instead of asking what new technology customers would like to have, companies and organizations would do much better to ask how they better can support their customers or users to reach valuable outcomes in improved ways (Heinonen et al., 2010).

influence service marketing in the past decade suggests a new way of thinking. It states that rather than goods being exchanged for money, it is the activities emanating from an integration of resources, that customers are looking for (Vargo and Lusch, 2004a, 2004b; 2017). Thus, rather than asking for ownership of a new digital service in the form of a wearable t-shirt that can indicate one's blood pressure, the customer wants to be able to lean back and enjoy the fact that he/she knows he/she still is in good health. The implication of this new school of thought is that companies and organizations need to understand how new technology can improve the situation for customers, or organizations, in some way. This does not necessarily mean that the customers must be offered something new; the technology can, for instance, help the providing company to better predict fluctuations in demand or improve the ability to prevent break-downs.

### **How future service technologies assist in value creation**

Below, I outline a framework illustrating a simplified value chain to give my reflections a red thread (Berggren et al., 2008; Sawhney et al., 2006). The framework should exemplify and make it easier to understand, predict, and/or discuss how future service technologies can lead to the creation of new value. It should help customers as well as managers to ensure that customers are not forgotten when it comes to new technologies, and it should also indicate how usage of future service technologies can solve problems that are important for customers. In addition to providing structure to my thoughts, the framework makes an

attempt to illustrate the infinite roles that new service technologies may play in the future. As the framework indicates, these situations are numerous, may also be hidden and, as concluded previously, are often therefore difficult to imagine beforehand. The examples of technology mentioned in the framework should be taken as illustrative examples for igniting inspiration. The most important aspect is that the framework emphasizes and illustrates the link between technology and value creation, as these two entities need to be married to each other in order for meaningful and long-term sustainable service to appear. The framework is displayed in Figure 1 and explained in more detail in the subsequent paragraphs.

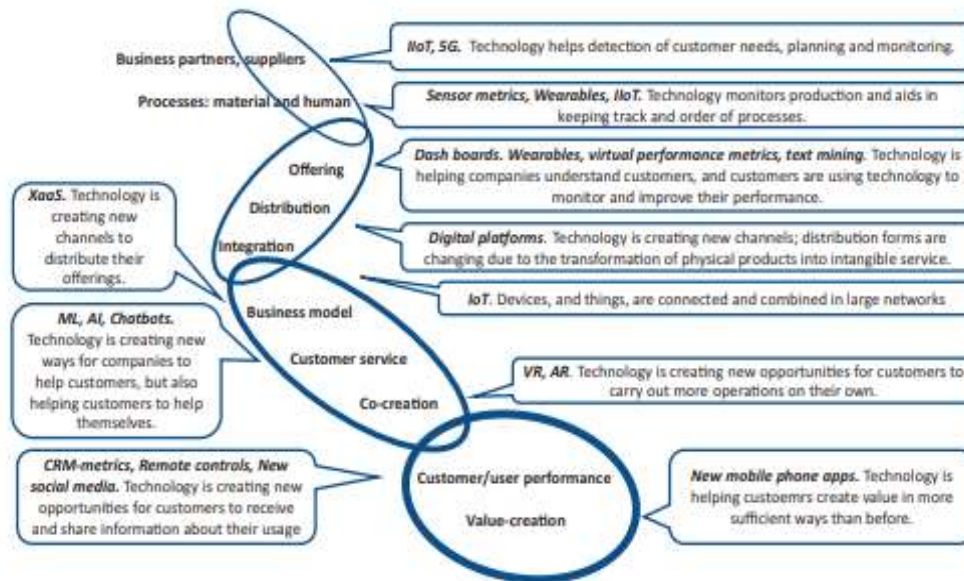
### **The first chain**

Figure 1 starts with the involvement of different actors, such as business partners and suppliers, and concerns the extent to which future service technologies can detect upcoming needs of input. New service technologies that detect future needs can facilitate (for example) just-in-time delivery or smoothen many types of operations that are typically found in industrial settings. New technologies, in terms of industrial internet of things, can detect sudden decreases in supply, automate new orders, or remotely regulate processes through 5G network connections. The benefit of future service technology, as displayed at the top of Figure 1, may regard improved aid in detection of customer needs, planning and monitoring. Moving further in the value chain to business processes raises questions such as to what extent technology can help keep track of production, how machines are performing, and how things are dispersed outside the factory or plant. Here, new technologies can aid in detection and positioning, which can be important to prevent breakdown. New technologies can be used not only to serve control of material processes, but also human ones. In this regard, technology can display how employees are performing. For example, technology may alert front-line employees when customers are about to approach or how many times a certain process has been run by a customer. Information of this kind can improve preparation for customer service and delivery. For both these cases (i.e. material and human), future service technologies may deal with different types of wearables and sensor metrics that can aid managerial and organizational decision-making. Cloud-based software infrastructure can be used to measure, collect and store big data. In sum, technology is helping both the customer and the providing organization to keep order and track of



**Figure 1**

Future service technologies facilitating value creation in different phases of a value chain



### The second chain

Approaching the middle section of Figure 1, the offering comes into focus. Here, future service technologies can be used to indicate how the offering is performing during usage, that is, when and where the customers are using the offering and the total usage time. So-called up- and down-time can be monitored and also how customers are becoming more proficient at using the offering over time. These are all examples of how future technology can assist customers' value creation. This is important because improved understanding of how customers are co-creating value represents a cornerstone in the success of any business or organization (Kunz et al., 2017). Examples of future service technologies may involve data dash-boarding, where customer behavior is visualized in real-time and during customer value co-creation. Text mining can imply opportunities for companies to better understand customer behavior.

Regarding distribution, an increasingly important issue is whether technology can transform physical goods into intangible service. Examples of future service technologies involve new platforms and big data access, where offerings that were previously tangible are made intangible (Lusch & Nambisan, 2015). It is notable how the entire music industry has transformed into a streamed service that customers subscribe to, instead of buying physical

goods in one-time transactions in retail stores. In this way, new service technologies are implying opportunities to create new channels and distribution forms.

Integration is an important aspect of new technology as it will be possible to connect many future innovations to each other. For example, technology can show how solutions from one company are interacting or being used with solutions from other companies. If so, future service technologies can facilitate in managing the integration of resources in a way that is beneficial for the customer. Examples may involve a new internet of things where devices transmit information and detect each other. With the increasingly popular term “Industry 4.0,” one of the main characterizing features is that machines interact with each other (Lorenz et al., 2015).

### **The third chain**

Regarding new business models, future service technology may imply opportunities for how companies can make revenue and, at the same time, facilitate for customers to enable (for example, smoothen their purchase process). Examples may involve new service business models such as XaaS (i.e. any thing as-a-service) where customers subscribe to or hire services instead of making a large one-time transaction of physical products.

A traditional value-chain focuses on activities occurring within the organization. As this commentary wants to raise awareness about circumstances in which customer processes are often neglected, this value chain is extended with activities relating to customer value (Porter and Kramer, 2011). Thus, a value chain should also involve user value.

Approaching the bottom of the Figure 1, the focus shifts to how future service technology can support customer service and imply new ways of communication and interaction. Future service technologies are likely to involve chatbots, machine learning (ML) and artificial intelligence (AI) to interact and train customers to get more out of their offerings than what has previously been the case. In particular, ML and AI can be used to help customers become more proficient at carrying out performances in the future. Here, technology can assist in creating new ways for companies to help customers but also for customers to help themselves.

In terms of co-creation, future service technologies are likely to imply many new opportunities for customers to carry out more operations on their own. When more value co-creation activities can be carried out by customers themselves, opportunities in terms of

personalization increase. Also, customers can test-run and train new services by means of future service technologies. In this regard, technological innovations such as virtual reality and augmented reality can be expected to be important.

### **The fourth chain**

As mentioned previously, future service technology can be used to indicate customer performance improvement over time. Technology is creating opportunities for customers to receive and share information about their usage. Data displays that allow users to improve, become smarter or save money are likely to be increasingly in demand. Examples of future service technologies may involve new CRM metrics, remote-control devices, sharing of knowledge by means of social media, or the above-mentioned data dashboards. All these can enable customers to see how they are performing while they are using different types of offerings (Fan and Gordon, 2014). Similarly, new social media analytics may indicate how other users are experiencing same or other types of activities. The result of future service technologies is that the customer will be able to carry out more and more operations on their own in an increasingly professional manner.

Finally, as mentioned in the introduction to this commentary, future service technologies exist for a reason, namely, to assist in improving value creation. How can future service technologies be used so that customers' lives improve or become more efficient? Can technology display how and when value is being experienced? Future service technologies can provide information about how much time a customer is saving or how much cleaner the environment is becoming when a customer is performing a certain activity. Examples of future service technologies may involve real-time usage of metrics and data analytics that are easily available, for example, through mobile phone apps or similar. The bottom line is that technology is helping the customer to co-create value in a more sufficient way than before.

### **Concluding remarks**

Overall, Figure 1 conveys how it could be possible to use future service technologies as a means to an end, which in these terms means supporting customer value creation. Although the providing service company in several of the instances is the possessor and user of new service technologies, Figure 1 illustrates how customers will still benefit from the technology in the end. The implementation of future service technologies in the way that is illustrated in the Figure is believed to increase the likelihood of leading to customers that are satisfied and

will therefore be retained, which will imply value capturing for companies as well (Keiningham et al., 2017). In this way, future service technologies have the capacity to create a win-win situation for both companies and customers.

However, future service technologies are not always beneficial for companies or customers. As mentioned, history is full of examples where new innovations have failed to both provide customers and companies with any value at all. Customer might lack skills and knowledge, or motivation, and therefore not be able to use the technology in the intended way. Future service technologies can also serve the role of only improving the situation for the company, while things will remain the same for the customer. A new technology can imply a way of saving costs for the company, while customers receive the same service as they had previously. This would imply facilitating companies to improve their profit margin, given that the same service at the same price is delivered to the customer as before.

## References

- Berggren, U., Bergkvist, T. and Hedby, U. (2008), *De Nya Affärsinnovationerna (the New Business Innovations)*, Nutek, Sweden.
- Chesbrough, H. (2006), *Open Business Models: How to Thrive in the New Innovation Landscape*, Harvard Business Press, USA.
- Fan, W. and Gordon, M.D. (2014), "The power of social media analytics", *Communications of the ACM*, Vol. 57 No. 6, pp. 74-81.
- Heinonen, K., Strandvik, T., Mickelsson, K.-J., Edvardsson, B., Sundström, E. and Andersson, P. (2010), "A customer dominant logic of service", *Journal of Service Management*, Vol. 21 No. 4, pp. 531-548.
- Huang, M.H. and Rust, R.T. (2017), "Technology-driven service strategy", *Journal of the Academy of Marketing Science*, Vol. 45 No. 6, pp. 906-924.
- Kahneman, D. and Tversky, A. (1979), "Intuitive prediction: biases and corrective procedures", *TIMS Studies in Management Science*, Vol. 12, pp. 313-327.
- Keiningham, T., Ball, J., Benoit, S., Bruce, H.L., Buoye, A., Dzenkowska, J. and Zaki, M. (2017), "The interplay of customer experience and commitment", *Journal of Services Marketing*, Vol. 31 No. 2, pp. 361-384.
- Kristensson, P., Brunstrom, A. and Pedersen, T. (2015), "Affective forecasting of value creation: professional nurses' ability to predict and remember the experienced value of a

- telemedicine diagnostics ICT service”, *Behaviour & Information Technology*, Vol. 34 No. 10, pp. 964-975.
- Kunz, W., Aksoy, L., Bart, Y., Heinonen, K., Kabadayı, S., Ordenes, F.V. and Theodoulidis, B. (2017), “Customer engagement in a big data world”, *Journal of Services Marketing*, Vol. 31 No. 2, pp. 161-171.
- Kunz, W., Heinonen, K. and Lemmink, J. (2019), “Future service technologies: is service research on track with business reality?”, *Journal of Services Marketing*, Vol. 33 No. 2.
- Lorenz, M., Ruessmann, M., Strack, R., Lueth, K.L. and Bolle, M. (2015), *Man and Machine in Industry 4.0: How Will Technology Transform the Industrial Workforce through 2025*, The Boston Consulting Group.
- Lusch, R.F. and Nambisan, S. (2015), “Service innovation: a service-dominant logic perspective”, *MIS Quarterly*, Vol. 39 No. 1.
- Porter, M.E. and Kramer, M.R. (2011), “The big idea: creating shared value”, *Harvard Business Review*, pp. 1-17.
- Sawhney, M., Wolcott, R.C. and Arroniz, I. (2006), “The 12 different ways for companies to innovate”, *MIT Sloan Management Review*, Vol. 47 No. 3, pp. 75.
- Snyder, H., Witell, L., Gustafsson, A., Fombelle, P. and Kristensson, P. (2016), “Identifying categories of service innovation: a review and synthesis of the literature”, *Journal of Business Research*, Vol. 69 No. 7, pp. 2401-2408.
- Vargo, S.L. and Lusch, R.F. (2004a), “Evolving to a new dominant logic for marketing”, *Journal of Marketing*, Vol. 68 No. 1, pp. 1-17.
- Vargo, S.L. and Lusch, R.F. (2004b), “The four service marketing myths: remnants”, *Of a Goods-Based, Manufacturing Model. Journal of Service Research*, Vol. 6 No. 4, pp. 324-335.
- Vargo, S.L. and Lusch, R.F. (2017), “Service-dominant logic 2025”, *International Journal of Research in Marketing*, Vol. 34 No. 1, pp. 46-67.

## CHAPTER 6

### LIFE STYLE CHANGES AND HEALTH: DISEASES AFTER DIGITAL TRANSFORMATION

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#### **Abstract**

Lifestyle may be defined as a way of living which reflects the attitudes, values, likes, dislikes and manners etc. Lifestyle may also be characterised in terms of the interests, judgements, behaviours, patterns of living and behavioural orientations of an individual or a group. A lifestyle typically reflects an individual's or a group's attitudes and values. Therefore, a lifestyle is a means of building a sense of self and to create cultural symbols that match with personal identity.

*Key words: Lifestyle, individuals, group.*

#### **ORIGIN OF TERM “LIFE STYLE”**

The term “life style” was firstly introduced by Austrian psychologist Alfred Adler in his book, in the year 1929 “The Case of Miss R” in which it was used as "a person's basic character as established early in childhood". Lifestyle is a combination of both intangible and tangible factors. Tangible factors are related to demographic features such as an individual's age, sex, occupation, income, whereas intangible factors are concerned with the psychological aspects of an individual such as personal values, opinions, preferences, likes, dislikes and outlooks.

#### **DEFINITIONS**

#### **TYPES OF LIFE STYLE**

Lifestyle is the combination of physical, social, mental, economical, psychological factors along with values, interests, opinions, and behaviours of a certain individual, group or community. It is how people live their life. People all around the world have different kinds

of lifestyles depending upon their values and preferences. There are various types of life styles exist in our culture.

### **Active lifestyle**

An active lifestyle means having exercises daily, socializing and meeting with people, joining groups or clubs in the neighbourhood, and an active and healthy body and mind.

### **Healthy lifestyle**

A healthy lifestyle is very closely associated with an active lifestyle. In a healthy lifestyle, one should choose the food with proper care; avoid junk foods, saturated fats, and sugar. A person should always try to eat healthy. A person should not overeat because it's not at all healthy and it also makes kidney tired, which is not healthy too. A person should also go for daily exercise and yoga.

### **Bohemian lifestyle**

This life style is suitable for those who are of creative nature such as artistic, spiritual, musical person. Persons having such life style tend to travel a lot. They always seek adventures, make time for spiritual culture. They enjoy going to parties and making a lot of friends.

### **Nomadic lifestyle**

It's a lifestyle where a person constantly moves from one place to another. A lot of people don't fit this lifestyle because most of people need stability and security in life. A nomadic lifestyle person feels comfortable by spending most of their time with some other people from time to time and they avoid attachments as well.

### **Solo lifestyle**

There are certain people who want to live solo and they are very independent people. Having a solo lifestyle does not mean lonely. A person with such life style can still have friends if they meet the right person.

### **Rural lifestyle**

Persons with such life style love to grow crops, animals, and love nature and rural areas. They grow their own food, put up a farm and grow fruits and veggies and maybe animals. A

rural lifestyle can be easily enjoyed by sitting on front porch, looking at the fields, enjoying a cup of coffee or tea and just enjoying the fresh air. Having a rural lifestyle doesn't mean that the person is lonely, instead a person also has active community which can celebrate a lot of festivities together.

## **DIGITAL TRANSFORMATION**

Digital transformation means change in technology with the passage of time. Technology has changed the entire world in various ways during the last decade and hence the life style of people has also undergone a change. These changes can be very well reflected in various aspects of life.

## **LIFE STYLE CHANGES DUE TO DIGITAL TRANSFORMATION**

All these kinds of life styles have undergone changes due to change in technology or in other words we can say due to digital transformation.

**Active life style:** Change is in the way of socializing. Now a day's people socialize through social media such as INSTAGRAM, WATSAPP, TWITTER, FACEBOOK and online interactions rather than meeting each other physically.

**Healthy life style:** A number of apps are available online who guide people to maintain their health and reduce weight etc. Such as HEALTHIFYME, MY FITNESSPAL, HEALTHTAP, RUNKEEPER, GOOGLEFIT ETC.

**Bohemian lifestyle:** Artistic people can sell their art online and can make money from the same. There are various apps available online for painters, musicians etc.

**Nomadic lifestyle:** Now people are not required to talk to travel agents on phone or stand in queue for taking tickets. They can use online apps to book their trips and can use GPS to find any destination.

**Solo lifestyle and rural lifestyle** have not undergone that much change but yes, technology has reached rural areas as well and now a day's rural people are also using internet, mobile phones etc.

Various other aspects of life style in which digital transformation has made change include:



## **Finance**

Technology has made the world of banking and finance easily accessible for everyone. people can do all the banking transactions online without requiring to visit banks, they can keep an eye on their stock portfolio, and invest in funds of their choice.

## **Shopping**

More and more people are choosing to shop online rather than visiting market physically. A big Thanks to technology because most of the retail chains have websites where people can buy anything from a pin to a plane. Various online shopping apps includes: MYNTRA, SNAPDEAL, AMAZON, FIRSTCRY, LIMEROAD ETC.

## **Gaming**

There are thousands and thousands of sites and apps which are offering new ways to experience games. In today's world Technology has brought all sorts of games, from augmented reality to even real money blackjack right to your home, to play, practise and excel.

## **Entrepreneurship**

There was a time when small and medium scale enterprises could not operate beyond local limits but now they have websites and more people are having access to them and their products and services. Companies have clients from all over the world which is helping them to bring valuable experience and expertise in its wake.

## **Social media**

Social media has played a major role in effecting the life style of people all over the world. From behaviour influencer, to finding new friends, social media presence has been ubiquitous. Instagram is a visual delight, Twitter is for clever repartee, and YouTube channels are there to learn everything from how to grow plants to how to cook etc.

All such changes in the life style can be depicted through the following pictures:



## **HEALTH CHANGES AND DISEASES AFTER DIGITAL TRANSFORMATION**

No doubt that digital transformation has changed the way of living and life styles but the major impact is on health of all individuals. Medicine- technology has enabled robots and remote location surgeries, it has reduced the chances of infection and disease, it has speeded up the process of delivering medicines and life-saving drugs but the stress related issues and diseases have also increased after digital transformation. Every day, technology is creating more breakthroughs to fight serious illnesses that have resulted in high mortality in the past. Stem cell research gives patients a new lease on life, as do artificial limbs. At the same time this fact can't be ignored that the health of all humans is affected in a negative way by digital transformation.

More and more use of Social media and mobile devices has lead to various psychological and physical issues. That has also contributed to more serious health conditions such as depression. The excessive use of technology also has a significant impact on developing children and teenagers. Various such diseases or affects can be categorised as psychological and physical effects.

### **PSYCHOLOGICAL EFFECTS**

#### **Isolation**

Social media such as FACE BOOK, WATSAPP and INSTRAGRAM are designed to bring people together but they have the opposite effects in some cases. [A 2017](#) study in young adults aged 19–32 years found that people with higher social media use were more than three times as likely to feel socially isolated than those who did not use social media as often.

#### **Depression and anxiety**

No doubt that People who had positive interactions and social support on the social media platforms have lower levels of depression and anxiety but the reverse is also true. People who had more negative social interactions online and who were more prone to social comparison experienced higher levels of depression and anxiety.

## **PHYSICAL EFFECTS**

### **Eyestrain**

Technologies such as tablets, smart phones and computers can hold a person's attention for long periods and this may lead to eyestrain. Further eyestrain may also lead to pains in other areas of the body, such as the head, neck, or shoulders.

Several digital transformation factors may lead to eyestrain, such as:

- screen time
- screen glare
- screen brightness
- viewing too close or too far away
- poor sitting posture
- underlying vision issues

### **Poor posture**

The way many people use mobile devices and computers may also contribute to incorrect posture. Over time, this may lead to musculoskeletal issues. Many technologies promote a "down and forward" user position, meaning the person is hunched forward and looking down at the screen. This can put an unnecessary amount of pressure on the neck and spine.

### **Reduced physical activity**

Most everyday digital technologies are sedentary. More extended use of these technologies promotes a more sedentary lifestyle, which is known to have negative health effects, such as contributing to:

- obesity
- cardiovascular disease
- type 2 diabetes

## **WAYS FOR HAVING A HEALTHY LIFE STYLE**

**Avoiding excessive social media usage:** A healthy life requires the finding of ways to reduce social media use, such as setting time limits for social apps, may help reduce feelings of isolation in some people. Excessive use of social media among the masses has led to emotional destruction leading to disastrous mental and physical effects.

**Care for Eye Health:** Continuous work on screens may increase the dangers to eyes causing strain and other eye diseases. Taking a regular break from the screen may lead to the reduction in the likelihood of eyestrain. The American Optometric Association recommends the 20-20 rule for digital viewing which means that after every 20 minutes of screen time a 20 second break is required to look at something which is at least 20 feet away. This may prevent the strain.

**Positive use of digital transformation:** A vital topic on today's world, conservation efforts can be easily benefitted from technology. From drone technology to monitor animals and birds, to embedded chips to keep track of movements and births, technology is helping dedicated people everywhere make the planet a better place. Ocean currents, rising temperatures, glacier cleavages, deforestation and afforestation- technology is helping us keep track of nature.

## **Conclusion**

One of the most effective way in which everlasting changes can be made in one's life is to approach the right way of adopting a lifestyle which is positive and includes all those factors which can reduce health risks. The concept of digital transformation has undoubtedly transformed our lives but has also affected the physical as well as mental health of the individuals. Thus, the need of the hour is a complete balanced approach towards digital transformation taking into consideration the health aspects.

## CHAPTER 7

### PROBLEMS AND PROSPECTS OF WOMAN ENTREPRENEURSHIP IN INDIA

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#### **Abstract**

Women entrepreneurship has been recognized during the last decade as an important untapped source of economic growth. Women entrepreneurs in India face challenges of attitudinal bias and lack of public safety, in addition to pressures of balancing work, home and family. Women have always been overburdened with multiple responsibilities making them look emotional, weak and indecisive. But in reality, being emotional and multi-taskers has made women natural leaders who are committed and work relentlessly towards their goals. Women have unabashedly sought help as and when the need has arisen making them more tolerant towards others viewpoints. The present paper is an attempt to understand the empowerment of women, problems faced by women entrepreneurs & leaders as well as the opinion of women regarding leadership and empowerment.

**Keywords:** *Women, entrepreneurship, Leadership, Challenges, Empowerment.*

#### **Introduction**

In this ever-changing world, awareness has instigated women to start their own enterprises and become an integral part of the family income. Moreover, in the present scenario when women are lacking social as well as economic security, it has become very much essential that a woman should be self-dependent. Women entrepreneurship is a key to economic development in many countries across the globe. It is one of the newest areas of research in the entrepreneurship field and has become one of the significant supportive factors for societal and economic development of any country around the world.

Nowadays women understand that entrepreneurship opens up wide numerous fields for them and they can achieve their ambitions with full liberty. More and more women are aspiring for

economic independence all over the world and a large number of women entrepreneurs have even appeared on the road of entrepreneurship. No doubt, the awakening is taking time but it is where women have come up with extraordinary outcomes of their missions in many generic fields. While at least half the brainpower on earth belongs to women, women remain perhaps the world's most underutilized resource. Despite all the social hurdles, India is brimming with the success stories of women. A few daring endeavors by women entrepreneurs have been enumerated in this paper to exemplify the fact that sky is not a limit for women who dare to support their dream of enterprising into a new field. The empowering process of women in India started specifically from the Sixth Five Year Plan (1980-85) when obligatory quota of benefits for women in different poverty alleviation programmes was made. This process reached another milestone when the Government of India brought in 73rd and 74th Amendments to the Constitution of India in the year 1992 for at least one third reservations of seats for women in rural and urban local self-governments. In rural areas, local self-governments have three tier villages, blocks, and districts. This reservation is applicable to all three tiers. As a consequence, thousands of women in rural and urban India have been liberated from their kitchens and brought into positions of authority and responsibility in the panchayats and municipalities. They became the members of political community at the same time, because to be the members of local self government they have to contest party-based general elections at an interval of five years.

The status of women in India has long been self contradictory. On one side, they have been treated like goddesses and on the other side they have been the victims of brutality of society. Women have been taking increasing interest in recent years in income generating activities, self employment, and entrepreneurship. This is seen in respect of all kinds of women both in urban and rural areas. Women are taking up both traditional activities like knitting, pickle making, toy making, jam and jelly and also non-traditional activities like computer training, catering services, beauty parlor, gym, etc. The reasons and motivations for starting business or economic activities by the rural women are many. The important being earning money or attractive source of income, enjoying better life, availability of loans, favorable government policy, influence of success stories, personal satisfaction, desire to utilize own skill and talents, unfavorable present working environment, self-employment and employment of others, assurance of career and family security, fulfillment of creative urge of the borrowers' experience in family business, self-confidence, non-ability to find suitable job or work, encouragement and advice of the family members, economic necessity, and so on.

## Literature Review

Hisrich and Brush (1985) researched to find the reasons for starting the business by women entrepreneurs. Most frequently mentioned were 'push' factors of frustration and boredom in their previous jobs, followed by interest in the business, with 'pull' factors such as autonomy a distant third. Bowen & Hisrich (1986) in their research "The Female Entrepreneur: A Career Development Perspective" came to the conclusion that female entrepreneurs are (a) relatively well-educated in general, but perhaps not in management skills; (b) high in internal locus of control; (c) more masculine or instrumental than other women in their values; (d) likely to have had entrepreneurial fathers; (e) relatively likely to have been first-born or only children; (f) unlikely to start a business in traditionally male-dominated industries; (g) more likely than not to be married; (h) seldom owners of a large business; and (i) experiencing a need for additional managerial training. Sue (1989) found out that all throughout the history, according to the traditions of particular cultures, the role of men and women in the respective societies have been quite different. The trend of these roles is on ever changing continuum where more and more women are completing their Postgraduate education and many are working on full-time basis too. Salganicoff (1990) depicted in his study that women show loyalty to both the business and family, focusing their concern on the individual needs of all members. This dual loyalty and concern, as well as role and judgment flexibility are vital to the success of the family firm. Moore and Buttner (1997) revealed five thematic clusters of reasons women left their jobs to start a business; need for self-determination (including need for greater autonomy and freedom) and challenge; blocks to corporate advancement (including lack of career advancement, discrimination and a feeling of "no fit" with the corporate culture); organizational dynamics that dealt with power and politics; desire for greater family-career balance.

The research by Sullivan, Halbrendt, Wang, & Scannell (1997) found that women see work environments in large organizations as significantly more hostile and this perception was related to women's turnover intentions. Cathleen (2008) suggests in a study that within the business, women network and integrate their worlds such that they have a positive impact on the performance and reputation of business. Impact of women on other stakeholders within the firm, customers and employees is also based on their relational focus. At last, women in the family firm also have a huge impact on the larger community with economic development, a focus on jobs and the environment.



Goyal & Parkash (2011) stated that if every citizen in India works with such a zeal that he tends to respect the important position occupied by women in society and understand their vital role in the modern business field too, then very soon we can assume our chances of out beating our own conservative and rigid thought process which is the biggest barrier in our country's entrepreneurial and social development process

Akehurst, Simarro & Alicia (2012) concluded in their study that firstly, the type of financial support received affects the motivation and obstacles for women entrepreneurs and secondly, in terms of demographic factors, not having a partner positively influences their ambition to start a business. The age at which women undertake a new business project also affects both the entrepreneurial nature of women, the obstacles they come up against and business success. Lastly, women entrepreneurs who start larger firms and those started using family loans tend to be more successful.

### ***Objectives of the study***

- To examine the status alleviation of women with the help of entrepreneurial skills in India.
- To critically examine the problems faced by women entrepreneurs.

### **Women as Entrepreneurs and Status of women**

“When women move forward, the family moves, the village moves”. These words of Pandit Jawaharlal Nehru are often repeated because it is an accepted fact, that only when women are in the main stream of progress, only then any economic and social development can be meaningful.

In India, there is absolutely no dearth of talented female social entrepreneurs. Research shows that women approach business leadership with a different perspective than men do, and as a result they relate more easily to the experiences of other women business owners. It is needed to convert experiences of women who have achieved high business growth into practical learning programs that are available to every woman aspiring to lead flourishing enterprises. Women entrepreneurs are expanding their network beyond community and women's entrepreneurship networks. The most successful women entrepreneurs join multiple, diverse network to learn from their contacts, meet customers and develop connections.

NAME OF ENTREPRENEUR	ENTERPRISE
<p><b>Ela Bhatt</b></p> <p><b>Hina Shah</b></p> <p><b>Jeroo Billmoria</b></p>	<p>Founded SEWA (1972), the world’s first and largest trade union for undocumented women workers, as well as Women’s World Banking in 1979 - had been inspiring and leading women for generations.</p> <p>Founder of The International Centre for Entrepreneurship and Career Development (ICECD), has worked for over 25 years on scaling micro, small, and medium size businesses across 21 states of India and shown the power of women in hostile conditions too.</p> <p>Founder of Childline India and Ashoka fellow since 1998, has become the outstanding example of social entrepreneurship around the world.</p>
<p><b>Ajaita</b></p> <p><b>Saloni</b></p> <p><b>Gloria</b></p> <p><b>Nina Lekhi</b></p> <p><b>Meena bindra</b></p> <p><b>Suchi Mukherjee</b></p>	<p>She is on a mission to bring high quality and affordable products to bottom of the pyramid and rural households in India. Having worked in microfinance for 5 years with organizations like SKS Microfinance and Ujjivan Financial Services, Ajaita has already been ranked the most influential leader under 30 in microfinance by Business Week. Her organization, Frontier Markets, aims to be the-scale solution for manufacturers creating products for rural markets.</p> <p>Founder of <u>DesiCrew</u>, a for-profit organization employing over 300 people that’s focused on creating knowledge-based livelihood opportunities in small towns and rural areas. Saloni stepped down as a the CEO in March 2012 to hand over to a professional management team and continues to participate on the Board</p> <p>Having founded Make A Difference in 2006, she now finds herself a leader in one of India’s largest volunteer networks. Around 1,300 youth volunteers teach and mentor 5,400 orphaned and underprivileged children across 20 cities in India thanks to her organization. Her aim is to inspire 360 million Indians to dedicate 1 hour per week to helping underprivileged children across the country.</p> <p>Founder of bag retail brand Baggit, launched her venture when she was a student at Sophia polytechnic at Mumbai. Baggit was meant to be “bags with attitude” also inspired by Michael Jackson’s “Beat it!” She started off with one shop at Kemp’s corner and then a nationwide chain featuring innovatively designed bags and accessories.</p> <p>Founder of India’s largest readymade ethnic wear brand BIBA. She started off with a local block printer with initial sales to Mumbai stores and then her own company owned outlets.</p> <p>She is the founder and CEO of lime road. She has revolutionized the way lifestyle products are discovered and bought by people online in India. She hails from a family having no business background. She was selected as 1 of 15 women worldwide ‘Rising talents, high potential leaders under 40.’</p>
<p><b>Simone Tata</b></p>	<p>She has been instrumental in changing a small subsidiary of Tata Oil Mills into the largest cosmetic brand in India – LAKME, synonymous today with Indian Fashion. She became a part of Lakme during 1961 and has been responsible for turning the company into one of the biggest brands of fashion in India. At present she is the Chairperson of Trent Limited, a subsidiary of Tata Group.</p>

## Case Studies

### Cremica- Dreams are Baked of Ice-creams

From Ice creams and baked goodies from the backyard, Cremica is one of the largest food processing companies in India; was founded by Mrs. Rajni Bector, who started making ice-creams in her garage. Today, Cremica is an integral link in the supply chain to the fast-food industry with an inventory of Buns, Breads, Sauces, Ketchups, Ice-cream Toppings, Syrups and Mayonnaise to giants like Indian railways, the United Nations (World Food Programme) and MNCs like Mc Donald's, Barista, Cafe Coffee Day, Big Bazaar, Papa John's, Jet Airways and so on. Below are the success steps of Cremica's Ladder which made Mrs. Bector, an eminent Feminine Leader in the world of Entrepreneurship.

<b>1980</b>	Rajni Bector (An Arts Graduate) started her new career with a little investment of Rs 20000/- to make ice creams & bakery items at backyard of her residence.
<b>1982</b>	Ajay Bector, eldest son of Mrs. Rajni Bector joined the business to help in the venture.
<b>1986</b>	Another Unit of Bread & Bakery Biscuits with an investment of Rs. 100000/-.
<b>1989</b>	Younger Sons joined the business & 1 more unit was established to manufacture 50000 loaves of bread a day.
<b>1991</b>	Establishment of a Fully Automated Unit for manufacturing of Biscuits with a capacity of 7200 million tones biscuits per annum with an investment of Rs. 7500000/-
<b>1992</b>	Introduction of a Confectionary Facility Unit followed by a Namkeen Manufacturing Unit.
<b>1997</b>	Mc Donald's approached Mrs. Bector for the supplies of various products i.e. buns, batters and breading.
<b>2002</b>	Most Modern Bun Manufacturing Plant established at Greater Noida with a capacity of 150000 Buns per Shift for supplies to Mc Donald's.
<b>2003</b>	Fresh Vegetable Processing Facility for supplies to Mc Donald's with an investment of Rs 15000000/-.
<b>2004</b>	Mrs. Bector's Cremica entered into an Agreement with ITC Ltd for manufacturing of biscuits on contract basis and a unit was set up to provide biscuits for ITC under the brand name of SUNFEAST.
<b>2007</b>	Offer by Goldman Sachs for Equity participation. The liquor products & biscuit operations were valued by Goldman Sachs at Rs. 500 Crores and 15% stake was offered to them by Cremica group at Rs 7500000/-.

### *Lijjat- Spirit of India's Vibrant Women*

Lijjat- An exclusive women's organization run and managed by them, a quality product that these women had the expertise to make, and, finally, a work environment which is not competition-driven and mechanized but based on pure labor and love for the organization and its people.

Stage	Description
Idea	<p>Generating employment for women</p> <p>Making women independent</p> <p>Empowering women</p>
Start up	<p>It was the Brain child of seven semi-literate Gujarati housewives from Mumbai who started the activities by borrowing Rs. 80. First of all they took over a loss-making Papad venture and bought the necessary ingredients and the basic infrastructure required to manufacture papads. On March 15, 1959, they gathered on the terrace of their building and started with the production of 4 packets of Papads and started selling the papads to a known merchant in Bhuleshwar. Within three months there were about 25 women making papads and at the end of first year, the organization's annual sales were Rs. 6,196.</p>
Set up	<p>Initially the papads were kept on the cot and the stove below the cot so that the process of drying could take place in spite of the rains. Promotion happened through word of mouth and articles in local newspapers which helped to increase its foundation membership. By end of second year 100 to 150 women had joined the group which reached more than 300 members at the end of third year.</p> <p>Within no time, Lijjat began producing other products like masala, wheat atta, bakery products, etc. In 1970s, they set up flour mills, printing division and packing division. Not only this, the group also initiated some unsuccessful ventures such as cottage leather, matches, and agarbattis. And in 1987, Lijjat purchased new premises at Kamal Apartments in Bandra, Mumbai. Further to the stream of success Lijjat group entered the soap market with Sasa detergent and soap in 1988. Notably, Sasa had annual sales of Rs 500 million, accounting for 17 percent of Lijjat's total turnover in 1998. Gradually, Lijjat started exporting its products with the help of merchant importers in the United Kingdom, the United States, the Middle East, Singapore, the Netherlands Thailand, and other countries and accounted for more than US\$2.4 million in 2001.</p>
Expansion	<p>Today, Lijjat has 42,000 members spread over 17 states in India. Many members remain with Lijjat for a lifetime and their association with Lijjat becomes a part of their life and family. One of the pioneering members of the very first group of the seven women who founded Lijjat, Jaswantiben Jamnadas Popat in 1959, continues to be a member-sister. Both, Lijjat and Mrs. Popat were nominated as "Business Women of the Year for Corporate Excellence, 15 during 2002 by Economic Times, India's leading financial newspaper in recognition of their entrepreneurial contribution. Another major initiative on part of Lijjat that informs its member-sisters and engages them with the organization is through <i>Lijjat Patrika</i>, the in- house publication which communicates to its member-sisters' significant events and new initiatives at Lijjat. The publication also acts as a platform for promoting education and literacy within the families of the organization's member-sisters. 'Papad' remains its principal focus and the dominant product in the organization's product mix. The organisation is registered as a trust under the Bombay Public Trusts Act, 1950 and being a trust, it is not owned by any single person but by all women who work for it and enroll as its members. Any woman, regardless of her caste, creed, religion, age can become a member of Lijjat.</p>
Present	

### *Problems faced by Feminine Leaders*

Being a woman, itself creates various problems to a feminine entrepreneur. The problems of Indian women arise from traditions, customs and socio-cultural values, ethics to her responsibility towards family, society and work. Women entrepreneurs face a series of problems right from the seeding of their venture till the enterprise functions.

<p><b>Startup Finance</b></p> <p><b>Finance for Growth</b></p> <p><b>Marketing/Promotion Skills</b></p>	<p>The complicated process of bank loans, the undue delay in obtaining the loans and running about involved do deter many women from venturing out.</p> <p>Obtaining the support of bankers, managing the working capital, lack of credit resources are the problems which still remain in the male's domain. Women are yet to make significant mark in quantitative terms. Some problems are structural in nature and beyond the control of entrepreneurs</p> <p>It is one of the core problems as this area is mainly dominated by males and even women with adequate experience fail to prove their mettle.</p>
<p><b>Management Skills</b></p> <p><b>Access to Markets</b></p>	<p>Although this is common to all entrepreneurs, women are particularly disadvantaged in this respect. Because they have lower propensity of previous business experience. Besides this, support providers discriminate against women entrepreneurs to a greater extent in providing these skills. Skills are concerned with and ranged from day-to-day management to long-term strategic development.</p> <p>It is not feasible for women to visit field like men which becomes a disadvantage factor for them.</p>
<p><b>Administrative &amp; Regulatory Requirements</b></p> <p><b>Family ties</b></p> <p><b>Limited Mobility</b></p> <p><b>Limited Access to Technology</b></p> <p><b>Discrimination by Finance providers</b></p>	<p>Long list of procedures poses a difficulty for women to qualify and hampers their growth.</p> <p>Women in India are very emotionally attached to their families. They are supposed to attend to all the domestic work, to look after the children and other members of the family. They are over burden with family responsibilities like extra attention to husband, children and in laws which take away a lot of their time and energy. In such situation, it will become difficult to concentrate and run the enterprise successfully.</p> <p>Women mobility in India is highly limited and has become a problem due to traditional values and inability to drive vehicles. Moving alone and asking for a room to stay out in the night for business purposes are still looked upon with suspicious eyes.</p> <p>Lesser Technical know-how is a constraint in starting a new business and women generally suffer from this. They need help in technical decisions which make them dependent and therefore it is another problem.</p> <p>Creditors perceive women as weaker section of society in terms of repayments which although is not true.</p>

<b>Women's safety &amp; Gender based Violence</b>	Insecurity all around the Indian societal boundaries has created a vicious web for women to come up with their entrepreneurial ideas.
<b>Exploitation by middle men</b>	Since women cannot run around for marketing, distribution and money collection, they have to depend on middle men for the above activities. Middle men tend to exploit them in the guise of helping. They add their own profit margin which results in less sales and lesser profit.
<b>Lack of belief in Women's Ability Difficulty in Legal Formalities</b>	Stereotypical thinking of society towards women makes it difficult for them achieve their aspirations. Too much complicated legal formalities make it tough for a normal individual to start up his/her own business.
<b>Indifferent attitude of Authorities towards women</b>	It's impossible for a woman to rise in a society where she is tagged as a weaker sex and hence prevents her to come forward with a concept which may be juvenile still fruitful.

## **Conclusion**

Although Indian society is transforming at a fast pace but still there are lags which make it too orthodox to rely on a woman for a better perspective in business. Women's relentless zeal, incessant quench for success and willingness to walk the extra mile has broken all myths about their inborn limitations that were supposed to be major road blocks on their way to success. Despite great potential there are certain unavoidable problems related with women empowerment which can only be tackled if the society understands the worth of a women and intellectual capital of woman. People need to change their perspective towards women and the government too needs to come forward with stringent reforms to put women on the same pedestal as men.

## **References**

- Akehurst, Simarro & Alicia (2012) Women entrepreneurship in small service firms: motivations, barriers and performance, *The Service Industries Journal*, 32:15, 2489-2505, DOI: 10.1080/02642069.2012.677834
- Bowen and Hisrich (1986) *The Female Entrepreneur: A Career Development Perspective*, *The Academy of Management Review*, Vol. 11, No. 2 (Apr., 1986), pp. 393-407, Accessed: 10/09/2013 03:07
- Cathleen (2008) *Women in Family Firms: Characteristics, Roles, and Contributions*. Small Business Institute® Research Review, *Proceedings of the Small Business Institute ® Annual Conference*, Vol. 35, San Diego, CA, Feb. 2008, pp.157-168.

- Goyal and Parkash (2011) Women entrepreneurship in India-problems and prospects. Zenith International Journal of Multidisciplinary Research Vol.1 Issue 5, pp: 195-207
- Hisrich & Brush (1985). Women and minority entrepreneurs: A comparative analysis. In J. A. Hornaday, E. B. Shils, J. A. Timmons & K. H. Vesper (Eds.), *Frontiers of Entrepreneurial Research*, Boston, MA: Babson College, pp. 566-87.
- Moore and Buttner (1997), *Women Entrepreneurs: Moving beyond the Glass ceiling*, Thousand Oaks: Sage Publications.
- Salganicoff (1990) Women in Family Businesses: Challenges and Opportunities. *Family Business Review*, 3: 125–137, DOI: 10.1111/j.1741-6248.1990.00125.x
- Sue (1989) Female Entrepreneurs: Are They Really Different? *Journal of Small Business Management*, Vol. 27, No. 1 (January), pp: 32-37
- Sullivan, Halbrecht, Wang, & Scannell (1997) Exploring female entrepreneurship in rural Vermont and its implications for rural America. *Economic Development Review*, Vol. 4, pp 275-300.

## CHAPTER 8

### ROLE OF AN EDUCATOR IN CHANGING SECNARIO

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#### ABSTRACT

You can't deny the role of Teacher in anyone's life. during a country like India Teacher was worshiped like GOD but in present scenario, Society is improving rapidly with the method of westernization. it's another impact of modernization. Now the role of teacher is modified for the sake of higher adjustment and understanding and that they forced to perform several duties beside the normal activities. Present education system is predicated on child centric and the teacher has paid his full attention towards the demand of his students. The teacher should arrange a democratic classroom environment where they will share their knowledge freely to construct new knowledge. Teacher must be involved in taking a positive role in school room management also as school management. This is the necessity of the hour that teacher should adapt and change himself within the changing scenario to perform his duty successfully and take the responsibility of his students for his or her better future.

*Keywords: teachers, present scenario, better adjustment, school management*

#### Introduction

consistent with the UN, "Education may be a process which pulls out the simplest in man with the aim of manufacturing a well-balanced personality". So, education played a really significant role in developing the general personality of a private to the extent of perfection and outcome the simplest citizen from him. within the opinion of Dr. A. P. J. Abdul Kalam, the previous president of India, "the whole purpose of education during a country is to develop and enhance the potential of human resource and progressively transform it into a knowledge society". For this purpose of education, teacher features a very significant role. In our Indian Society, the prime purpose of education was to transmit the knowledge to subsequent generation and teach them the facts, and standards of ethical and social conduct which they concede to be necessary for subsequent generation's material and social success. during this way the role of teacher was as important that he was worshiped like GOD. His role is taken into account as a giver of data, which he gives to students on a specific subject.



He motivated his students and moves them toward a deeper understanding of that subject. In traditional teaching, teacher cares with the controller of the training environment. He hold the Power and responsibility of his students and also acts sort of an instructor. They regard students as having 'knowledge holes' that require to be crammed with information. In short, the normal teacher views that it's the teacher that causes learning to occur. Faculty generally are responsible of interacting with a student to help , promote, and complete an indication of student learning. This included a lively role in teaching the category itself, developing and revising lectures, revising content, preparing for lectures and labs, developing or finding class materials, grading materials, and accessing student learning but the method of westernization also as modernization changed the role of teachers. because the society is changing, its contents also are changing for better adjustment and understanding. Now the teacher has got to perform several duties beside the normal activities. As we all know a teacher's traditional activities are mainly teaching and evaluating but now, he's not only doing teaching, rather he has got to take a share in modern management within the previous system, teacher was the centre of whole education but within the new approach of education the learner occupies the centre of the education system. Now the requirements, interests, level, age and potentials of the kid are taken under consideration. Nowadays the method of education isn't the method of inputting knowlege into the top of the scholar, rather drawing out his talent from the kid. Teachers now play a task to assess the character of the scholars, watch their natural interests and encourage to require out his potential out. In present scenario contents and evaluation systems are upgraded and elaborated. the fashionable teacher depends on encouragement, suggestion and sympathetic ways with their students. the fashionable teacher encourages questions by learners.

The main characteristics of constructivism are:

- (A) All knowledge is human construction
- (B) Learning is an indoor process which occurs within the mind of a private
- (C) Experience or interaction is required to make knowledge
- (D) Follows the principle off collaborative and cooperative learning strategies.

Thus, within the present scenario, the normal role of teachers which was as a provider of data to the scholar is completely changed as compare to the 20 years ago. consistent with Dr Jackie Gerstein, 4 key areas are affected like:

- i) Teacher and student roles
- ii) Curriculum

iii) Assessment

iv) Pedagogy

These all four areas are discussed like this

i) Teacher's role

Now the teachers aren't considered because the experts and therefore the only source of data. Their role has changed to being because the mentors, guides and leaders for learning.

ii) Student's role

lately students have a much bigger role in education. Now they're not only passive during their learning but they're actively engaged and liable for their own learning

iii) Pedagogy

Today failure and mistakes also are seen because a part of the training process. Guidelines and Instruction are more student-centred instead of teacher-centred. Curriculum is being differentiated and personalized consistent with the wants instead of being one-size-fits-all curriculum.

iv) Assessment

Summative assessments are replaced by formative and more and more education institutions adopt formative assessments so as to switch teaching and learning activities to enhance student attainment.

### **ROLE OF TEACHERS within the CHANGING SCENARIO**

The new era is an era of globalization, knowledge explosion, technological innovations and digital/ virtual learning therefore, the field of education is additionally undergoing into the various changes like virtual classrooms, global communications, distance learning, global economies, telecourses, corporate classrooms, increased competition among social agencies for scarce resources etc. during this situation, an issue arises that **What's driving this change?**

There are variety of key drivers of this alteration, including:

I. Shifting from the concept of 'delivering learning' to 'enabling learning. The Education institutions provide that kind of learning experiences which foster positive emotion to strengthen greater cognitive development. Curricula and syllabuses are designed to satisfy the varied and variable needs of all learners to make sure that learning is fully inclusive and promotes success for all. Increasing recognition of societal changes, including problems with equity and catering for school kids who come to high school disadvantaged. Pedagogies that

specialize in engagement, inquiry and active, flexible, deep learning. Collaborative practice and thus the necessity to create relational trust across teams. Deliberately designing learning to possess horizontal connectedness across an honest range of curriculum areas, the community and thus the broader world. Learning experiences that open up opportunities for college kids to be curious, creative, and innovative. Deliberately designing learning for innovation and creativity. Designing learning experiences where students can develop social skills and relationships, collaborating with a selection of various people and peers.

II. Human capability and capacity changed according to Technology ---- It's evidenced as: The unpredictability of the long run workforce and rapid advancements of automation. the roles of today weren't the roles of 10 years ago and should be not the roles of 2030. the varied skill sets and attributes needed to contribute to society with demands for innovation, creativity and sustainable practices that have minimal impact on our planet. The emergence of robotics and AI (AI) on such a scale that the demand for humans as teachers/workers may alright be under threat.

III. Change in concept of knowledge as evidenced by: Thinking more of knowledge as a gaggle of cognitive strategies than as a 'thing' or because the goal of learning. The exponential rate of change leading to rapid knowledge obsolescence and rapid knowledge emergence.

IV. An economy that succeeds through the deployment of knowledge. Changes to the inspiration of knowledge-generation, from being the domain of academia to recognizing the importance of peer-based knowledge, community knowledge and cultural knowledge.

V. Shifts within the ownership of learning as evidenced by: Increased learner agency with learners also being teachers within the environment. Increased emphasis on learner-centered approaches, including self-directed, self-determined and self-managed learning. Increased emphasis on the importance and acknowledgment of student voice and open opportunities for expressive outcomes. Development of learning environments suited to collaborative practices.

VI. Increased specialize in culturally responsive practice like: Recognition of local languages, cultural practices and history with within the national and native curriculum. Prioritizing bicultural perspectives over a dominant culture discourse. Valuing place-based knowledge and history. Using both indigenous and western epistemologies, research methodologies and

ways of learning. Deliberate provision of opportunities for college kids to strengthen their own connection to their language, culture and identity which may successively support teachers to reply to their learning needs. Engaging students with learning in, through and about their own culture, also because the culture(s) of the country they reside in.

Recent technological advances have affected not only the education system but many areas of our lives too. The way we communicate, collaborate, learn, and, of course, teach in conjunction with that, those advances necessitated an expansion of our vocabulary, producing definitions like digital natives, digital immigrants etc.

Obviously, teaching within the 21-century could also be a special phenomenon. It never before could happen the way it's now. Below are the characteristics of a 21st-century teacher and teaching during this changing scenario

### **Teacher - Model and Learner-Centered Classroom**

you can't deny the role of Teacher in anyone's life, this is often kind of a model. A task model could even be a private whose behavior is imitated by others. In 30 or 40 years back teacher's personality was an explanation for nice attraction for the students. They not only had great respect for him but also wants to imitated his behavior. He was the only source of knowledge for him. But now as students have access to any information possible, there certainly isn't any need to "spoon-feed", the knowledge of the teacher or teach content. As students have different personalities, goals, and needs, offering personalized instructions isn't just possible but also desirable. When students are allowed to form their own choices, they own their learning, increase intrinsic motivation, and put in additional effort -- a perfect recipe for better learning outcomes. there is a thirst of youth for positive role models

### **Teachers learn new technologies and students as producers**

Today's students have the newest and greatest tools, yet, the usage in many cases barely goes beyond communicating with family and friends via chat, text, or calls. albeit students are now viewed as digital natives, many are far away from producing any digital content. While they are doing own expensive devices with capabilities to supply blogs, infographics, books, how-to videos, and tutorials, just to call a couple of, in many classes, they're still asked to show those devices off and work with handouts and worksheets. Sadly, often times these papers are simply thrown away once graded. Many students don't even want to try to them, including keep or return them later. When given an opportunity, students can produce beautiful and

artistic blogs, movies, or digital stories that they feel pleased with and share with others. In order to be ready to offer students choices, having one's own hands-on experience and expertise are going to be useful. Since technology keeps developing, learning a tool once and for all isn't a option. the great news is that new technologies are new for the novice and experienced teachers alike.

### **Go Global is that the agenda of today**

Today's tools make it possible to find out about other countries and other people first hand. Of course, textbooks are still sufficient, yet, there's nothing like learning languages, cultures, and communication skills from actually lecture people from other parts of the planet. it is a shame that with all the tools available, we still study other cultures, people, and events from the media. Teaching students the way to use the tools in their hands to "visit" any corner of this planet will hopefully make us more knowledgeable and sympathetic.

### **Be Smart and Use Smart Phones**

Once again -- when students are encouraged to seem at their devices as valuable tools that support knowledge (rather than distractions), they start using them intrinsically. Some years ago, teaching was sort of a cassette playing meaning teacher wouldn't allow cell phones in class and that they tried to aim to elucidate every new vocabulary word or answer any question there self -- but it'd not even consider doing today!

Now teachers have learned that different students have different needs when it involves help with new vocabulary or questions; therefore, there is no need to waste time and explain something that perhaps only one or two students would enjoy. Instead, teaching students to be independent and skills to hunt out answers they need makes the category a special environment!

I think that it's a positive change ever since I started viewing students' devices as useful aid. In fact, sometimes I even respond by saying "I don't know -- use Google and tell us all!" What a difference in their reactions and outcomes!

### **Teacher as guide for Project-Based Learning**

As today's students have enough authentic resources on the web, experts anywhere in the world, and peers learning the same subject somewhere else, and now teaching with textbooks is very "20th-century" phenomena. Today's students should develop their own driving

questions, conduct their research, contact experts, and create final projects to share all using devices already in their hands. All they need from their teacher is only guidance!

### **Teacher should develop their Positive Digital Footprint**

It might sound obvious, but it's for today's teachers to model the way to appropriately use social media, the way to produce and publish valuable content, and the way to make sharable resources. Albeit it's true that teachers are people, and that they want to use social media and post their pictures and thoughts, we cannot ask our students to not do inappropriate things online if we ourselves roll in the hay. Maintaining professional behavior both in school and online will help build positive digital footprint and model appropriate actions for college kids.

### **Innovative and keep learner**

The teacher should develop their Positive Digital Footprint It might sound obvious, but it's for today's teachers to model the way to appropriately uses social media, the way to produce and publishes valuable content, and the way to make sharable resources. Albeit it's true that teachers are people, and that they want to use social media and post their pictures and thoughts, we cannot ask our students to not do inappropriate things online if we ourselves roll in the hay. Maintaining professional behavior both in school and online will help build the positive digital footprint and a model appropriate action for college kids.

### **As a Friend or a mentor**

Now the relationship of a student and teacher involves trust, guidance, encouragement etc. Teachers got to make an honest rapport with the scholars. Teachers got to create freedom with the students in such the way to make a situation for sharing with them like friends. In this 21st cen. teacher should take the role of a mentor. He can help the individual to bring out his hidden talents and interests which features an excellent influence on his future. it is best to celebrate the identified strength of the child within the general public. during this era teacher can encourage their acceptable behavior and proper the non-accepted ones. Teacher can provide him values like punctuality, morality and perseverance.

### **CONCLUSION**

According to William Arthur Ward "The mediocre teacher tells; the great teacher explains. The superior teacher demonstrates. the good teacher inspires". In this era teaching may be a complex process and therefore the role of teacher is additionally complex, multidimensional

and challenging. they need to play roles starting from simple classroom teachers to model. it's not an easy task; but a time-consuming process and wish constant concentration of mind. To play these roles effectively teacher has got to face great challenges and needed to use technological applications, improved ways of teaching and quite that, he or she should be endless learner. they ought to have good mind and a spotlight to realize all the qualities needed for an efficient teacher. within the age of data explosion also teacher may be a must for student's wellbeing.

“Many of the most important advances in civilization are the chief work, not of politicians or investigators, not even of artists, but of teachers”. thanks to this alteration of scenario, thousands of teachers are rethinking every a part of their jobs, their relationship with students, the tools and techniques they employ, their rights and responsibilities, the shape and content of curriculum, what standards to line and the way to assess , their preparation as teachers and their ongoing professional development.

### **References**

- Aggarwal J. C. 2007 Teaching of History, Vikas Publishing House Pvt. Ltd.
- Banerjee M. Sinha S, Dutta H,. 2011 ‘The Changing Role of Teachers in the Recent Trend of Teaching and Learning’, Musings, volume-2, pp: 1 –5
- Biswas G.K.2011, Technological Approach in Teaching History, Musings, volume-2, pp: 1 27 –129
- Gronlund N. E. 1985, Measurement and Evaluation in Teaching, Macmillan Publishing Company, New York.
- <https://www.linkedin.com/pulse/teachers-role-classroom-control-management-peter-kayoundo>. Retrieved on 25/01/2017.
- Kochhar, S.K. 2014 ‘The Teaching of Social Studies’ Sterling Publishers(P)Ltd.
- Nidhi Madan, 2017 International Education and Research Journal, vol.3 no.6
- Pandya R. MistryP.2010 ‘Higher Education; Challenges and issues’, University News, 48(28), July 12-18
- Shrabanti Gayen,2017 Harvest (Online); Bi-Annual, Changing Role of Teachers, vol.2-page no.81 -83

## CHAPTER 9

# FINANCIAL LITERACY AND SUSTAINABLE RURAL DEVELOPMENT: AN OVERVIEW

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### **Abstract**

The purpose of this research is not only to comprehend rural credit or rural banking, but also to determine the extent to which it has benefited the lives of rural residents. As not all literates are financially literate, it is critical to examine the gap between expectations and reality in rural areas, which is the root cause of poverty and suicide. The population growth rate is much higher than the development rate. The banking sector must be innovative, provide services to rural clients, and educate its customers on financial matters so they can plan for their families. Indian banks can become global banks only if they focus on rural clients.

*Keywords: Financial Literacy; Sustainable Development; Banking sector, Rural Banking*

### **Introduction**

Financial literacy focuses on the ability and knowledge to manage personal finance in an efficient manner. It shows how an individual makes his financial decisions. The education and understanding of various financial areas are important for managing personal finance. It helps individuals to become self-sufficient so that they can achieve financial stability. Those who are financial literate know about purchases, such as whether an item is required, whether it is affordable, and whether it an asset or a liability. It clearly shows the existence of the behaviors and attitudes a person possesses about money that is applied to his daily life. It helps and individual to develop a financial road map to identify what he earns, what he spends and what he owes, whereas the lack of financial literacy leads to owing of large debts, becoming the victim of lending loans at high interest rates, subprime mortgages, and frauds, resulting in bad credit, bankruptcy or foreclosure. It leads to owing large amounts of debt and making poor financial decisions because they lack the basic skills to manage their bank accounts, pay off their bills and debts on time and plan for the future. Financial Inclusion and financial education are two important elements that should go hand in hand only then the goal of development can be achieved in real sense. It is more so important for the rural population



because only opening the bank accounts won't help them solve their problems. They are lacking the basic knowledge of managing their finance and dealing with the crisis. Also being well educated not always means to be financial literate. Sometimes people with a lower formal education level but with better experience are better prepared for making financial decisions. So, it's not entirely based upon your academic qualification or by just having an account in the local bank or just by being rich, it is not the right criteria to decide if the person is financial literate or not? The Financial regulators in India—Reserve Bank of India (RBI), Securities and Exchange Board of India (Sebi), Insurance Regulatory and Development Authority of India (IRDAI) and Pension Fund Regulatory and Development Authority (PFRDA) have created a joint charter called 'National Strategy for Financial Education'. Financial ministry has taken many initiatives to make people of rural areas financially literate like utilising the services of postmen to teach people how to use banking services and access various state-sponsored financial inclusion schemes. Also, the Securities and Exchange Board of India (Sebi) has decided to empanel financial education resource persons (RPs) on part-time basis for various districts in Uttar Pradesh, Haryana, Punjab, Jammu and Kashmir, Himachal Pradesh and Uttarakhand. In Punjab, Barnala, Kapurthala and Pathankot are among the seven districts in the state where Sebi will empanel resource persons (RPs). Reserve Bank of India (RBI) has created critical volume of literature in 13 languages for banks and other stakeholders to download and use and it has been uploaded on their website. The booklet **FAME (Financial Awareness Messages)** provides basic financial literacy messages for the information of general public.

India is home to 17.5% of the world's population and approximately 76% of its adult population does not understand even basic financial concepts which is a cause of worry because it leads to unproductive investment decisions which leads to crisis and sometimes leads to suicides by the farmers and poor people in the rural areas. Some of the basic messages financial literacy seeks to deliver are: how money works, the need to save, need to save consistently in banks, need to borrow money within limits from banks and moneylenders, need to repay loans in time, need for insurance, what is interest and how banks and money lenders charges high rate of interest etc.

Everyone in the economy needs to be financially literate only then development can take place. Both users and providers needs have financial awareness.

**Users:** Various types of users in Indian context are: poor, the lower- and middle-income groups and high net worth individuals. The poor and the illiterate population are more prone to being exploited by money lenders and banks in the rural areas.

**Providers:** Banks, financial institutions and various market players too need to be literate about the risk and return framework in order to expand its customer base. If they understand the requirements of its customers and the risks associated with the market only then they will be able to expand their operation to new segments and to the untapped rural population.

### **Review of literature**

Financial literacy is the first step towards achieving financial inclusion. Many studies have been conducted regarding the impact of financial literacy on rural development and how it helps in financial inclusion and organized financial decisions in the country. Some of the studies are discussed as follows:

**Massey (2010)** said that, role of financial institutions in a developing country is vital in promoting financial inclusion. The efforts of the government to promote financial inclusion and deepening can be further enhanced by the pro-activeness on the part of capital market players including financial institutions. Financial institutions have a very crucial and a wider role to play in fostering financial inclusion. National and international forum have recognized this and efforts are seen on domestic and global levels to encourage the financial institutions to take up larger responsibilities in including the financially excluded lot. **Kumar and Mohanty (2011)** discussed regarding Financial inclusion which is a development policy priority aimed at improving conditions of vulnerable groups in many countries. Several initiatives for financial inclusion supported by legislative measures have come from financial regulators, banks and governments. One such initiative taken by the SAARC countries is the provision of microfinance. The comparison of Financial Access 2010 survey on various issues of financial inclusion agenda of the SAARC countries suggests that enforcement mechanisms are weaker than legislative requirements in all the SAARC countries. In India microfinance promotion is very impressive but high interest rate has increased household debt burdens leading in some cases to suicides. **Banot, Bapat and Bera (2012)** tried to explore the factors which are crucial in determining the extent of financial inclusion in geographically remote areas. The study also aims to provide suggestive measures for banks to tap unexplored markets. Their findings showed that level of financial inclusion in north-east India was very low. Income, financial information from various channels and awareness of

self help groups (SHGs), and education were influential factors leading to inclusion. Factors like area terrain and receipt of government benefit individually do not facilitate inclusion. However, recipients of government benefits in plain areas show increased level of inclusion. **Kunt and Klapper (2012)** found that only 35 per cent of Indian adults had access to a formal bank account and 8 per cent borrowed formally in the last 12 months.

It is identified as a key cause of poverty, together with other issues like illiteracy,

lack of access to social benefits and productive assets, so also inadequate healthcare **Kumar (2013)** discuss about the status of financial inclusion in India and study its determinants and the findings reveal the importance of a region's socio-economic and environmental setup in shaping banking habit of masses. **Garg & Aggarwal (2014)** tried to analyze how Indian banks tried to achieve the ultimate goal of financial inclusion for inclusive growth in India and their various initiatives and achievements in past few years. **Mehrotra & Yetman (2015)** discussed about the access to financial services that is increasing worldwide. This special feature discusses the implications for central banks. Greater financial inclusion changes the behaviour of firms and consumers in ways that could influence the effectiveness of monetary policy. The impact on financial stability may depend on how any improvements in financial access are achieved. Risks may rise if greater financial inclusion results from rapid credit growth, or if relatively unregulated parts of the financial system grow quickly. **Ardhendu, Singh and Venkataramani (2016)** this study considers other financial services such as NBFCs, insurance companies, pension schemes, in addition to banking, it also takes into consideration the supply and demand side of financial services. It further includes infrastructure factors, both real sector and human resources. The study takes into account the fact that the process of financial inclusion has its roots in the development of demand, supply and infrastructure factors, and the index is developed considering all these three dimensions. **Barua, Kathuria and Malik (2016)** they explained the current state of financial inclusion, as well as regulatory changes necessary to make the new architecture for inclusion viable, including a critique of some of the recommendations of the Mor Committee on Comprehensive Financial Services for Small Businesses and Low-Income Households. The paper then reviews modes of delivery and the regulatory structure being contemplated or recently introduced. It assesses the suitability objective envisaged as critical for inclusion, associated challenge of revamping consumer protection laws, and imperative of improving financial literacy. The paper also discusses the case of micro, small, and medium-sized enterprises in the given context. **Ghosh and Vinod (2017)** discuss about role and relevance

of gender in financial inclusion. Their findings suggest significant disparity in both the access to as well as the use of finance by gender. On average, female-headed households are 8% less likely to access formal finance and 6% more likely to access informal finance as compared to households that are headed by males, after taking into account other relevant household and state-level characteristics that are important in explaining financial access by households. Similar evidence carries over to the use of finance: households headed by female use 20% less cash loans as compared to male-headed households.

**Table 1**  
**Summary of Review of Literature**

<b>S. No.</b>	<b>Study</b>	<b>Author</b>	<b>Year</b>	<b>Origin</b>
<b>1</b>	Role of Financial Institutions in Financial Inclusion	Massey	2010	India
<b>2</b>	Financial Inclusion and Inclusive Development in SAARC Countries with Special Reference to India	Kumar and Mohanty	2011	India
<b>3</b>	Studying financial inclusion in north-east India	Banot, Bapat and Bera	2012	India
<b>4</b>	Measuring Financial Inclusion: The Global Findex Database	Kunt and Klapper	2012	World bank
<b>5</b>	Financial inclusion and its determinants: evidence from India	Kumar	2013	India
<b>6</b>	Financial Inclusion in India – A Review of Initiatives and Achievements	Garg & Aggarwal	2014	India
<b>7</b>	Financial Inclusion - Issues for Central Banks	Mehrotra & Yetman	2015	Central Banks
<b>8</b>	Measuring Financial Inclusion of Indian States	Ardhendu, Singh and Venkataramani	2016	India
<b>9</b>	The Status of Financial Inclusion, Regulation, and Education in India	Barua, Kathuria and Malik	2016	India
<b>10</b>	What Constrains Financial Inclusion for Women? Evidence from Indian Micro data	Ghosh and Vinod	2017	India

## **Conclusion**

The purpose of this research is not only to understand the rural credit or rural banking, but how far it has been able to impact the life of the people of rural area in a positive manner. According to Punjab state census report 2011, around 62.52 percent people in Punjab live in the villages and average literacy rate is 71.42. The population growth rate recorded for the decade (2001-2011) was 62.52%. Not all literates are financially literate so it is important to study the gap between the expectations that arise with the success of financial inclusion and the reality that exists in the rural areas, the real cause of suicides and exploitation of poor people. The population growth rate is at much higher rate whereas the development is at much lower rate. Banking sector have to be innovative and offer facilities to rural clients and should focus on 100 percent financial inclusion along with imparting financial literacy to its clients so they can do financial planning for their families themselves. Indian banks have potential to emerge as global banks only if they focus on the needs of rural clients in their banking network.

## **References**

- Massey, J. (2010). Role of financial institutions in financial inclusion. *FICCI's Banking & Finance Journal*, 50-62.
- Kumar, B. and Mohanty, B. (2011) "Financial Inclusion and Inclusive Development in SAARC Countries with Special Reference to India", *The XIMB Journal of Management*. Sep2011, Vol. 8 Issue 2, p13-22.
- Bhanot, D., Bapat, V. and Bera, S. (2012) "Studying financial inclusion in north-east India", *International Journal of Bank Marketing*, Vol. 30 Issue: 6, pp.465-484
- Kunt, DA. and Klapper, L. (2012) "Measuring Financial Inclusion: The Global Findex Database". Policy Research Working Paper 6025. Washington, DC: World Bank.
- Kumar, N. (2013) "Financial inclusion and its determinants: evidence from India", *Journal of Financial Economic Policy*, Vol. 5 Issue: 1, pp.4-19
- Garg, S., and Agarwal, P. (2014) "Financial Inclusion in India –a Review of Initiatives and Achievements", *IOSR Journal of Business and Management (IOSR-JBM)*, Volume 16, Issue 6, PP 52-61
- Mehrotra, AN. and Yetman, J. (2015) "Financial Inclusion - Issues for Central Banks", *BIS Quarterly Review* March 2015
- Barua, A., and Kathuria, R., and Malik, N., (2016) "The Status of Financial Inclusion, Regulation, and Education in India", *ADB Working Paper* 568.

## CHAPTER 10

### EVOLUTION AND THE FUTURE OF CRYPTO COMMODITIES

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#### **Abstract**

A crypto-currency is a virtual currency created and managed through advanced encryption techniques known as cryptography. Cryptography constitutes complex algorithms for various processes to secure the Crypto-transactions and to control the generation of new codes (generally known as crypto-coins). The first ever crypto-currency developed and evolved in 2009 was Bitcoin and developer named Satoshi Nakamoto is the father of Bitcoin. Bitcoin uses sophisticated algorithms like SHA-256, which is a set of cryptographic hash functions designed by the United States National Security Agency. Bitcoin is considered as a medium of exchange of base currencies of country and these exchanges are performed in the form of exchanging digital information, electricity transformed into lines of code with monetary value through a process made possible by certain principles, protocols and complex coding structures of cryptography. Since from the progression phase of Bitcoin in the crypto-currency world, the concept not remained buried and expands its horizon to other hundreds of crypto-currencies in existence today, often referred to as Altcoins and they have their corresponding monetary values in the economy of cyber world with reference to the base currency as Bitcoin <sup>[8]</sup>. This paper covers the evolution of crypto currency, its acceptance by the crypto community and the reasons for tremendous raise in its value over the couple of past years. The paper also covers the present and future derivatives of crypto market space including crypto farming / mining and crypto trading. An attempt has been made in providing overview impacts of social coercion and government policies on crypto society.

**Keywords:** *Crypto currency, Future Tradings, Crypto Minings, Security threats, Bitcoin, Crypto Farming and Crypto Trading*

#### **Introduction**

Virtual or crypto currency is decentralized digital form of an encrypted code transferred between peers but confirmed in overall public ledger through the process known as mining. The ever first such virtual currency developed and evolved in 2009 was Bitcoin and developer Satoshi Nakamoto. Such currency system(s) based on a reusable proof of concept was later generated by Hal Finney who followed the work of Dai and Szabo. Bitcoin uses

sophisticated and complex crypto algorithms like SHA-256, which is a set of cryptographic hash functions designed by the United States National Security Agency. During the month of Sep 2015, United States Commodities Futures Trading Commission (CFTC) while settling the charges against already defunct operation in San Francisco called Coinflip, actually marketed Bitcoin derivatives. Through the process, the CFTC asserted for the first time that Bitcoin as a “commodity” and it leaves the principal impact of the enforcement battle itself to be felt by companies like Coinflip, which offer Bitcoin derivatives to users in the States later. Presently taking the scenario of Indian economy due demonetization in India, people are tending to be attracted towards cashless economy and forcing the overall course pushing in the support of cashless transactions. Taking into consideration, the benefits of cryptocurrency analytical over the traditional cash transactions and other commodities like nominal or no transaction fee, instant and secure transactions, accessible by anyone anywhere round the clock and no interference or governance of any centralized or reserve governing authority has created a huge cyber crypto space.

The Indian government's is still working over the legalization or otherwise procedure for crypto space which survives over the Block-chain framework (peer-to-peer networks) and in view to mounted consciousness of Bitcoin in the world's next most populous country which could push it to an inclining point. The trend of obtaining and collecting Bitcoins and other crypto currencies generally known as Altcoins are so popular among the society that people acquired and installed the mining systems at their places with the use heavy graphics cards in series while the trend of crypto trading is also mushrooming promptly without any hitches.

### **Crypto Farming and Its Future**

Mining is the basic process of cryptocurrency generation and its propagation which involves transaction validation to make sure safe and secure peer to peer transfer. Cryptocurrency mining is performed by people called miners, who validate the transactions and, in this process, new currency is generated. Each cryptocurrency transaction is stored on a digital ledger called blockchain, where transactions occurred in a particular time period are stored forever in blocks. Miners carefully keep an eye over transactions to verify the errorless transfers from source to destination. Therefore, mining enables the generation and release of new cryptocurrency coins in the digital economy. Mining is performed with mining tools which may range from traditionally used CPUs (Central Processing Unit) to modern privately owned ASICs (Application Specific Integrated Circuit) and other machines <sup>[1]</sup>. Traditional mining tools required large power to operate but it was not sufficient to meet the rapidly

increasing demand for cryptocurrency. Therefore, cryptocurrency mining tools were transformed time to time with some additional advancements such as GPU (Graphical Processing Units) and FPGA (Field Programmable Gate Array).

While efficient mining is the backbone of cryptocurrency propagation, since it is crucially important to minimize the time taken by miners to validate the transactions. But mining is a sophisticated process which requires to solve the puzzles and mathematical problems of a blocks to put in blockchain. In short, miners get rewarded with some coins when they successfully solve a puzzle. On the other side of the coin, in order to increase the profits in competitive mining network, miners' approach for expensive mining tools having higher hash rates and ability to solve complex hashing algorithms. Thus, large energy and computational power is needed for this purpose to solve the complex mathematical problems in shortest time period. Therefore, it is one of the major challenges encountered in cryptocurrency mining. Other than this, a number of new people entering and becoming the part of cryptocurrency community may also raise the burden in mining as hash complexity is directly related to the increased number of transactions.

Consequently, all such challenges can be minimized by opting the cloud mining techniques instead of private mining. It may positively impact the whole mining process. By this way, extra expenditures on purchasing highly efficient mining tools may be reduced and thereby decreasing the risk to lose in highly volatile cryptocurrency market providing the same opportunities to all the miners on a large scale. This may also support in ensuring the decentralized system of cryptocurrencies. Along with this, mining pool is another way to offer equal reward gaining possibilities for all miners who put efforts in solving mathematical problems and commonly contribute in generating new block.

### **The Ministry of Finance is Ultimately Responsible**

The Indian government conveyed another stunner recently when it declared that the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021, will be postponed in the Legislature's Budget Session. The Bill will probably make all private digital currencies illicit in India and to set up an authoritative system for the RBI to make official computerized cash. The Bill would, in any case, take into consideration a few prohibitions to advance digital currency's crucial innovation and applications.

Notwithstanding the debate encompassing the Bill, it was not postponed in Parliament. Money Minister Nirmala Sitharaman later expressed on March 5 that the public authority was in dealings with the RBI and will take a careful position on the issue.



According to Sitharaman, innovation is moving dangerously fast all through the world, and India can't bear to stop. India has pioneered a path in the fintech business, and numerous nations are trying to emulate its example.

Be that as it may, fire up backing bunches including IndiaTech.org, IMAI, Blockchain and Crypto Assets Council (BACC), and others are in customary contact with finance government specialists to examine approaches to further develop the Indian crypto industry's lucidity, receptiveness, and straightforwardness.

Nischal Shetty, the President and Chairman of Wazir X, a crypto stage and exchanging stage right now possessed by Binance, guaranteed that India is not any more a specialty industry however a quickly creating monetary area during an online class facilitated by IMAI and BACC. In spite of the ascent in cryptographic money use, the nation falls behind others as far as the administrative system and the scope of potential crypto organizations. India requires its own crypto unicorns and more rigid laws, and the nation should push its business people to create for digital money.

### **Crypto Trading- Future Perspective**

Crypto currency trading is the process through which the customers trade crypto currencies for other means like fiat currency or distinct digital currencies. Since after the emergence of Bitcoin, many new crypto currencies are blooming everyday in today's crypto market because usage of digital currencies offer a lot of benefits over centralized currencies. Just like Bitcoin, Litecoin, Ethereum, Ripple, Dentacoin and Monero are some other examples of digital currencies. Bitcoin has gained tremendous popularity in past few years due to its increased prices and other advantages.

Digital currencies offer convenient and user-friendly payment modes as they are easy to use for cross-border money transfers with minimal transaction fee and peer to peer usage circumventing the third parties to facilitate payments. Apart from this, a recent trend of Initial Coin Offerings (ICOs) is also well-liked nowadays as it bypasses the customary rules and regulations to raise the start-up funds for establishing new businesses, where people send virtual currencies to receive digital tokens of a new project <sup>[2]</sup>. All this has resulted in zoomed Bitcoin trading events were seen while the Bitcoin prices were rising up where people swap one crypto currency for getting tokens and other digital currency on various trading platforms. Therefore, all these scenarios going on in crypto community have noticeably escalated the attention towards other digital currencies too. On international level, crypto currencies are traded on several financial and crypto currency exchanges or Digital Currency

Exchanges (DCEs). Some of the most popular crypto currency exchanges are Bittrex, Binance, Coin Exchange and Local Bitcoins.

Although, the crypto currency trading is beneficial to its users in many ways, but at the same time it becomes utmost important to understand the associated risks and challenges. One of the most common risk is the non-regulated trading market <sup>[3]</sup>. Therefore, the exchanges may seize up or even disappear resulting in the loss of all crypto currency coins and also, government may overnight make the crypto currency trading illegal. In addition, many securities related issues like hacking passwords, private keys and emails may also cause personal data theft which later on may be used for criminal activities. A recent example of this was Ransomware attack in May 2017 which hit nearly hundred countries across the globe <sup>[4]</sup>. Another sensitive issue is that it may also engage money laundering or may be linked with terrorist activities. Crypto currency price fluctuation can also cause huge loss because it may dip down in a single day as crypto currency market is highly volatile. Therefore, future investors and crypto currency traders should invest smartly according to their capability to suffer any losses.

Undoubtedly, crypto currency trading is ready to transform the traditional payment exchange methods but in contrast, at global level, their universal acceptance is still a crucial topic. This is so because digital currencies are not widely accepted and they lack authentic regulations to pay for goods and services <sup>[5]</sup>. For that reason, while looking onto the safe future of crypto currency trading and its sustainability, it may not be expected without establishing legal framework. However, taking efforts to evade security related constraints by various crypto currency exchanges and building the faith in users may also be helpful. Similarly, public perception to different ICOs is also equally important as it determines the long-term success rates of a newly emerged crypto currency in market.

### **Security Challenge(s)**

As crypto currencies are the digital data in origin and it is vulnerable to all kinds of cyber threats where the most common are covered inline:

**User-wallet Address Phishing:** In the present scenario the trend of launching ICO's are most popular and the owner publish the collection address on the website (which is in general practice these days). As in case of CoinDash (ICO) where a little-known startup project was abruptly halted after it was revealed that the sale had been compromised shortly after launching the project. The aforesaid ICO was able to gain \$7.53m before the ethereum

address it was using to solicit funds was altered to a fake one by an unidentified hacker, redirecting the ether going to different source. Finally, the CoinDash website has been shut down, and the project stake holders ensure to compensate investors affected through CoinDash token (CDT) giveaway for the amount they lost.

**Fraudulent and Insecure ICO's:** The trend of launching initial coin offering (ICO's), was associated promptly through the block-chain and remain most popular among the crypto currency holders in year 2017. The crypto currency market is still not regulated by any means and there is no mechanism for risk assessment and its management leading to no guarantee for return of fraudulent Investments coming up with fraudulent ICO. As in case the South Korean exchanges and many others has been shut down without any prior intimation to its investors <sup>[6]</sup>.

**Manipulation and File Corruption Issues:** In general, the insecurities related to the loss of file or hacking of the e-wallet, where most of the crypto currency holder thinks that they are more secure by keeping their crypto-coins online but in actual they are more prone to Cyber-attacks and hacking incidents. As people are getting more aware to such insecurities the trend of USB based hard wallets is gaining acceleration at highest pace though the number is much lesser at the moment. Other remedies for e-wallets securities are Google authentication through two factor security features provided by various projects.

**Recipient Wallet Address Issues:** The complexity constitutes within Bitcoin and other crypto currency wallet addresses are very much prone to errors. Long alphanumeric codes are easily subject to errors. As in case of Ethereum wallet, the address is designed in such a way that if the amount is sent to an incorrect Ether wallet, then the amount disappeared into the thin air. Though the error is not relevant in the case of Bitcoin as it is having the inbuilt address validation but in such case of entering the incorrect recipient address will lead to the complete loss of money. The rollback of such transactions is merely impossible.

**Payment gateway Hacking Threats:** Hacking is a general procedure which is not designed for any specific kind of platforms and it may cause a complete damage to even genuine payment gateways. As in case of the leakage of Ethereum classic crypto currency diversion from original address to some unknown address in June 2017. All in all, the Classic Financial Services always prone to such kind of attacks for example the Brazil hackers Hijacked the whole Bank recently last year.

**Spoofing User Payment and Phishing Activities:** Consumers of the traditional banking payment systems also vulnerable to the cyber thieves but in case of crypto currencies as they are digitalized and remain online (except for the chunk of coins stored in the hard wallets) the degree of attacking such systems is much more as compared to the traditional systems. Practice in general; the sender hardly rechecks the wallet long codes of crypto addresses those are mentioned for sending the coins which finally may leading to manipulation of recipient addresses to some other address and are generally replaced by the malwares present in the clipboard.

### **Legalisation of crypto trading in India**

Notwithstanding the way that the financial denial on Indian digital money trade was toppled by the Supreme Court on the grounds of proportionality, ICICI bank's freshest choice happened after the RBI asked the bank casually to stop crypto-related activities.

"We are basically following the RBI suggestions gave to us," a HDFC Bank official, who would not like to be recognized, told Inc42. Our choices are restricted until and except if the controller changes its demeanour on digital currency."

At the point when inquired as to why the RBI has all the earmarks of being gambling obstacle of equity, a senior official educated Inc42 that he was ignorant of ICICI Bank's new move, however that the national bank has the power to limit any technique that may influence the Indian money in any way. Considering the way that the money service has said that digital currencies have no inborn worth and are not upheld by any resource, the RBI should continually screen INR changes to digital currencies. The RBI official further expressed that bitcoin just as other digital forms of money's qualities are exceptionally unsound and theoretical in nature. The RBI can't figure out how to fight on a few fronts when the country's economy is battling (chiefly inferable from the continuous scourge and downturn).

### **Conclusion**

Though the cryptocurrency was not developed or designed initially by the developers for the purpose of crypto trading or crypto mining but it has evolved in this manner and is revolving around a digital revolution changing the overall meaning of economy. It is generating lots of opportunities for all the walks of modern society and people are still attracted towards it irrespective of the challenges associated with the trading and mining of the crypto coins. While the crypto currency is not legalized in several countries and many of the nations are

working on this process, making it the hottest cake selling in the market today. In some of the countries, mining was initiated as a project many years back but they are banned today because of the energy consumption limitation and extreme overloading of resources. It is observed from the various studies that the crypto currency market space is widening its horizons and the security factors which are lagging the crypto concepts behind are handled very sensitively. Additionally, special care is taken for much more sophisticated design and architects to resolve issues associated with the security part. At the end, it is concluded that the cryptocurrency will remain the burning topic in the coming years. Also, the supply and demand trade-off is already predicted according to the capping factor of limited bitcoin generation which will always keep the value of crypto coin(s) on the rising side.

## References

- Cryptocurrency Mining- Transition to Cloud; research paper published by Hari Krishnan R., Sai Saketh Y., Venkata Tej Vaibhav M. in *International Journal of Advanced Computer Science and Applications*, Vol. 6, No. 9, 2015
- Why bitcoin has become popular in India – and why RBI’s version of it will never work; article published online by Devangshu Datta on Scroll.in, Date of Publication: Sep 23, 2017 at 08:00 am, Source of Publication: <https://scroll.in/article/85160/why-bitcoin-has-become-popular-in-india-and-why-rbis-version-of-it-will-never-work>
- The risks in trading cryptocurrencies; article published online on Crypto Hydra- Investment Opportunities in Crypto Assets, Source of Publication: <https://cryptohydra.com/trading/the-risks-in-trading-cryptocurrencies/>
- Massive Ransomware Cyber- Attack hits nearly 100 Countries around the World; article published online by Julia Carrie Wong and Olivia Solon on The Guardian, Date of Publication, May 12, 2017, 20.57 BST, Source of Publication: <https://www.theguardian.com/technology/2017/may/12/global-cyber-attack-ransomware-nsa-uk-nhs>
- An Analysis of The Cryptocurrency Industry; article published online by Ryan Farell in Wharton Research Scholars in 2015, Source of Publication: [https://repository.upenn.edu/cgi/viewcontent.cgi?article=1133&context=wharton\\_research\\_scholars](https://repository.upenn.edu/cgi/viewcontent.cgi?article=1133&context=wharton_research_scholars)
- \$7 Million Lost in CoinDash ICO Hack; article published online by Wolfie Zhao on Condesk.com, Date of Publication: Jul 17, 2017 at 22:02 UTC; Source

of Publication: <https://www.coindesk.com/7-million-ico-hack-results-coindash-refund-offer/>

Safe Trading on Cryptocurrency Exchanges: 20 Security Tips; article published online by David Balaban Contributor, In-Cyber-Defense, Date of Publication: January 2, 2018; Source of Publication: <https://in homelandsecurity.com/safe-cryptocurrency-exchanges-tips/>

Benefits of Cryptocurrency: A New Economy For The Future article published online by AmeerRosic, Date of Publication: June 28, 2016; Source of Publication: <https://decentralize.today/5-benefits-of-cryptocurrency-a-new-economy-for-the-future-925747434103>

Bitcoin as a Commodity: What the CFTC's Ruling Means; article published online by Jared Paul Marx, Date of Publication: Sep 21, 2015 at 11:50 UTC; Source of Publication: <https://www.coindesk.com/bitcoin-as-a-commodity-what-the-cftcs-ruling-means/>

## CHAPTER 11

### SWOT ANALYSIS OF VIRTUAL COMMUNICATION

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#### **Abstract**

In a globalized world, the all information in the organization is not only transferred through face-to-face communication but also through Virtual Communication. The importance of Virtual Communication is arisen when our friends, relatives, colleagues are from all corners of the world. Business organizations meet their goal through effective implementation of Virtual Communication. The meaning of Virtual Communication is transferring information through internet by way audio and video conference.

**Keywords:** *virtual communication, future techniques, SWOT*

#### **Introduction**

The word “communication” derived from the Latin word “communicare” that means to make common. The word “communication” used in common talk, normally, to man speaking or writing or sending a message to another person. In communication process, it involves receive, understand, interpret, and respond to messages that are sent to you.

Passing of information is called communication. Communication is essential for improve the performance of job. A manager should communicate the policies, plans, programmes of management to the workers so then they co-operate with others. Communication process ends with reaches the destination. Communication is also important part of the function of management. So, the meaning of communication to inform, to tell, to show or to spread information. Communication is that a process in which an information idea or opinion is transferred to a greater number of persons. When information is communicated to only one person, that will also be called as communication. According to oxford dictionary the meaning of Virtual means to Carried out, accessed, or stored by means of a computer, especially over a network.

Virtual Communication means that mode of communication that include the use of technology –audio and video to communicate with people who are not physically present. People can communicate anywhere in the world. The virtual communication started from invention of telephone later on the advent of webcams, video conferencing and instant

communications, which made Virtual Communication a big hit. Today Virtual Communication is used in every aspect of life within family, friends and office. Through various Virtual Communication tools like Google Hangouts, ezTalk Meeting, Fuze, skype, Zoom, BlueJeans, Unified Meeting 5, Yammer, the person can transfer any information in any time across the globe. These communication tools speed up the process of communication.

### **Review of literature**

Patrícia, Luís, Joaquim, Goran, Maria Manuela (2014) studied the Direct Communication versus Virtual Communication in Virtual Teams. In this researcher found that the Virtual Communication Architecture does not affect communication from the emotional perspective. In this paper virtual environments can be used efficiently, and in future the totally virtual interfaces can be used particularly when dynamics is compulsory, as virtual interfaces and environments, as demonstrated, do not affect confidence and comfort.

Dr. Akhandanand Shukla (2018) discussed definition and types of e-learning and several virtual communication methods available for e-learning. In this paper, the researcher discuss the various tools of Virtual Communication.

Dr. Jacqueline M. Layng (2016) studied the Virtual Communication Aspect: A Critical Review of Virtual Studies Over the Last 15 Years. In this study, the researcher critical analysis of the virtual research conducted over the last 15 years in which Virtual Communication played a main role. The study found that successful utilization of Virtual Communication in the workplace the organization must use definite pattern of criteria.

### **Objective of this paper**

The objective of this paper to define the meaning of Virtual Communication and also make SWOT analysis of Virtual Communication in business organization.

### **SWOT analysis of virtual communication**

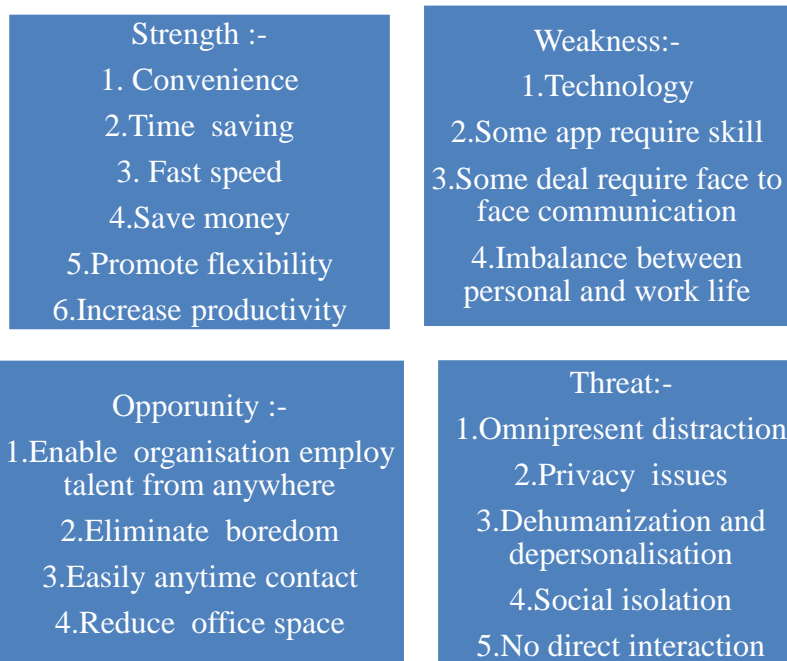
#### **Strength of Virtual Communication**

There are following strengths of Virtual Communication

1. Convenience: Now people or employee need not to interact personally, so they can interact with each other from wherever they want. So, person can conveniently connect anytime or anywhere whenever the person is busy or caught up in traffic.



2. Time saving: There is no need to physical present to attend meeting. You can pass any information in any time through different Virtual Communication software.
3. Fast speed: Just a one clicks you get to convey what you have in mind. Person can convey any information to anyone in seconds in world.
4. Save money: Through Virtual Communication, you can also reduce transport expenses. companies also reduce operational cost of employees, thus these saved money also be used for another functions.
5. Promote flexibility: Virtual Communication attain flexibility in work place. With the help of Virtual Communication, employee can work anywhere and submit their work on time.



### **Weakness of Virtual Communication:**

Following are the weaknesses of virtual communication

1. Technology: Virtual Communication depends upon software, machine and the internet which can stop working at any time. This affects the overall work of the organization.
2. Some app require skill: All communication software is not easy to use. So, organization may need to train its staff to use this software. These obstacles are not face in face-to-face communication.

3. Some deal require face to face communication: There are some case where interacting through Virtual Communication not satisfying the communication need, So, in those cases face-to-face communication work.
4. Imbalance between personal and work life: When there is freedom to decide when and where to communicate from, then it is possible that person work life will take up most your personal time.

### **Opportunities of Virtual Communication:**

There are following opportunity of Virtual Communication

1. Enable organisation employ talent from anywhere: Virtual Communication, people do not meet physically, so employees can work from anywhere. In this way, an organization is able to accumulate the best people for the workforce.
2. Eliminate boredom: Change in place also impact on employee performance. If employee work on the project from other then office, the change of environment is good for your body and mind. That will fresh person's mind.
3. Easily anytime contact: In virtual communication, you can easily make contact anytime and anywhere in the world without any obstacle.
4. Reduce office space: With the help of virtual communication, you can eliminate the need to create space for employees who can work from anywhere where they want.

### **Threats of Virtual Communication:**

There are following threats of Virtual Communication

1. Omnipresent distraction: Whenever user away from computer they can allow connected through cell phones and mobile devises. Every year more than thousands of people suffer injuries through accident by distracted driver and texting and mobile phone use are min sources of distraction.
2. Privacy issues: When data send from sender to recipient then data passes through a large of computer nodes and the computer that handle that data may be interfere on it. When GPS receivers installed on mobile, these apps can build a frighteningly accurate picture of person's daily activities, enough to give a third-party uncongenial view into person's life.
3. Dehumanization and depersonalization: In Virtual Communication, the users behave completely different from face-to-face conversation. when the virtual communication reduces a person to a faceless screen name, it can make it difficult for some users to

remember that an actual person exists behind the avatar. Because of faceless screen name, 43% of kids reporting that they have suffered online harassment.

4. **Social isolation:** In Virtual Communication, face-to-face interaction replace by online interaction of user that reduces the amount of time they originally spend in the company with other human being. These social networks sometimes replace a small number of strong social connection that leading to situation where person may have large numbers of friends but few friends in real world. So, this can reason of depression and feeling of loneliness.
5. **No direct interaction:** There is biggest threat in virtual communication is that there is no direct interaction between sender and receiver. So, there can be more crime through Virtual communication.

## **Conclusion**

Virtual Communication play important role in global environment. With the help of various virtual communication tools like Google Hangouts, ezTalk Meeting, Fuze, skype, Zoom, Blue Jeans, Unified Meeting 5, Yammer, the person can communicate anywhere, anytime without any obstacle. So, these type communications create boundary free and space less business. The finding of this paper to elaborate all aspects of the Virtual Communication that include strength, weakness, opportunity and threat. If there is strength of Virtual Communication like fastest speed, convenience, less time, increase productivity then also have threat like privacy issue, dehumanization and depersonalization.

## **References**

- Shukla, Akhandanand (2012). Virtual communication tools: a new mode of learning through web technology.
- GonçalvesPatrícia, Ferreira Luís, Gonçalves Joaquim, D. Putnik Goran, Cruz-Cunha Manuela Maria (2014). Direct Communication versus Virtual Communication in Virtual Teams.
- M. Layng Jacqueline (2016). The Virtual Communication Aspect: A Critical Review of Virtual Studies Over the Last 15 Years

## CHAPTER 12

# A STUDY ON DIGITAL TRANSFORMATION OF HR MANAGEMENT SYSTEM

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### ABSTRACT

Digitization of HR means converting the traditional HR Functions into Functions which makes use of new technology like HR Bots, social media etc. for smooth running of the operations is called as Digital HR. Digital transformation as a change-oriented approach that leverages new way of doing the business along with existing businesses across the globe. In prevalent business situations, there is huge transformation of business across industry. Use of modern digital technologies in personnel management are raised, which make it possible to more effectively manage the processes of labour productivity and human potential of the organization, as well as create a digital environment for personnel communication. The introduction of digital technologies in the field of human resource management will significantly change the approaches to personnel management standards. Organizations today must make decisions on the adequate equipping of departments and divisions with modern equipment and programs that allow them to quickly respond to changes in the external environment and advanced technologies. Digital resources allow organizing an effective personnel management process to automate and improve routine mechanisms, as well as reduce the load and funding of important tasks of the organization. This paper will study the concept of digital transformation in Human resources management and how different technologies are serving different HR functions and its employees.

**Keywords-** *digital transformation, human resource management, HR.*

### INTRODUCTION

Modern information systems make it possible to solve management problems of almost any complexity, including HR management. The digital transformation of the personnel management system contributes to the development and application of modern digital technologies that make it possible to manage employees efficiently. Digital transformation of HR management contributes to the dynamic development and implementation of remote HR management Digital technologies are used to improve efficiency in human resource

management and reduce the labor intensity of HR functions; accelerate the adoption of managerial and personnel decisions; improve the quality of analytical data; allow forecasting for the current and strategic periods; carry out personnel management remotely; get access to modern technological solutions and the possibility of planning personal development for the head and employees of the enterprise. The introduction of modern Digital-technologies in the HR sphere will allow to manage the processes of labor productivity and human potential of the organization more effectively, as well as create a digital environment for personnel communication.

## **LITERATURE REVIEW**

The concept of digital transformation was first mentioned by Patel and McCarthy (2000) however they didn't conceptualize the term. There are few studies which provide an insight into the concept. One of them was The Capgemini research of Westerman et al. (2011), they specify digital transformation as: "the use of technology to radically improve performance or reach of enterprises". Similarly, Stolterman and Croon Forst (2006,) defines digital transformation "as the changes that digital technology causes or influences in all aspects of human life".

Bell et al. (2006) indicates that digital transformation has brought about newer changes and positive results in roles played by Human resource potential and competencies among them. In this line, Larkin (2017) states that there will be huge transformation change in Human resource by adapting digital platform in all pervasive manner and omnidirectional across the organization.

Becker & Huselid, 2006 in their study emphasizes that main focus itself is Human Resource Management and its performance because the role of employees are the real solution to business problems. In digital era, the study made by Palmer et al. (2017) specifies that role of human resource management i.e., employee should be actively engaged with the new challenges in terms of people person with responsibility. Besides, understanding of the diverse business applications and creating better workplace and keep employees engaged with various organizational processes which tend to change due to digital transformation. So, digital transformation is the need of the hour.

Lankshear and Knobel (2008) describe digital transformation as the final level of digital literacy. At this level, digital technologies enable innovation and creativity and stimulate significant changes in professional and knowledge domains

Payne (2010) says that that unless human resource management changes to manage the HR function strategically top management may continue to regard human resources as a drain to the finances of the company.

Bharadwaj et al., (2013); Fitzgerald et al., (2013) they considered digital transformation as the combinations of information, computing, communications, and connectivity technologies. Applying digital technologies is often referred to as digitalization.

Westerman & Bonnet, 2015 in the study indicate that Digital transformation has revolutionized the way organizations have to deliver value to their customers and run their operations by means of digital platform. In this line, organizations have to rebuild their business model with digital interface along with traditional approach which cannot be changed immediately but it can change in future course of time.

Mrs. B. Kishori and B Divyabharathi (2017) in their paper “A Study on digitalization in performance management” the authors states that the objective of this paper is to explore recent trends in HR practices and also states the effects of technology on performance management. It is found that digitization helps in easy management of employee performance and increases the accuracy of performance appraisal. Mrs. A. Mary Francina (2018) in her paper “A study on Digital HR” states that the focus of this research is to identify the impact of technology on Workforce and HRM. This paper is based on secondary sources like literature review. It is found that the technological revolution will increase the organizational and employee performance.

## **OBJECTIVES**

1. To study digital transformation in Human Resource Management System.
2. To identify the benefits of digital transformation to HRM
3. To study challenges faced by HR while adopting digital transformation.

## **RESEARCH METHODOLOGY**

The nature of research is completely descriptive. All the relevant data used in paper has been collected from secondary sources e.g. e-journal, websites, newspaper.

## THE CONCEPT OF SMACI OF DIGITAL TRANSFORMATION

As HR is proceeding towards the digital transformation and the prospect is determined mobile, artificial intelligence, social media, and cloud computing, the skill required for organizations to cope up their workforce to flourish more flexible, active and modified. Social, mobile, analytic, cloud and internet completely make a mesh of technology which is called as SMACI. This technology mesh authorizing initiatives cross ways critical digital measurement containing products and services, customer experience, operations, and workforce. The combined play of SMACI benefits in bringing content, commerce, and teamwork to customers anytime and anywhere in an inclusive, personalized, linked and cost-effective manner.

**Social media:** Social media Platforms give aids to businesses in collaborating with their customers. *Social media* provides *HR* an opportunity to create a relationship with every employee in the organization, irrespective of their location.

**Mobility:** is transferring the effort of application progress away from the desktop to mobile first approach. Mobile software engages people. Enterprise Mobility enables employees to connect into core processes and participate even if they are not sitting at their desks. Enterprises that have not yet incorporated these strategies will struggle with anything in digital transformation.

**Analytic:** is permitting enterprises to study large volumes of data to gain understandings and drive deliberate decisions.

**Cloud computing:** is redesigning the way software and facilities are sold and delivered.

**Internet of Everything (IoE)** is introducing significant opportunities by connecting everything to the internet.

## BENEFITS OF DIGITAL TRANSFORMATION TO HUMAN RESOURCES MANAGEMENT

**Shifting focus on the core activities** -Digital HR can automate any time-consuming manual processes, allowing you to focus on more productive and important work. Any organisation with a large number of employees will find it difficult to manage their information on paper. Digital HR allows HR professionals to streamline workflows to improve overall work management and productivity.

**Smart Recruitment**-About 40% of organizations are utilizing some type of AI in HR. Association resembles IBM, Facebook, GE, SAP and Hilton worldwide are as of now utilizing this distinct advantage innovation to screen, meeting and enlist new ability. What Artificial knowledge (AI) does, it streamlines the capacities inside the organization and gradually builds up the insight to work more intelligent without supplanting the human component in HR Department.

**Simpleness, Screening and Interview Process** – Artificial Intelligence is also showing very helpful in powering the interview process by assessing candidates word choices, speech patterns and facial expressions. AI can turn a 15 min video interview into a set of 20,000 data points on facial movements, novelty and word choice to assess a candidate. It can also aid in collating data about the communicating aspects of the potential candidates through machine learning.

**Increases On-boarding experience** – The study found that On-boarding had a resilient influence on employee retention. So, it is important to make the first impression important for. Artificial Intelligence is facilitating HR in constructing this first impression robust and positive by redefining the whole employee entry process by designing maps, right from pre-hiring assessment and interviewing to On-boarding and employee orientation.

**Increase Efficiency** – Robotic/Mechanical Process Automation is a shrewd Artificial Intelligence which access all the HR related forgiving better administrations to its workers. This Robotic/Mechanical Process Automation helps the association for quick handling of different sorts of work like information preparing, sending mails.

**Enhance work environment learning** – Cloud profitability arrangements, for example, Microsoft365 can assist representatives with working and team up at pinnacle capability without sitting around idly by making an increasingly streamlined workplace. Simulated intelligence devices can likewise help HR Operations to make changed-vocation improvement involving distinctive learning and advancement programs, that will upgrade worker profitability and occupation fulfillment and furthermore cuts downward-prompted weight level and representative turnover and numerous different advantages. Artificial intelligence devices give moment input; screen their upgrades routinely; suggest methods for development and accomplishing development in their activity jobs.

**Enables Companies to stay competitive** – Digital advancement has not remained a option, it has become an necessary part of viable and living strategies. The basis to the good technology is that it works for you. Whatever the size of your business, start with a strong



digital transformation strategy, and choose the right technology to fit your business objectives.

## **CHALLENGES OF HR IN DIGITAL TRANSFORMATION**

**Improper Plans:** When ineffective plans are made which does not bring any fruit to the organization or which doesn't look forward to improve the skill sets of employees then it will also bring in a failure in adopting the digital transformation.

**Resistance to change:** Technology is not the projectile that will magically liberate us of all the issues it can't solve any problem unless we alter the basic mindsets. People normally don't inspire change unless and until it is important

**Leadership support:** A leader should be there to backing and motivate the technology as most of the companies won't able to practise with digitization as their managers or leader were not encouraging enough. So, it is a compulsory thing to have a good leader's support that encourages revolution.

**Lack of skilled Employees:** When the organization doesn't as right talented employees then it fails to make use of such digital transformation. Digital transformation requires highly skilled people to handle the various activities so hence absence of skilled employees becomes a barrier.

**Fear of Failure:** The fear of failure among employees creates impact on making use of new technology. The employees should take things as challenge and should develop their skill sets to tackle such weakness.

## **AREAS IN HR THAT IS DIGITIZED**

**E- Recruitment and Selection:** The Artificial intelligence as paved way for recruiting right candidates for the Job and due to which HR Bots as came into existence. By making use of HR Bots we can shortlist a candidate and can fix an appointment for an interview and in turn the HR Bot will give intimation about the candidate Profile to the HR Manager.

**E-Training of Employees:** The HR Bots will also help the employees to access various websites for getting trained on specific skill sets and Knowledge. Also, it will suggest them about various skill assessment websites which will help them test their knowledge and improve their skills.

**Enrolment to Employee Benefits:** Due to Digitization, now employees can enrol for the various benefits like Insurance, PF and ESI online which in turn reduces time consumption.

**E-Performance Management:** Tracking of employees work status as become very easy due to use of technology and due to which we can check how much part of work does an employee as completed and what is remaining. Whenever it is found the performance or out of employee getting reduce, we can give immediate feedback to the respective employee.

**E-Rewards and Recognition:** Whenever an employee completes his work or a project successfully the organization can give him reward in the form of E-Certificates and can also recognize him by updating in company's website as star employee of the month along with his photograph. This will create employee satisfaction and engagement.

## **CONCLUSION**

Digital HR Means converting the traditional HR Functions into Functions which makes use of new technology that is making use of social media, HR Bots, new upgraded software's etc. Every organization should look forward towards digital transformation so to improve its performance and create competitive advantage. The introduction of digital technologies in the field of human resource management will significantly change the approaches to personnel management standards. Organizations today must make decisions on the adequate equipping of departments and divisions with modern equipment and programs that allow them to quickly respond to changes in the external environment and advanced technologies. The success of the digitization will depend not only on the development of digital technologies directly, but also on the availability of qualified specialists who, using modern technologies, could create optimal conditions for the development of effective enterprises.

## **REFERENCES**

- Becker, B.E., & Huselid, M.A. (2006). Strategic human resources management: Where do we go from here? *Journal of Management*, 32, 898-925.
- Bell, B.S., Lee, S., & Yeung, S.K. (2006). The impact of eHR on professional competence in HRM: Implications for the development of HR professionals. *Human Resource Management*, 45(3), 295-308.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., and Venkatraman, N. (2018) "Digital Business Strategy: Toward a Next Generation of Insights," *MIS Quarterly* (37:2), pp. 471-482.

- Clemons, E. K. (2018). How Information Changes Consumer Behavior and How Consumer Behavior Determines Corporate Strategy. *Journal of Management Information Systems*, 25(2), 13–40.
- Fichman, R. G., Dos Santos, B. L., and Zheng, Z. E. (2017) “Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum,” *MIS Quarterly* (38:2), pp. 329-353.
- Fitzgerald, M., Kruschwitz, N., Bonnet, D., and Welch, M. (2017). "Embracing Digital Technology," *MIT Sloan Management Review*, 1-12.
- Granados, N., Gupta, A.: Transparency Strategy: Competing with Information in a Digital World. *MIS Quarterly*, vol. 37, no. 2, pp. 637-641 (2017).
- Hennig-Thurau, T., Malthouse, E. C., Friege, C., Gensler, S., Lobschat, L., Rangaswamy, A., & Skiera, B. (2016). The Impact of New Media on Customer Relationships. *Journal of Service Research*, 13(3), 311–330.
- Kauffman, R. J., Li, T., & Heck, E. van. (2017). Business Network-Based Value Creation in Electronic Commerce. *International Journal of Electronic Commerce*, 15(1), 113–144.
- Lankshear, C & Knobel, M 2016, *Digital Literacies: Concepts, Policies and Practices*, Peter Lang International Academic Publishers.
- Lucas, H.C., Agarwal, R., Clemons, E.K., El Sawy, O.A., Weber, B. (2016.) “Impactful Research on Transformational Information Technology: An Opportunity to Inform New Audiences,” *MIS Quarterly* (37:2), pp. 371-382.
- Patel, K & McCarthy, MP 2000, *Digital Transformation: The Essentials of EBusiness Leadership*, McGraw-Hill Professional.
- Piccinini, E., Gregory, R., & Kolbe, L. (2015). Changes in the Producer-Consumer Relationship-Towards Digital Transformation. In 12th international conference on *Wirtschaftsinformatik* (pp. 1634–1648).
- Stolterman, E. and A. C. Fors (2015). “Information Technology and the Good Life.” In: *Information Systems Research: Relevant Theory and Informed Practice*. Ed. Kaplan, B. et al., London: Kluwer.

## CHAPTER 13

### IMPACT OF TECHNOLOGY ON HEALTHCARE SERVICES

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#### ABSTRACT

The importance of health in human life is enormous. The technologies developed and the studies in this field have caused differences in the field of health as in all areas. Technological innovation is generally recognized as an important driver of performance in major service sectors. This paper argues that evidence of such a relationship is much more diffuse in healthcare services. Moreover, the concept of impact of technology on healthcare is very broad when new medical equipment, new pharmaceutical products, new forms of contact with patients and new work processes are considered. Therefore, this study contributes to the identification of technological innovation in healthcare. It also explores the impact of these technological innovation on the health of people. Healthcare changes dramatically because of technological developments, from anesthetics and antibiotics to magnetic resonance imaging scanners and radiotherapy. While some forms of technology may have made positive changes in the world, there is evidence for the negative effects of technology and its overuse, as well. Social media and mobile devices may lead to psychological and physical issues, such as eyestrain and difficulty focusing on important tasks. They may also contribute to more serious health conditions, such as depression. The overuse of technology may have a more significant impact on developing children and teenagers. This paper aims to highlight the positive as well as negative impact of the technology on health of people.

**Keywords:** *healthcare services, technology, innovations*

#### INTRODUCTION

In recent time, technological advancements have grown in leaps and bound and are showing no signs of slowing down. Continuous surge of such technological development has helped many countries save lives and help in improving the overall quality of life. Yet, such integration of technology and human lifestyle has, in fact, an adverse effect on the health of the human body. This affects us both good as well as bad. In the fight to stay healthy, technology can give us an edge in our personal and

professional lives. We can use our digital devices to improve our diets, track our fitness efforts, or help us with compliance. Technology plays a role in virtually every part of our lives, whether we're aware of it or not. There are many ways in which technology may positively affect our physical and mental health: health apps to track chronic illnesses and communicate vital information to doctors, health apps that help you track diet, exercise, and mental health information, online medical records that give you access to test results and allow you to fill prescriptions, virtual doctor visits, online education and ease of research, enhanced communication with others, which can improve the feeling of connection. It is important to note that without careful integration and proper use, technology can overrun the human intent and the excessive use can cause immense harm. Though this harm might not be immediate, but few years down the line, it will affect the human species as a whole. Even in current times, the negative effect on health due to technology is an alarming issue. Technology can have a large impact on users' mental and physical health. Being overly connected can cause psychological issues such as distraction, narcissism, expectation of instant gratification, and even depression. Beside affecting users' mental health, use of technology can also have negative repercussions on physical health causing vision problems, hearing loss, and neck strain.

The present paper is based on secondary sources such as journals, articles, papers and other different sources of internet. The objective of the present paper is to study the impact of technology on health with references to various positive and negative impact of technology on health and the various measures to reduce the negative impact.

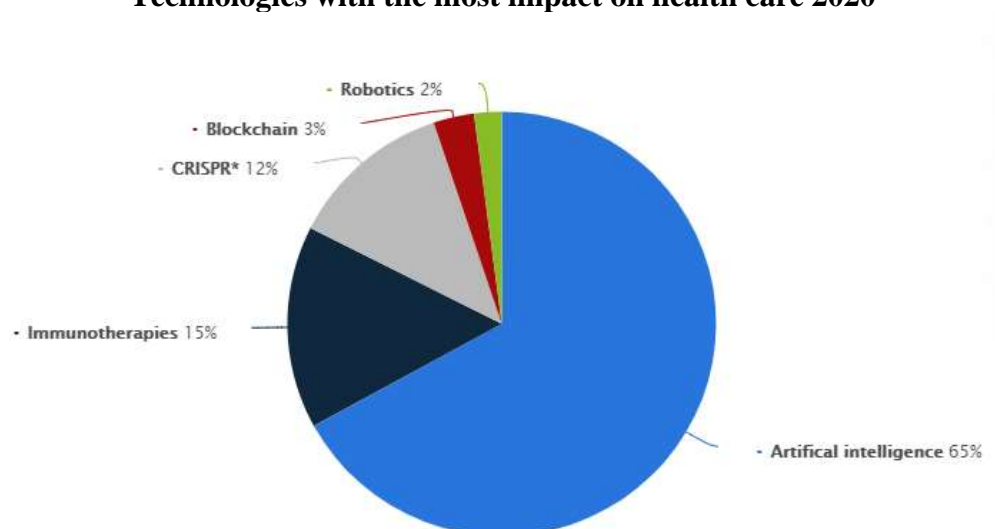
## **POSITIVE IMPACT OF TECHNOLOGY**

Technology has always advanced with the purpose of making our lives better. All technology was new at one point in time. Those who were open to new technology have been more likely to benefit from it. Nowadays, there is a mobile application for almost everything. From games to economics and even to fitness and health, the digitization of regulatory norms and practices for proper health maintenance allows us to access the right information required for proper maintaining of the body and keeping fit for the foreseeable future. Online doctor consultation has become more of a widespread practice delivering fast accurate and informative suggestions and prescriptive methods on how to deal with certain health issues.

The introduction of Electronic Health Records or EHR has replaced the use of paper for the systematic storing of records and has been a game changer for numerous healthcare wards. Rather than writing the requisite data like a vital sign, weight, test results, etc. manually, ERH provides nurses and technicians for entering such data digitally. This makes it more efficient and faster to allocate the patients' data and thus deliver more accurate and quick treatment. With the rise and intricate incorporation of technology in our normal daily lives, health options are becoming more and more diverse and readily available. Knowledge about diseases and their treatment can be found readily on the cyberspace. People can get medical advice from all across the globe and can find well researched and universally accurate medical information.

In today's time, everyone is equipped with a smart phone which can be used to acquire medical information at any place and at any time. Information and communication technology allows us to link healthcare professionals and also professionals to patients. This has proved especially useful in rural and suburban areas where there is a lack of communicative facilities and specialist services. 'Telemedicine' can be used to refer to a type of two-way video call for consultation, or the transmission and healthcare data and information. Via telemedicine, healthcare and support can be spread to many fields of medicine like cardiovascular healthcare and can allow the practice of modern medicine to reach further rural areas where it is difficult to get proper amenities for proper health.

**Figure 1**  
**Technologies with the most impact on health care 2020**



Source: <https://www.statista.com/statistics/1091107/technologies-impact-on-health-care-prediction/>

This above pie chart shows that artificial intelligence is predicted to have the greatest impact on health care in the future, as of 2020 followed by immunotherapies and CRISPR and blockchain with robotics having the least impact.

## **NEGATIVE IMPACT OF TECHNOLOGY**

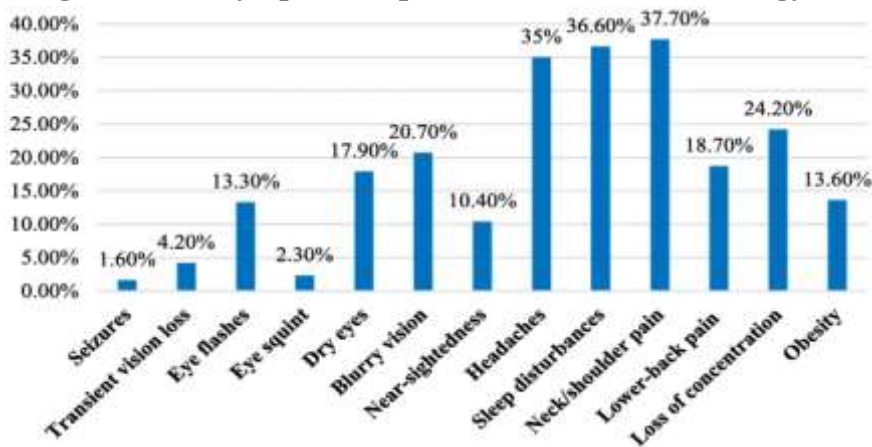
While some forms of technology may have made positive changes in the world, there is evidence for the negative effects of technology and its overuse, as well. Social media and mobile devices may lead to psychological and physical issues, such as eyestrain and difficulty focusing on important tasks. They may also contribute to more serious health conditions, such as depression. The overuse of technology may have a more significant impact on developing children and teenagers. Overuse or dependence on technology may have adverse psychological effects, including: isolation, depression and anxiety. Technologies, such as social media, are designed to bring people together, yet they may have the opposite effect in some cases. A study in young adults aged 19–32 years found that people with higher social media use were more than three times as likely to feel socially isolated than those who did not use social media as often. Finding ways to reduce social media use, such as setting time limits for social apps, may help reduce feelings of isolation in some people. The authors of a 2016 systematic review Trusted Source discussed the link between social networks and mental health issues, such as depression and anxiety. Their research found mixed results People who had more positive interactions and social support on these platforms appeared to have lower levels of depression and anxiety. However, the reverse was also true People who perceived that they had more negative social interactions online and who were more prone to social comparison experienced higher levels of depression and anxiety. So, while there does appear to be a link between social media and mental health, a significant determining factor is the types of interactions people feel they are having on these platforms.

Technology use may increase the risk of physical issues as well, including: eyestrain, poor posture, sleep problems and reduction in physical activities. Technologies, such as handheld tablets, smartphones, and computers, can hold a person's attention for long periods this may lead to eyestrain. Symptoms of digital eyestrain can include blurred vision and dry eyes Eyestrain may also lead to pains in other areas of the body, such as the head, neck, or shoulders. Taking regular breaks away from the screen may reduce the likelihood of eyestrain. The way many people use mobile devices and computers may also contribute to incorrect posture.

A 5-year study in the journal *Applied Ergonomics* found an association between texting on a mobile phone and neck or upper back pain in young adults. The results indicated the effects were mostly short term, though some people continued to have long-term symptoms. However, some studies challenge these results. A 2018 study *Trusted Source* in the *European Spine Journal* found that the posture of the neck while texting made no difference in symptoms such as neck pain. This study concluded that texting and “text neck” did not influence neck pain in young adults. However, the study did not include a long-term follow-up. It may be that other factors influence neck pain, as well, such as age and activity levels. Correcting posture problems while using technology may lead to an overall improvement in posture and strength in the core, neck, and back.

Studies have also shown that excessive use of technology has also lead to deterioration of relationship between kids and their parents. According to a study published by *University of Michigan Health System*, “Parents’ use of mobile technology around young children may be causing internal tension, conflicts and negative interactions with their kids”.

**Figure 2**  
**Percentage of health symptoms reported after smart technology device use**



The above figure indicates the various physical and psychological health issues such as headache, obesity, neck pain, lack of concentration etc. faced by people due to excessive use of technology. Neck/shoulder pain, sleep disturbance and headaches are the most prominent problems faced by people with seizures and eye squint being the least prominent.

Technology has also helped people with certain specific disabilities. For example, individuals with speech impediments can use apps such as Speak for yourself to speak for them and Individuals who may not have the function in their hands necessary to navigate phone menus or type on keyboards can use voice control programs.



## CONCLUSION

Technology is a part of our lives. It can have some negative effects, but it can also offer many positive benefits and play an important role in education, health, and general welfare. Knowing the possible negative effects can help us take steps to identify and minimize them so that we can still enjoy the positive aspects of technology. It can add limitless value to our lives especially if we take care to use it mindfully. Having discussed all this, we would just like to say that everything in life has two sides to it. While technology may have helped the healthcare sector, it has also brought a set of new problems for healthcare professionals and society in general as well. If we want to take advantage of technology, we have to balance both the pros and cons.

## REFERENCES:

- Marcella. (2019, September 03). How Does Technology Use Affect Men's & Women's Health? Retrieved from <https://www.nwpc.com/how-does-technology-use-affect-mens-womens-health/>
- Negative effects of technology: Psychological, social, and health. (n.d.). Retrieved from <https://www.medicalnewstoday.com/articles/negative-effects-of-technology>
- Pietrangelo, A. (2019, May 23). What Are the Negative and Positive Effects of Technology? Retrieved from <https://www.healthline.com/health/negative-effects-of-technology>
- The Good and Bad Impact of Technology On Health. (n.d.). Retrieved from <https://panamajack.com/blog/the-good-and-bad-impact-of-technology-on-health>
- Buabbas, A. J., Al-Mass, M. A., Al-Tawari, B. A., & Buabbas, M. A. (2020, November 16). The detrimental impacts of smart technology device overuse among school students in Kuwait: A cross-sectional survey. Retrieved from <https://bmcpediatr.biomedcentral.com/articles/10.1186/s12887-020-02417-x>
- Stewart, C. (2020, August 03). Technologies with most impact on healthcare 2020. Retrieved from <https://www.statista.com/statistics/1091107/technologies-impact-on-health-care-prediction/>
- Wardynski, D. (n.d.). Positive Effects of Technology - Making Everyday Life Better. Retrieved from <https://www.brainspire.com/blog/positive-effects-of-technology-making-everyday-life-better>
- Health and Technology. (n.d.). Retrieved from <http://www.digitalresponsibility.org/health-and-technology/>
- Erdal, E. (2018). The Impact of Technology Trends on Healthcare Systems: A Study on Opportunities and Threats. *International Journal of Trend in Scientific Research and Development*, Volume-2(Issue-6), 1574-1578. doi:10.31142/ijtsrd18901
- Figueiredo, J., & Eiriz, V. (2009). Analysis of the impact of technological innovation on healthcare services. *International Journal of Behavioral and Healthcare Research*, 1(3), 234. doi:10.1504/ijbhr.2009.028458

## CHAPTER 14

### ROLE OF THE PEDAGOGUE FOR THE BETTER TOMORROW

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#### **Abstract**

Within the system of education at all levels, educators are arguably the foremost vital members of our society. They are those, who are vested with important job duties and responsibilities. They are vested with numerous responsibilities, which are primarily associated with promoting effective growth and development of students, facilitating the achievement of academic goals and up-grading the overall system of education. Once the educators are recruited, there are certain aspects that require to be taken into thought. These include, academic qualifications, experience, competencies and temperament traits. Furthermore, the educators should possess the abilities to work under stress and deal with various issues and challenges in an acceptable manner. With these traits, they will be ready to perform their job duties satisfactorily and incur job satisfaction. In order to retain their jobs, it is important for the educators to spot their roles and responsibilities. Within the period of time, it is necessary to get awareness in terms of usage of technologies and different modern and innovative methods that will facilitate within the successful implementation of tasks and activities. To carry out one's job duties satisfactorily, they need to hone their skills and abilities. The main concepts that have been taken into account in this research paper include, significance of roles and responsibilities of educators, roles of educators and responsibilities of educators.

**Keywords:** Academic Concepts, Education, Educators, Responsibilities, Roles

#### **Introduction**

India has one of the largest networks of educational institutions in the world. During the past decades, there has been immense improvements within the system of education. In order to boost the system of education, it is indispensable to demand new knowledge and skills from educators in addition because the principals, directors and heads. They are those, who render an effective or good contribution in formulating measures, procedures and policies that render a significant contribution in enhancing the overall system of education. With the

arrival of technologies, like Information and Communications Technologies (ICT) and knowledge revolution, there has been an increase in the job demands of educators. They are required and will be encouraged to assume new roles and responsibilities for ICT to bring about improvements within the quality of education. Additionally, they are also required to reinforce their capabilities to provide assistance and support to learners to achieve academic goals (Ranjan, & Rahman, n.d.).

The roles and responsibilities of the educators are primarily focused upon making provision of knowledge and information to the students, so that they can enrich their overall living standards. Other than contributing towards development of students into moral and ethical mortals, they render a major contribution towards enriching the system of education. A proficient educator must possess adequate knowledge in terms of subjects but possessing knowledge of the subject, they have to ensure they make students acquire an efficient understanding of the concepts. Furthermore, they have to possess the competencies and skills to present the subject content during a logical and systematic manner. One of the important aspects is classroom control. Classroom control can occur in an appropriate manner, when educators and learners develop mutual understanding and they encourage learners to ask questions (Pushkar, 2015). Hence, the roles and responsibilities of the educators primarily centre on creating an amiable environment, within which students feel motivated towards learning.

### **Significance of Roles and Responsibilities of Educators**

In not only India, however in different countries of the globe as well, educators are regarded to be rendering a big contribution in promoting community welfare, economic process and nation building. They are engaged in continuous learning. They concentrate towards augmenting their academic qualifications, skills and competencies, in order that they will impart them to the students, and inculcate the traits of diligence, resourcefulness and conscientiousness among them. The importance in terms of roles and responsibilities of the educators is primarily recognized in leading and managing the design, delivery, analysis and improvement of education of students through the efficient utilization of resources. (Roles and Responsibilities Teaching Service, 2017). The educators have to be ensured, they make wise decisions, which may prove to be helpful to the members as well as the academic institutions.

The main role of leading educators is to carry out their jobs efficiently and effectively by with improvements in skills and performance of the teaching workforce. Typically, leading educators are responsible for co-ordinating a number of staff members for bringing about improvements in teaching and learning, which may involve the modelling, collaborating and coaching and using processes that develop knowledge, practice and professional participation. A leading educator has a direct impact and influence on the achievement of academic goals. They are responsible for the implementation of one or more priorities contained in the strategic plan (Roles and Responsibilities Teaching Service, 2017).

Educators need to be skilled classroom practitioners to a major extent, who continue to spend the majority of their time within the classroom in delivering high quality teaching and learning and have a range of responsibilities related to their expertise, including teaching demonstration lessons, observing and providing feedback to other educators and facilitating school-based professional learning. The educators need to be well-aware in terms of the subject areas, which they are imparting to the students. Under the guidance of experienced educators, novice educators into the teaching profession will plan and teach student groups in one or more subjects and are expected to participate in the induction programs and other professional learning activities that are designed to ensure the integration of curriculum, assessment and pedagogy across the educational institutions (Roles and Responsibilities Teaching Service, 2017).

### **Roles of Educators**

Educators are those, who are vested with important job duties and responsibilities. They are vested with numerous responsibilities, which are primarily associated with promoting effective growth and development of students, facilitating the achievement of academic goals and up-grading the overall system of education. The major roles of educators have been stated as follows: (Harrison, & Killion, n.d.).

- Resource Providers
- Instructional Specialist
- School Leader
- Curriculum Specialist
- Classroom Supporter
- Mentor
- Learning Facilitator
- Research and Writing
- Catalyst for Change

## **Responsibilities of Educators**

The various aspects, which highlight the responsibilities of educators have been stated as follows:

- Managerial Functions
- Personnel Management
- Student Management
- Academic Management
- Performance Assessment
- Taking Actions
- Counselling and Guidance
- Use of Technology in Education
- Promoting Discipline
- Development of Leadership Skills
- Providing Equal Rights and Opportunities

## **How Educators Can Prepare for the Future of Work**

Many of today's educational discussions are centred on how we can best prepare our pupils for the future. What kinds of experiences do you think our students should have? How can we provide kids with authentic, unique learning opportunities that will assist them in developing the abilities they will require in the future? These are probably the two most often asked questions I receive. The answer is ambiguous. How can we know exactly how to educate our children for five, ten, or more years down the road if we can't make accurate forecasts about the future of work or the future of learning? By using what we've learned so far, staying engaged in the conversation as it unfolds, and continuing to learn more about educational changes and trends, we'll be able to achieve our goals. However, I believe that another essential aspect of the future of learning and job discussions should be how we prepare instructors so that they can best prepare pupils.

## **Teaching: More than Just Content**

Aside from delivering knowledge, being a teacher entails assuming a variety of tasks. We have a variety of responsibilities and roles in our workplaces, whether through events, committees, or anything else that allows us to foster a feeling of community in our classrooms. Being a learner, on the other hand, is a position that is just as vital as being a teacher. Educators' ongoing quest of knowledge and consistent engagement in varied and, perhaps challenging, learning opportunities has never been more critical than it is now. We owe it to our students and co-workers to improve ourselves so that we can be prepared for whatever changes the educational landscape and the future of work may bring.

## **Engage in New Learning**

We need to provide various learning experiences for our students, which involves moving away from traditional kinds of evaluations and activities and instead experimenting with new ideas, resources, and even finding methods to empower students to take a more active role in the topic we are teaching. We must make time for ourselves to explore a passion area, whether it is something related to the content area that we teach or something that pushes us outside of our comfort zones. It's important that we stretch ourselves professionally, so we can help our students better understand why they need to do this and how they can push through any challenges they might confront in their future.

## **Recognize the New Vocabulary**

Many words are used in education today, many of which are referred to as "buzzwords" at times. Personalized learning, differentiation, blended learning, student voice and student choice, SEL, and project-based learning are some of the more prominent phrases. All of these are critical concepts or tactics to incorporate into our schools today.

## **Investigate Various Learning Methods**

Educators may be given as many opportunities to the society as possible to explore their interests, tackle huge challenges, connect worldwide, and make decisions about their own learning path, including the process and product. This can be accomplished through project-based learning (PBL), place-based learning, or experiential learning, among other methods.

## **Investigate New Concepts**

There's always something new to learn, and with technology's availability and access to so many resources, we're better equipped than ever to stay informed. Here are some ideas for how to go about it:

- To keep current and relevant, read blogs and use hashtags on social media. Learn more about themes like AI, PBL, and the future of education by looking through books that are available.
- Do some research on the most in-demand careers or abilities?
- Search for publications and materials from the past five years that make predictions about the future.
- Look for stories that forecast what the future will be like.

## Conclusion

Educators' roles and responsibilities are critical in promoting academic learning among individuals, enabling them to instil morality, ethics, diligence, resourcefulness, and conscientiousness, promoting community welfare, and leading to effective growth and development of individuals, so they can contribute significantly to promoting better livelihoods for all. Educators must enhance their competences and educational qualifications in order to carry out their jobs and obligations effectively. They must guarantee that they raise awareness of current and inventive approaches for carrying out their job obligations in a well-organized manner.

The roles and responsibilities of the educators are related to promoting well-being of not only students, but all members of the educational institutions. When they are carrying out their roles and responsibilities, they need to form constructive viewpoints. Teaching jobs are hard and educators are required to undergo number of challenges within the course of implementation of their job duties. But it is vital for them to form constructive viewpoints, conduct analysis in terms of areas, which need to be improved, learn to cope with difficulties and problems appropriately and develop interest and enthusiasm towards the implementation of their job duties. Hence, these factors would enable them to carry out their roles and responsibilities in a well-organised manner and incur job satisfaction.

## Bibliography

- Harrison, C., & Killion, J. (n.d.). Ten Roles for Teacher Leaders. Retrieved October 08, 2019 from <https://wvde.state.wv.us/schoolimprovement/principalstoolkit/documents/TenRolesforTeacherLeaders.pdf>
- Pushkar, P. (2015). Role of Teacher in Higher Education. *International Journal of Education and Information Studies*, 5(1), 25-30.
- Ranjan, N., & Rahman, N. (n.d.). Role of Teacher in Enhancing Learning Achievement of Child and Emphasis on Teacher Skill Development, Knowledge Building and ICT. Retrieved October 07, 2019 from [http://dhsekerala.gov.in/downloads/role\\_tech.pdf](http://dhsekerala.gov.in/downloads/role_tech.pdf)
- Roles and Responsibilities Teaching Service. (2017). *Education and Training*.
- The Role of Teacher and Classroom Management. (2009). Retrieved October 08, 2019 from <http://www.scientificlanguage.com/esp/classroom-management.pdf>

## CHAPTER 15

### ETHICAL PRACTICE IN SMALL AND MEDIUM ENTERPRISES

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#### ABSTARCT

In today's competitive world organization are under pressure to act ethically along with running their organization in most efficient way and to increase the performance of the business. Customers have also full knowledge of the market and they keep in their mind the reputation of the organization. Small and medium-sized enterprises (SMEs) have certain issues regarding ethical practices because they have less fund to exorcise and implementation of ethical practices. Ethics refers to a system of moral principles or rules of behaviour which involves doing the right thing in the right manner. This article aims at evaluating the aspects of business ethics, significance of business ethics to SMEs, ethical dilemmas and challenges of SMEs, particularly in developing countries, and suggests strategies to address ethical dilemmas and challenges.

*Keywords:* - *SMEs, ethics, strategy etc.*

#### INTRODUCTION

In today's competitive world organization are under pressure to act ethically along with running their organization in most efficient way and to increase the performance of the business. In this changing competitive environment business have make a new policy to meet the competition along with offering a new product or offering good product with lesser price. Now a days business houses employee a person from different background because due to globalization labour can move easily from one place to another. In one organization there are employees from different religion, cultural, nationality and education. Employees from different background create ethical challenge for organization and manager as well. Businesses have realised that ethical misconduct can be very costly not only for the organisation but also to society as a whole. Small and medium-sized enterprises (SMEs) have certain issues regarding ethical practices because they have less fund to exorcise and implementation of ethical practices.as SMEs play and important role in boosting any economy globally, due to this ethical approach is become important for these enterprises also. SMEs and their managers are forced to act ethically to save their own business interest. There



is also increasing the knowledge about ethics, society, customers all know about is company is ethical good or not. However, the study of the role and function of ethics in business organisations has unfortunately focused primarily on larger enterprises, even though SMEs exert a strong influence on the economies of all countries, particularly in the fast changing and increasingly competitive global market (Naidoo, Perumal & Moodley 2009). While many large companies have gained their reputation by applying ethical standards, SMEs in developed countries are progressively becoming more alert to the significance of trustworthy dealings with employees, clients, suppliers and society. However, SMEs in developing countries still require more understanding and awareness of the implication of business ethics and its benefits. They may be unable to recognise such gains due to lack of a long-term vision.

### **GENESIS OF BUSINESS ETHICS**

Ethics refers as a rule or principal of moral behavior of doing right things in a right way. According to Abiodun and Oyeniyi (2014), ethics is based on broad principles of integrity, transparency, accountability, responsibility and fairness, and focuses on internal stakeholder issues such as product quality, customer satisfaction, employee wages and benefits, and local community and environmental responsibilities. ethics means moral principles that govern the action of an individual or a group (Abiodun & Oyeniyi 2014). Most scholars generally agree that ethics is asset of principles, rules, morals and values that inform and guide the conduct of individuals and groups in society or a business organization.

Business ethics means apply the ethics into business. Business ethics control the behavior of company and making a right quality of product, employees' welfare etc. When identifying the business's core values, it may help to think of some values as business values and others as ethical values, although the distinction can be insignificant, and business and ethical values are often interrelated. In SMEs, these values will inevitably be influenced by the personal and professional values and principles of the owners or managers.

<b>Ethical values</b>	<b>Business values</b>
Integrity	Customer service
Honesty	Quality
Openness	Innovation
Respect	Reliability
Fairness	Efficiency
Responsibility	Value for money

Ethical and socially responsible practices benefit entrepreneurs financially in the long run. This means that behavior associated with maintaining honesty and integrity, being trustworthy, engaging in fair commercial practices, taking responsibility and being accountable for one's own actions are very important for SMEs in the long run (Ahmad 2009). According to Goll and Rasheed (2004), in fast-changing and unpredictable environments, ethical and socially responsible behavior helps businesses to gain support from different external stakeholder groups. Such behavior provide them with some protection from the unpredictability they face. As such, a business's image and reputation may be influenced by the good practices it exhibits to its customers and to the general public (Jones 2000). The benefits of ethical practices

enable competitive advantage to be attained as a business distinguishes itself from its competitors (Ahmad 2009). In fact, businesses with high ethical codes of conduct and a commitment to enhancing integrity are not only profitable but more likely to succeed in a commercially competitive world (Hasnah, Ishak & Sobei 2015)

Indeed, the importance of business ethics cannot be over-emphasized (Mahmood 2008). The advantages of adopting business ethics include:

- Investors use business practices and values as primary considerations in their decision-making.
- As customers are becoming increasingly aware of their rights, they value ethical practices. Hence, adopting ethics can help to build reputation of businesses.
- Promoting reputation can help in building customer loyalty and increase revenue.
- Attract a talented workforce and employees thus improving business performance and productivity of employees.
- Comply with regulations such as labour laws and environment.
- Collaboration with other firms both domestically and internationally.

According to Sraboni and Sharmistha (2011), a satisfied and motivated workforce is the primary step towards long-term success in business. Ethical practices towards the employees can warrant job satisfaction and enhanced motivation levels of employees, which eventually leads to better business profitability. Essentially, ethical hiring practices, the implementation of a rational performance appraisal system, a formal procedure for employee replacement, a proactive approach towards handling employee grievances, workplace safety and voluntary investments for employee welfare are all instrumental towards creating an ethical work climate. Furthermore, encouraging employees to participate in decision-making, attending to

the training and development needs of employees, without discrimination, and presence of a formal code of ethics in the organization are also ethical issues that motivate employees (Sraboni & Sharmistha 2011).

### **Ethical challenges of small and medium-sized enterprises**

Unethical behavior has indeed become prevalent in businesses of all sizes today, and they pose significant risks to business organizations and their stakeholders (Wiid et al. 2013). SMEs are in a more vulnerable position today with regard to corruption, fraud and other unethical practices. This is attributed to the fact that they need to survive and as they tend to be small in size, they experience more difficulties. SMEs are especially vulnerable to the practice and consequences of unethical business behavior (Medlin & Green 2003) due to their size, limited finances and funding sources, their dependence on word-of-mouth strategies to market products, dependence on sometimes overpowering customers, difficulty in building a reputation and their tendency to take shortcuts when doing business. However, SMEs in the developing countries lack awareness and understanding of the importance of business ethics and its advantages. SMEs lack long-term vision and focus more on survival in the short term. Due to lack of financial resources to build a formal ethical culture, SMEs in some countries like Pakistan embrace unethical practices in order to remain afloat. For example, they seek unethical schemes to access low-quality goods at lower prices and evade taxation so that they have the upper hand over their competitors (Mahmood 2008; Tarus & Nganga 2013). Others accept contracts at lower prices than they should because there are no rules governing their operation. Furthermore, lack of information, credit, scale economies, quality and reputation make most SMEs very uncompetitive (Tarus & Nganga 2013). On the other hand, SMEs are aware of the large scale of unethical practices taking place in large companies and government departments, which they see as standard or acceptable practice. Therefore, this may influence their behaviour and perceptions, and even make them more open to dishonest behavior (Wiid et al. 2013). In some instances, SMEs see these unethical actions as necessary for survival. Their size ultimately limits their resources and capabilities to avoid corruption and fraud in the business sector. Consequently, many, particularly in developing countries accept corruption and fraud as normal, acceptable practices and utilize these as a means of getting something done quicker, even when they know that it is illegal and unethical (Rune 2011).

## **Methodology**

In this article, the background literature review on ethical practices in SMEs in the context of developing countries has been conducted on several journal articles. Peer-reviewed articles from journals between 2004 and 2016 were analysed. This helped identify the aspects of business ethics, significance of business ethics to SMEs, ethical dilemmas and challenges of SMEs and the proposed strategies to address ethical dilemmas and challenges thereof. The key words used for the literature search are ethics, business ethics, ethical practices and SMEs.

## **Strategies to address ethical dilemmas and challenges**

- Consideration of employability skills such as honesty, ability to work cooperatively, respect for others, pride in one's work, willingness to learn, dependability, responsibility for one's actions, integrity and loyalty is very critical
- The training should focus on business ethics and how SMEs can introduce the concept in their structure. Hence, SME owners and their employees need to become more educated and more aware of the need for ethics in business.
- There is the need for SMEs to maintain good, trusting relationships with key stakeholders such as customers, employees, suppliers and the community. It is recommended that SME owners should design a code of ethics as a key tool for implementing business ethics in their businesses.
- Business ethics should be introduced as a major module in the universities and in institutions of higher learning in developing countries to educate likely entrepreneurs about the importance of ethics
- SMEs need to collaborate with each other and the best way to do this is to form strategic alliances. This will help them to learn about challenges and best practices. Working through associations will also help in promoting fair business practices
- This requires a business to act honestly, and sincerely endeavor to behave in accordance with one's own agreements, ethical standards in the industry and the law itself
- SME owners must desist from taking unfair advantage of their employees, customers, and other stakeholders. Hence, SMEs must appreciate that doing business requires exercising good faith and honoring their promises and carrying out their responsibilities towards customers and stakeholders with goodwill and good intention.

## **Conclusion**

Business enterprises can no longer afford to disregard business ethics. There are continuous business failures as a result of unethical practices especially those associated with employees and top executives. This in turn has adversely affected SMEs' reputations and survival,

particularly in developing countries. Business organizations and managers need to behave ethically and protect their own business interests if they are to remain competitive. SME owners and their employees need to become more educated and more aware of the need for ethics in business. They need to understand what ethics means and design a code of ethics as a key tool for implementing business ethics in their businesses. Such a code of ethics should translate core values into specific commitments and expected behavior in relation to the organization's stakeholders. This article has added to the body of existing literature on ethical practices of SMEs in developing countries. As such, SME owners and managers, as well as the industry, can use the findings of this article to design ethical policy frameworks and guidelines to improve their reputations and competitiveness.

## References

- Peter K. Turyakira Ethical practices of small and medium-sized enterprises in developing countries: Literature analysis. ISSN: (Online) 2222-3436, (Print) 1015-8812
- Abiodun, A.J. & Oyeniya, O.J., 2014, 'Ethical dilemmas in management: An African perspective', *Journal of Business Systems, Governance and Ethics* 6(2), 36–44. <https://doi.org/10.15209/jbsge.v6i2.203>
- Ahmad, N.H., 2009, 'Doing well by doing good. A study of ethical and socially responsible practices among entrepreneurial ventures in an emerging economy', *Frontiers of Entrepreneurship Research* 29(12), 1–15.
- Ahmad, N.H., Amran, A. & Halim, H.A., 2012, 'Ethical and socially responsible practices among SME owner-managers: Proposing a multi-ethnic assessment', *Journal of Southeast Asian Research* 43(2), 1–11. <https://doi.org/10.5171/2012.258185>
- Borade, G., 2012, *Difference between ethics and morality*, viewed 17 December 2012, from <http://www.buzzle.com/articles/difference-between-ethics-and-morality.html>
- Botha, H.J., 2012, *Investigating the ethical considerations faced by small business entrepreneurs in the informal sector: Zandspruit Township, Johannesburg*, viewed 05 June 2012, from [http://www.uj.ac.za/EN/Faculties/management/departments/CSBD/Documents/2010%20CSBD%20Conference%20Docs/BS\\_Botha.pdf](http://www.uj.ac.za/EN/Faculties/management/departments/CSBD/Documents/2010%20CSBD%20Conference%20Docs/BS_Botha.pdf)
- Branko, M., Drago, C. & Zoran, S., 2015, 'Role of business ethics in management of human resources', *Januar-mart* 61(1), 85–96.

## CHAPTER 16

# JOURNEY OF INDIAN RUPEE AND CAUSES OF DEVALUATION OF INDIAN RUPEE

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### **Abstract**

Currency of any country is a key pillar of its growth and development. All financial aspects can be managed by a country effectively only if its currency is properly developed, managed and valued. This paper will help the others to know the about the interesting development journey of Indian rupee and also help in further research to find out the way to save Indian rupee from devaluation in normal as well as in adverse situations. Main causes of devaluation of Indian rupee were also discussed and current position of Indian rupee during pandemic covid19 has also considered in the study as whole world has faced a great lockdown period.

*Key words - Indian, currency, rupee, devaluation, coin*

### **Introduction**

Currency is a kind of payment that may be used to buy and sell products and services. In a nutshell, its money, usually in the form of paper or coins, issued by a government and widely recognized as a means of payment at face value. Currency is the primary medium of exchange in the modern world, having long ago replaced bartering as a means of trading goods and services. In the 21st century, a new form of currency has entered the vocabulary, the virtual currency. Virtual currencies such as bitcoins have no physical existence or government backing and are traded and stored in electronic form.

### **Methodology**

This paper has been written on the basis of secondary information only which has been taken from internet resources, published papers of other researchers and books.

### **History**

Indian rupee's history can be traced back to ancient times. Ancient India was one of the earlier issuers of coins in the world in circa 6<sup>th</sup> century BC, along with Chinese 'Wen' and Lydia's staters. The word 'Rupiya' has been claimed to derived from a Dravidian word which means wrought silver that is a coin of silver.

Indo-Aryan origin is more likely compare to Sanskrit as the word 'Rupa' means a form of beauty and 'Rupka' as noun means a specific coin. Same in Panchatantra, Rupya (rupiya) means a beautiful paini made with silver and bearing stamp.

Arthashastra, written by Chanakya (Prime minister of first Maurya emperor, 340-290 BCE). He mentioned silver coin as 'Rupyarupa' and other coins like gold coins as 'Suvarnarupa', copper coins as 'Tamararupa' and lead coins as 'Sisarupa'

### **Earlier Forms of rupee and its development**

Sher Shah Suri, during his five-year tenure (1540 to 1545) issued a coin of silver whose weight was 178 grains and it termed as Rupiya. Upto Mughal period it was in proper use but as Britishers set in India they start paper rupee. The biggest evidence of this was the Bank of Hindustan established by them during that period.

### **Silver coin**

Indian rupee was a silver-based currency upto 19<sup>th</sup> century. But it had several consequences on the standard value because other strong economies at that time were on the gold standard. during british rule and first decade of independence Indian rupee was sub divided into 16 annas. Each anna was subdivided into either 4paisa or 12 pies. So, one rupee was equal to 16 annas, 64 paisas of 192 pies. In 1957 when decimalization occurred then Indian rupee was divided into 100 "Naya paisa" but after few years the initial "Naya Paisa" was dropped. Since mid- 20<sup>th</sup> century, the Indian rupee was the official currency of several areas which were under the control of britishers and governed from India like East Africa, Southern Arabia and the Persian Gulf.

### **Pig Coin**

In 1911 accession to the throne of the king- emperor Georage Vth led to the Famous "Pig Coin". This coin has very interesting story as actually the chain of elephants was engraved on upon it but due to poor engraving the elephants looked very much like a pig. So, it remarked as 'pig coin' but muslim community at that time was very angry so this image was quickly redesigned.



**pig coin in 1911**



**Redesigned pig coin 1911**

**Paper currency**

Due to shortage of silver during the first world war, led to the introduction of paper currency of One rupee and Two and Half rupees. During that time other small silver coins were replaced with coin made with Nickel (1940 to 1947)



**One rupee**



**Two Rupee**



**Half Rupee Coin**

**Ashoka emblem and corn sheaf engraved coin**

After independence monetary system remained unchanged and on 15<sup>th</sup> august 1950, ‘Annas Series’ was first coinage of the Republic India. King’s portrait was replaced with Ashoka Lion Capital And the picture of tiger was replaced with Corn Sheaf on One rupee Coin.



**Naya Paisa**

In 1957, Naya Paisa was introduced due to “Decimal Series” and denominations of 1, 2, 5, 10, 20 and 50 paisa were issued. these paisa coins were valid upto 1968.but due to inflation



all coins who were made of bronze, Nickel, Brass etc. converted into Aluminum. In 1988, coins of 10, 25 and 50 paisa were started to made with Stainless Steel.



### **Devaluation of Indian rupee**

With the passage of time as form of Indian rupee has been changed the value of Indian rupee has also changed as compare with other countries. To understand the causes of devaluation of Indian rupee it can be studied in two parts as follow -

#### **I. Devaluation of rupee since independence**

Indian rupee which was at par with American currency at the time of independence in 1947 had depreciated by little more than 6.5 times against the greenback time in past 66 years. It was a slippery journey since independence. Many geopolitical and economic developments had affected its movement in last 66 years.

When India got freedom on 15 August,1947 the value of rupee was at par with the American dollar. There were no foreign borrowings on India's Balance sheet. So, to finance welfare and development activities, especially with the introduction of five years plan in 1951, the government of India started external borrowings. This required the devaluation of the rupee.

#### **II. Devaluation of rupee After Independence**

After independence, India had chosen a fixed rate currency regime (pegged exchange rate). The rupee was pegged at 4.79 against a dollar between 1948 and 1966. But the two consecutive wars, one with China in 1962 and another one with Pakistan in 1965, resulted in a huge deficit of India's budget, and forcing the government to divided the currency to 7.57 against dollar. The rupee link with the British currency was broken in 1971 and it was linked directly to US dollar.

In 1975, value of the Indian rupee was pegged at 8.39 against a dollar. In 1985 it was again devalued to 12 against a dollar. in 1991, when India faces great depression period and its balance of payment was huge, the sharp devaluation of currency was needed. The country was in the grip of high inflation, low growth and the foreign exchange even was not enough

to meet the 3weeks of imports. Thus, under such situation the Indian currency was again devalued to 17.90 against a dollar.

In 1993 currency was let free to flow with market sentiments. Exchange rate was freely determined by the market forces with a provision of intervention of central bank under the situation of extreme volatility.in this year currency was devalued to 31.37 against a dollar. Liberisation the currency regime led to sharp jump in foreign investment inflows and boosted the economic growth. The rupee traded in range of 40-50 from 2000 to 2010.

### **Present scenario (Position of rupee during pandemic Covid-19)**

With the huge foreign exchange resources the central bank of India (RBI) tries to control the direction of Indian rupee specially its volatility. As The rate of the dollar against the rupee has a tendency to consolidate in a range for 6-12 months before breaking out. It was consolidating between 69 and 71 widely last year before the pandemic, and as the epidemic spread, the pair likewise spread, closing the financial year 2019-20 at 75.80.

The consequences of pandemic also increased with the GDP, as the cases of covid-19 increased in the first quarter of 2020-2021 that is reduced GDP by 24 per cent. On April 22, 2020, the rupee hit a new all-time low of 76.91 until the RBI intervened and began selling dollars to stabilise it. Meanwhile, the BSE Sensex had plummeted to 25,000 points and the NSE had fallen to 7,500 points as the market considered the economic consequences of the epidemic. At this point, Reliance began selling interests in Reliance Jio and Reliance Retail, bringing in roughly \$25 billion in foreign direct investment into the country.

### **Reasons why rupee is sinking every day**

Difference between import and export of goods and services of a country during a particular period shows the balance of current account of that period which may be surplus or deficit. So current account deficit occurs when import of goods and services of a country is more than total export of goods and services of that country. This gap of income and expenditure put pressure on downward side of value of currency means devaluation. In the year 1990, the current account deficit is US \$9.7 billion. The wider CAD creates demand for dollar which is the reason of devaluation of rupee. India's presently current account balance deficit is \$8.1 billion (1% of its GDP) up to quarter end March 2021.

### **Policy inaction High fiscal deficit**

High fiscal deficit is regarded as the main reason of devaluation of currency. Fiscal deficit is the difference between government income and expenditure. In case of high fiscal deficit government may use foreign reserve to finance the deficit. Due to this, the reserves are reduced. And this problem encourages the government to devalue its currency. Like RBI one day said that it will tighten the liquidity and, on another day, it said that it will inject 1 billion dollars in market. It shows the policy inaction.

### **Low FOREX exchange**

In 1991 India's foreign exchange reserve was as much low as it can cover the import of goods and services only for 3 weeks. At that time LPG policy was introduced to increase the foreign exchange and due to low foreign exchange RBI cannot intervene powerfully in the currency market and this led to devaluation of Indian rupee. By the July that year this lead sharp devaluation of rupee.

### **Slow growth (low GDP)**

Fall in the growth of Indian GDP (gross domestic product) was also a reason of devaluation of Indian rupee. Like in 2012-2013 India's gross domestic product growth was fell down to decade low of 5%. Agriculture, mining and manufacturing sector was flatter at that time. Foreign investors were pulling money out of Indian market due such a slow growth. Thus, it adversely affects the value of rupee.

### **Dependence on foreign money**

India's current account deficit was financed by foreign money from last many years. but as the foreign investors started withdrew their investment which led to the weakness of Indian rupee.

### **Crude oil prices**

The decision by the Organisation of Arab Petroleum Exporting Countries also known as OAPEC to reduce production and the decision taken by Persian Gulf nations to double the price of crude oil led India to borrow foreign currency. India had to borrow foreign currency that led to another reason why is the rupee falling. In spite of being one of the strongest financial countries in the world, India falls in short of effective plans that will show a difference in the country's economic status. On the other hand, US takes up very smart plans to cope with the current business strategies, hence taking over the entire world. USD vs INR

is a never-ending debate that causes repercussions among the public. The value of USD to INR has been on high since the last two decades. Until a change has been brought in this system, the **rupee value against US dollar** will continue to go downslide.

The U.S. is the biggest importer of crude oil. When the crude oil prices go down, the U.S. saves more dollars in buying it. This strengthens the dollar and that leads to another reason why the rupee is falling against the dollar.

### **Inflation**

Depreciation of rupee can boost the inflation adversely as the inflation rate in the economy is already close to two digits. As the imports go expensive the fuel price would be inflated considerably. Rise in fuel prices will impact the prices of raw materials and other products which will lead to a steady inflation in the economy. This will create a huge pressure on the developing economy in terms of growth. Curbing inflation will become a tedious task for the central bank and government. Inflation means continuously rise in prices. From 1966 to 1980, the value of rupee is constant. But after this, the value of money is decreased. And it decreases the purchasing power of money. Due to this there is a decline in demand of the goods and this is cause of devaluation of currency.

### **Current position of Indian rupee during pandemic**

The Covid-19 pandemic has thrown the Indian economy into an unprecedented recession. Hundreds of small businesses have shuttered, unemployment is on the rise, and household incomes are dwindling. But despite this upheaval, the Indian currency has remained surprisingly stable. On July 7, the Indian rupee was valued at 74.62 to the dollar as compared to 75.66 in the last week of March 2020 when the pandemic first reached the country's shores. At the end of March 2020, when India went into a sudden and unprecedented lockdown, the Indian currency felt some heat for a bit. In April, the rupee touched a record low of 76.92 against a dollar. There was nervousness among global investors, which was also evident in the stock markets that went into a near tailspin. However, India's central bank quickly sprang into action to calm nerves. The Reserve Bank of India (RBI) called for at least three unscheduled briefings for policy announcements, to show its seriousness towards supporting the economy. The central bank took some unprecedented measures, including reducing the repo rate—the rate at which it lends to banks—by 115 basis points until now. The measure was aimed at encouraging banks to lend money to businesses so they could survive the tough lockdowns. In fact, several central banks across the world did the same, and that worked in India's favour. With interest rates in other countries low, global investors

flocked to emerging markets, flushing India with liquidity. So basically, even when the Indian economy was staring at a recession, foreign investors were putting their money into the country. In the last two months, the Indian rupee has seen some pressure because of the rise in global crude oil prices. However, the RBI's bumper foreign exchange reserves are good enough to save the rupee from weakening sharply in adverse times.

Since April 2020, the Indian central bank has added a whopping \$134.34 billion to its coffers, taking the total forex reserves to \$608.99 billion (pdf) as of June 25. This is the highest-ever forex reserve held by India. In addition, there are expectations that central banks across the globe will continue to keep their policy rates low, especially given the recent concerns of the delta variant, which could lead to an increase in Covid-19 cases in countries that have had some respite from the pandemic for the last few months. "While the recent spike in crude oil prices and financial market volatility has caused some dent to rupee's performance, the continued foreign interest accompanied by a decline in the number of new infections, and the vaccination pace will likely limit the losses (in the rupee)," Shashank Mendiratta, an economist at technology company IBM India said.

### **Conclusion**

Although Indian rupee journey till nowadays has remained cyclical. but in recent time it shows positive direction even facing lockdown and pandemic situation, as compare to many other countries. The proper planning and actions taken by government of India and The RBI can save the Indian rupee from devaluation and depreciation even in adverse time like if adequate foreign reserve will be there then it will help Indian rupee to stay stable during pessimistic events also.

### **References**

- Narang, V. (2014). Indian Rupee vs. Dollar: A Deep Insight. *International Journal of Innovative Research and Development*, 3(1), 383-390.
- Khandre, S. A. To Identify the Comprehensive Reasons of Indian Economy for the Depreciation of Rupee.
- Due, P., Sen, P. (2006) "Capital flow Volatility and Exchange Rates: The Case of India" Central for Development Economics, Department of Economics, Delhi School of Economics
- Iqbal, B. A. (2015). Depreciating Indian Rupee: Trends and Issues. *Global Economic Observer*, 3(1), 127-134.
- Patni, V., Batheja, N., & Mathur, S. K. Effect of Rupee Decline on Indian Economy. <https://www.jagranjosh.com/general-knowledge/devaluation-of-indian-rupee-reasons-history-since-1947-1475640486-1>
- O.P Aggarwal, B,K Chaudhuri (2020), "Foreign Trade and Foreign Exchange" Himalaya Publishing House ISBN Number : 978-93-5273-132-9.

## CHAPTER 17

### COMPARATIVE ANALYSIS WITH SARS-COV-1/ MERS-COV/ INFLUENZA VIRUSES

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#### **Introduction**

By July 15, 2021, the pandemic of COVID-19 had already infected 189,139,378 humans worldwide causing death of 4,074,083 individuals and 172,776,835 individuals recovered. (*Coronavirus Cases: Worldometer,2021*). India has been struck devastatingly by this pandemic with the 2nd highest caseload being recorded here. In India, 30,986,803 patients have been found infected with COVID-19 since Dec 2019. (*India:Worldometer.2021*); (*Ministry of Health and Family Welfare, Govt. of India. MoHFW. (2021)*); (*Coronavirus in India: Latest Map and Case Count. Coronavirus Outbreak in India. (2021)*). On July 15, 2021, there were 4,29,946 active cases of COVID-19 infection. (*Ministry of Health and Family Welfare, Govt. of India. MoHFW. (2021)*). 301044720 individuals discharged after defeating COVID-19 infection which is 97.28% of total caseload in India (*Ministry of Health and Family Welfare, Govt. of India. MoHFW. (2021)*). 4,11,404 patients succumbed to COVID-19 in India. (*Ministry of Health and Family Welfare, Govt. of India. MoHFW. (2021)*).

Coronaviruses (CoVs) are single-stranded RNA viruses with a positive sense that cause illnesses in humans and animals. Human coronaviruses (HCoVs) were discovered as causes of acute upper respiratory infection (URI) for the first time in 1962. HCoVs have been reported to be increasingly frequently linked with severe upper and lower respiratory tract infection in recent years (RTI). They have been identified as a main cause of pneumonia in older adults and immunocompromised patients (El-Sahly, 2000). Two extremely deadly human coronaviruses have been found in the recent two decades, including coronaviruses linked with severe acute respiratory syndrome (SARS-CoV-2) and the Middle East respiratory sickness (MERS-CoV), which arose in various parts of the world (Drosten, 2003). On December 31, 2019, a new strain of coronavirus was isolated and named as severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) by the International Committee on Taxonomy of Viruses (ICTV) from patients with pneumonia of unknown etiology in Wuhan city, China (Phelan, 2020). On March 11, 2020, the World Health Organization (WHO)

announced that COVID-19 is a ‘public-health emergency of international concern’. (Li, 2020).

Coronaviruses (CoVs) are a large group of enclosed positive-sense single-stranded RNA viruses. They infect humans, other mammals and avian species, including livestock and companion animals, and are therefore not only a challenge for public health but also a veterinary and economic concern. Within the order of *Nidovirales* and the suborder of *Coronavirineae* lies the family *Coronaviridae*. The latter is further specified into the subfamily of *Orthocoronavirinae*, which consists of four genera: *alpha-coronavirus*, *beta-coronavirus*, *gamma-coronavirus* and *delta-coronavirus*. Whereas alphacoronaviruses and betacoronaviruses exclusively infect mammalian species, gamma-coronaviruses and delta-coronaviruses have a wider host range that includes avian species. Human and animal coronavirus infections mainly result in respiratory and enteric diseases. (Corman, 2018)

### **COVID-19 Epidemiology**

To date, it has been found that all ages are susceptible to COVID-19 infection. The world map of COVID-19 mediated infections and deaths showed that no country, race, ethnicity, or religion is spared from this virus. The possible transmission route of this novel coronavirus is person-to-person, which includes contact transmission by contacting the nasal, oral, and eye mucosal secretions of the infected patient, as well as direct transmission by droplet inhalation when the patient coughs or sneezes.

Studies have shown higher viral loads in the throat, while no significant difference in viral burden has been observed when comparing symptomatic and asymptomatic cases. (Holshue, 2020). It is also reported that droplets from sneezing or coughing can spread up to 6 feet, emphasizing the 6 feet social distancing criteria. (Setti, 2020). The virus can deposit on many surfaces and can survive for days under favorable conditions depending on the particular surface. The incubation period for COVID-19 is from 3 to 14 days, depending upon the patient’s immunological conditions. (Acter, 2020).

### **Material and Methods:**

We included peer-reviewed articles that reported cases with demographical, clinical, laboratory, and image features of real-time reverse transcriptase polymerase chain reaction (rRT-PCR) confirmed SARS-CoV-2 infection. For assessing clinical, laboratory and imaging characteristics eligible study designs were case-control, cohort studies, case reports, and case

series. For assessing risk factors and outcomes Observational studies, Review articles, opinion articles and letters were included. Article language limit was not set, and we included publications from November, 2019 until the date the search was Finished. Studies not presenting relevant data were excluded.

### **Information sources and Search Strategy:**

We conducted a systematic review using Medline/PubMed, Scopus,EMBASE, Cochrane, LitCOVID, PROquest, MEDind, CUIMC and Web of Sciences. The search terms used were these: “Novel coronavirus,” “Novel coronavirus 2019”, “2019 nCoV”, “COVID-19”, “Wuhan coronavirus,” “Wuhan pneumonia,”and “SARS-CoV-2.” The searches were concluded by July, 2021, and four different researchers independently evaluated search results.

### **Study Selection:**

The results of the initial search strategy were first screened by title and abstract. The full texts of relevant articles were examined for inclusion and exclusion criteria. When an article reported duplicate information from the same patient,the information of both reports was combined in order to obtain complete data, but only counted as a single case. Observational Studies that reported the proportion of symptoms, laboratory characteristics and risk factors were included for quantitative synthesis (meta-analysis). Case reports were not included for meta-analysis, as they do not have a denominator for any variables, but descriptive statistics were applied to them, to summarize their findings.

### **Data collection process and data items:**

Data extraction forms including information on the type of publication, the publishing institution, country, year and date of publication, the number of reported cases, of cases at ICU, age, sex, comorbidities, clinical features (e.g., fever, cough), laboratory findings (e.g., white blood cell counts [WBC], biochemistry), imaging (e.g., chest X-ray), complications (e.g.,acute respiratory distress syndrome, ARDS), outcome (e.g., death) were filled independently by four investigators. A fifth researcher checked the article list and data extractions to ensure there were no duplicate articles or duplicate information of the same patient and also resolved discrepancies about study inclusion.



### **Assessment of methodological quality and risk of bias:**

For quality assessment, we used the Quality Appraisal of Case Series Studies Checklist of the IHE and specifically the critical appraisal tool to assess the quality of cross-sectional studies (AXIS). Publication bias was assessed using a funnel-plot. A random-effects model was used to calculate the pooled prevalence and 95%CI, given variable degrees of data heterogeneity, and given the inherent heterogeneity in any systematic review of studies from the published literature. Also, Egger's test was performed.

### **Statistical approach**

Unit discordance for variables was resolved by converting all units to a standard measurement for that variable. Percentages and means  $\pm$  standard deviation (SDs) were calculated to describe the distributions of categorical and continuous variables, respectively. Since individual patient information was not available for all patients, we report weighted means and SDs. Pooled prevalences and their 95% confidence intervals (95% CIs) were used to summarize the weighted effect size for each study grouping variable using the binary random-effects model (the weighting took into consideration the sample sizes of the individual studies), except for median age, where a continuous random-effect model was applied (DerSimonian-Laird procedure) (Jackshon,2010). Measures of heterogeneity, including Cochran's Q statistic, the I<sup>2</sup> index, and the tau-squared test, were estimated and reported. We performed subgroup analyses by age groups (adults or children). And meta-analyses for each of the variables of interest. Cochrane's RevMan software was used for statistical analysis. OriginPro and Google sheets were used for Charting.

### **Results**

Initially, 8070 scientific productions were found in the databases, 184 of which met the initial inclusion criteria, with a total of 114,046 patients. After full reading, 32 scientific productions that did not report clinical manifestations were excluded (Fig. 5). The remaining 152 publications totalled a population of 41,409 (Annex. 1) individuals from the following 23 countries: Germany, Bolivia, Brazil, China, Korea, South Korea, Spain, USA, France, United Kingdom, India, Iceland, Italy, Poland, Singapore, Thailand, Belgium, Finland, Russia, Japan, Pakistan, Philippines and Sweden. The following three analyses were conducted: first, all studies were considered; second, only studies with 10 or more individuals were

considered, and third, only studies with a population equal to or greater than 100 individuals were considered.

## **Discussion**

A wide range of clinical symptoms may occur in COVID-19 individuals. This research was able to uncover at least 26 of these manifestations, however it is far from a complete list of symptoms. It is necessary to highlight the illustrative number of presentations, given that generic terms such as neurological and dermatological manifestations imply a range of specific responses, which could substantially increase numbers of signs and symptoms.

Regarding SARS-CoV-2, in general, these findings are nonspecific, such as dyspnea, fever, cough, and headache. The severity of the infection may vary from asymptomatic patients to severe cases of pneumonia that can lead to death (Zhou, 2020; Tu, 2020). Initially, the disease was characterized by the triad fever, cough, and shortness of breath. The US Center for Disease Control and Prevention (CDC) subsequently added chills, muscle pain, headache, sore throat, and loss of taste or smell to this list (neurological manifestations) (Center for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19). Fever was the most common finding observed among patients (58.7%), which signals the organism's response to toxic substances that affect temperature regulating centers (González, 2016). This symptom can appear throughout the course of various infectious diseases, and, although it is a beneficial signaling process for the host, it demands a considerable increase in energy metabolism (Plaza, 2016). When compared to diseases caused by other members of the coronavirus family, such as SARS-CoV (99%) and MERS-CoV (98%), studies suggest that fever is less frequent in COVID-19 (Guan, 2020).

Cough was the second most common manifestation (54.6%), and it is directly linked to the transmission of the virus through respiratory droplets (Mungroo, 2020). The cough reflex improves release of secretions and particles from airways as a result of irritating mechanisms, such as accumulated secretions, postnasal drip, and pathogens, in addition to inflammatory processes. In some conditions, it can become excessive and potentially harmful to the airway mucosa (Polverino, 2020). Additional symptoms associated with the upper respiratory tract have also been observed, such as sneezing, nasal congestion, and sore throat.

Dyspnea was seen in 30.7% of the reported patients, and it is generally related to greater severity of the condition. During physical examination, patients in serious condition present, in addition to dyspnea, increased respiratory rate, speech tremor, weakened breath sounds, and dullness on lung percussion (Wu, 2020; Mungroo, 2020). Most of these severe patients had comorbidities, such as cardiovascular disorders, hypertension, and diabetes (Wu, 2020; Tu, 2020; Liu, 2020). Additionally, radiological findings of these patients showed ground-glass opacities and consolidation, especially in the periphery of the lungs. When these conditions were present, there was an increase in mortality (Wu, 2020; Mungroo, 2020; Brann, 2020).

Fatigue (28%) is widely reported in several studies, which places it among the most significant occurrences of the disease (Brann, 2020). This symptom may be related to the increase in viral load and to the immune response to the infectious process (Brann, 2020). In addition, insufficient energy production to meet the required metabolic demands relates fatigue to other symptoms, such as dyspnea and myalgia (Woo, 2000).

Neurological symptoms (20.8%) are also among the most common clinical manifestations. The neuroinvasive potential of the virus could influence the development of respiratory failure in some individuals, in addition to contributing to the anosmia/ hyposmia and dysgeusia reported by some patients. Neurotropism and its repercussions are still poorly understood (Brann, 2020). Although not very detailed in the studies, anosmia and hyposmia are already proposed as possible initial manifestations of the disease, especially in paucisymptomatic patients, in addition to being relevant for the differential diagnosis of SARS-CoV-2 infection (Pascarella, 2020).

Dermatological symptoms have recently been associated with COVID-19, including non specific manifestations, such as erythematous rash and generalized urticaria as well as more specific characteristics, such as chickenpox rash. Acral ischemia has also been described in patients with severe forms of COVID-19, such as cyanosis of toes, skin blisters, and dry gangrene (Marzano, 2020).

Regarding less prevalent symptoms, although reported in 16 studies, hemoptysis was observed in only 1.64% of patients. This clinical finding reflects the severity of the disease in a proportion of hospitalized patients, with high risk of death (Brann, 2020; Woo, 2000).

As it presents with diverse clinical manifestations, which are in most cases similar to other respiratory diseases, it is difficult to differentiate COVID-19 during the initial phase. There is no pathognomonic sign/symptom as seen in other viral diseases, such as measles and chickenpox, for example. In addition, it is necessary to highlight that the initial manifestations may vary significantly from one patient to another, characterizing COVID-19 as a clinically dynamic disease.

On the other hand, the present study showed a small number of asymptomatic patients (n = 651; 2.3%). This group is composed mainly of young people and women without coexisting diseases, who do not have a significant increase in C-reactive protein (CRP) and do not frequently present radiological findings. Despite the low percentage, asymptomatic cases represent a difficult scenario to control, even in the presence of a single unidentified case, since the virus is easily spread by contaminated droplets and the transmissibility of this patient seems to be equivalent to the symptomatic patient (Dai, 2020). Thus, given the difficulty of screening, social distancing remains a crucial recommendation to slow the spread of the virus.

Additionally, further studies should be conducted with the aim of identifying the most prevalent symptoms in different population groups (children, older people, and pregnant women, for example), in different contexts (community and hospital) as well as levels of severity. This information is essential to define risk estimates of worse outcomes. Finally, knowledge of all possible symptoms in patients with COVID-19 can facilitate early diagnosis and the adoption of measures necessary to contain the transmission chain in the community.

### **Limitations**

This review has several limitations. First, still few studies are available for inclusion. It would be better to include as many studies, newer studies from Latin America, Africa and Other Countries not represented in this study should be included to get a more comprehensive understanding of COVID19.

Second, more detailed patient information, particularly regarding clinical outcomes, was unavailable in most studies at the time of analyses; however, the data in this review permit a first synthesis of the clinical and laboratory characteristics of COVID-19, although the need to be more detailed for characterization and analysis.

Thirdly, Datasets obtained from reports were often from hospitalised settings. Datasets should be more homogenised with a normal population to get better results.

## References

- Coronavirus Cases*: Worldometer. (2021). <https://www.worldometers.info/coronavirus/>.  
*India*. Worldometer. (2021). <https://www.worldometers.info/coronavirus/country/india/>.  
*Ministry of Health and Family Welfare, Govt. of India*. MoHFW. (2021). <https://www.mohfw.gov.in/>.  
*Coronavirus in India: Latest Map and Case Count*. Coronavirus Outbreak in India. (2021). <https://www.covid19india.org/>.
- El-Sahly, H. M., Atmar, R. L., Glezen, W. P., & Greenberg, S. B. (2000). Spectrum of clinical illness in hospitalized patients with "common cold" virus infections. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*, 31(1), 96–100. <https://doi.org/10.1086/313937>
- Drosten, C., Günther, S., Preiser, W., van der Werf, S., Brodt, H. R., Becker, S., Rabenau, H., Panning, M., Kolesnikova, L., Fouchier, R. A., Berger, A., Burguière, A. M., Cinatl, J., Eickmann, M., Escriou, N., Grywna, K., Kramme, S., Manuguerra, J. C., Müller, S., Rickerts, V., ... Doerr, H. W. (2003). Identification of a novel coronavirus in patients with severe acute respiratory syndrome. *The New England journal of medicine*, 348(20), 1967–1976. <https://doi.org/10.1056/NEJMoa030747>
- Phelan, A. L., Katz, R., & Gostin, L. O. (2020). The Novel Coronavirus Originating in Wuhan, China: Challenges for Global Health Governance. *JAMA*, 323(8), 709–710. <https://doi.org/10.1001/jama.2020.1097>
- Li, X., Wang, W., Zhao, X., Zai, J., Zhao, Q., Li, Y., & Chaillon, A. (2020). Transmission dynamics and evolutionary history of 2019-nCoV. *Journal of medical virology*, 92(5), 501–511. <https://doi.org/10.1002/jmv.25701>
- Corman, V. M., Muth, D., Niemeyer, D., & Drosten, C. (2018). Hosts and Sources of Endemic Human Coronaviruses. *Advances in virus research*, 100, 163–188. <https://doi.org/10.1016/bs.aivir.2018.01.001>
- Holshue, M. L., DeBolt, C., Lindquist, S., Lofy, K. H., Wiesman, J., Bruce, H., Spitters, C., Ericson, K., Wilkerson, S., Tural, A., Diaz, G., Cohn, A., Fox, L., Patel, A., Gerber, S. I., Kim, L., Tong, S., Lu, X., Lindstrom, S., Pallansch, M. A., ... Washington State 2019-nCoV Case Investigation Team (2020). First Case of 2019 Novel Coronavirus in the United States. *The New England journal of medicine*, 382(10), 929–936. <https://doi.org/10.1056/NEJMoa2001191>
- Setti, L., Passarini, F., De Gennaro, G., Barbieri, P., Perrone, M. G., Borelli, M., Palmisani, J., Di Gilio, A., Piscitelli, P., & Miani, A. (2020). Airborne Transmission Route of COVID-19: Why 2 Meters/6 Feet of Inter-Personal Distance Could Not Be Enough. *International journal of environmental research and public health*, 17(8), 2932. <https://doi.org/10.3390/ijerph17082932>
- Acter, T., Uddin, N., Das, J., Akhter, A., Choudhury, T. R., & Kim, S. (2020). Evolution of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as coronavirus disease

2019 (COVID-19) pandemic: A global health emergency. *The Science of the total environment*, 730, 138996. <https://doi.org/10.1016/j.scitotenv.2020.138996>

# CHAPTER 18

## INNOVATIVE HR PRACTICES: CASE STUDY OF ZOHO CORPORATION

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### **Abstract**

Zoho Corporation is a leading IT company founded by Sridhar Vembu and is in direct competition with tech giants Microsoft, Google, etc. Mr. Sridhar adopted innovative human resources practices like Zoho University Initiative and Go rural initiative. Zoho university-trained the rural youth in software development and was able to employ rural youth. They proved that degrees are secondary and valued talent. Go rural mission helped to stop migration to cities and opportunities are provided to rural youth near to their hometown. These practices improved not only the profitability of the company but also improved the work-life balance of employees. Zoho model proved that rural and small talent need not come to large cities they can provide world-class services to MNC while working near to their hometown.

***Keywords:*** *Case study, Zoho, Migration*

### **Introduction**

Migration from rural areas to urban cities is a global phenomenon. The rural youth moves to metro cities in search of better opportunities. Villagers or small town residents move to urban cities for better education and employment opportunities available (Hoffmann et al. 2019). Urban cities have more employment opportunities and better education and medical facilities which motivate people to migrate (Kundu 2012). Migration causes various problems. Migration leads to unplanned growth of cities, an increase in slum areas, etc. Migrated people live away from their families which creates a social vacuum and many times due to loneliness and despondency change their behaviors and they fall prey to drugs and crimes (Khullar 2014). Migration also causes geographical imbalances. The government had taken several steps to stop this migration from rural areas to urban areas. MANREGA was an attempt to stop this migration. The rural employment guarantee schemes were able to reduce urban migration. Few Private sectors companies had also taken the initiative to increase rural employment and

providing job opportunities near the native place of workers. Zoho corporation is one such company that had initiatives to control rural migration.

### **Background of Zoho Corporation (ZC)**

Zoho Corporation is a leading IT company founded by Sridhar Vembu. Zoho corporation was Founded in 1996 by Mr. Vembu at that time its name was AdventNet Inc. Zoho Corporation provides cloud-based customers relationship management, accounting, and other 40 application and is in direct competition with tech giants Microsoft, Google, etc. Sridhar was from a middle-class family in Tamil Nadu. His father was working in the high court. Sridhar did his schooling at government schools and did graduation in electric engineering from IIT Madras. He did Electrical Engineering from Princeton University. He worked for two years in Qualcomm. In 1996 he founded AdventNet Inc along with two of his brothers and three friends. In the IT boom, he got several offers for venture capital funding which was declines by Sridhar, and to date, it is a privately self-financed company. Forbes in 2019 valued the 88% stake of Sridhar in Zoho as \$ 1.83 billion.

At the time of IT bubble in 2001 almost all the clients left the company except three clients and during this crisis, Sridhar took the responsibility of CEO for the company. At that time Sridhar diversified to different areas of software management. They worked in the area of CRM, accounting, and sales and marketing, etc. in 2009 the company name was changed to Zoho Corporation. Sridhar was facing a problem in hiring quality human resources. According to the NASSCOM report, 90% of graduates and 75% of engineers were not suitable to work in the industry. The best candidates from the reputed universities and institutes were hired by MNC at very high packages. In 2005, Sridhar started a new venture at Zoho University.

### **Zoho University (ZU) Initiative**

Zoho had to compete with big giants of IT industry, they come up with a new idea instead of hiring engineers from reputed institutes they started Zoho informal university with 2 teachers and 6 students and trained hundreds of students and most of these are employees of Zoho now. Zoho University selects the government high school students from various villages in and around Tamilnadu by taking the competency test. The students are trained for 18 months out of 6 months is on the job industrial training. Course curriculums are updated from time to time to cover the latest requirement of IT industry. During industrial training, students are paid a stipend and they get practical experience of software design in the actual working



environment. Most of the students of Zoho university are from rural backgrounds and had not even faced the computer before and extensive training of 18 months in ZU they are transformed into software professionals. The university was set up to provide employment opportunities to rural Indian youth from average family backgrounds. NASSCOM report provided that 90% of graduates and 75% of engineers are not employable as they are not having the skills desired by multinational companies. The MNC was only able to provide employment opportunities to the toppers of reputed institutes at a high package. The initiative of Zoho had benefited Zoho in two ways the cost of human resources decreased substantially which led to an increase in gross revenue of Zoho. According to Bloomberg, the revenue of Zoho in 2012 was \$200 Million which surged to \$300 Million in 2015. In 2016 the profit jumped to \$500 Million with a substantial increase in clients from 12 Million to 18 Million across the US, Europe, and Asia. There are various exemplary pieces of evidence of the success of the Zoho university initiative and the story of Abdul Alim is one of them. Abdul was a security guard in Zoho, one of his senior executives noticed him working on a computer and accessed that he had a fire in the belly to learn computer. He was trained for 18 months in Zoho and sharpened his skills for programming. Now he is working as a programmer in Zoho. Many students from the rural schools join Zoho university and as the institute is in the Zoho office they grab the opportunity to learn in a live environment. Students of Zoho are employed in Zoho and they start earning while students of the same age are graduating from college. Students are skilled enough that they are employed in Zoho. There is an interesting story of Saran Babu Paramasivam, who is a senior product manager at Zoho who does not even possess a graduation degree, but all his dreams came true by zoning Zoho university. He possesses a good house and car. He had traveled to many countries several times for official work. He still remembers that when he joined Zoho in 2005 he had operated a computer first time at Zoho only and now he has more than 15 years of association. More than 15-20% of employees of Zoho do not possess a graduation degree and are well settled earning a handsome salary.

### **Go rural initiative**

Mr.Vembu dreamed that his company's employees should be from a rural area and they should also work in the rural area. Zoho conducted a survey of employees where more than 3500 employees suggested that they prefer to work near their hometown. This survey led Vembu to set up satellite offices in rural areas where the employee can work closer to their hometown. Zoho started satellite offices. Zoho started a customer support center in the town

of Renigunta in Chittoor District, Andhra Pradesh. The office had placed 120 employees who had a residence in the range of 20-25 kilometers from Renigunta. Employees can easily commute to the office from their residence. The experiments expanded to 10 villages in Tamilnadu where more than 200 employees, 20 from each village will collaborate and build software for across the world. Employees working near to their home town can save more and live a healthy life. Employees can garner a better work-life balance. Employees working near their residence enjoy more work-life balance as they can perform family responsibilities in a better way (Hilbrecht et al., 2008; Hill et al., 1998. Hill et al. 2003). The rural office has many benefits. Zoho has the advantage that satisfied employees can contribute in a better way for the organization and employee turnover is reduced. Employees have more savings as they need not spend extra money on rent etc. Zoho had witnessed 37.6% growth in operating revenues in 2019 from Rs. 2412 crore in 2018 to Rs. 3308 crore. Net cash inflow from operation increased to 1113 crore in 2019 from 682 crores in 2018. After the successful implementation of the go rural project in 10 villages of Tamilnadu, Zoho is planning to further extend this project to Kerala and Andhra Pradesh. Zoho also plans to apply the same model in the US, Mexico, and Japan. During the Covid, Zoho closed the offices two weeks before the official announcement of nationwide lockdown. Staff had enough time to reach their home town. The early experience of go rural project Zoho was able to adjust to working from a home environment during the lockdown.

## **Conclusion**

Zoho adopted innovative human resource practices like the start of Zoho university and go rural project. Zoho university-trained the rural youth in software development and was able to employ rural youth. They proved that degrees are secondary and valued talent. Go rural mission helped to stop migration to cities and opportunities are provided to rural youth near to their hometown. These practices improved not only the profitability of the company but also improved the work-life balance of employees. Zoho model proved that rural and small talent need not come to large cities they can provide world-class services to MNC while working near to their hometown.

## **References**

1. Hilbrecht, M., Shaw, S. M., Johnson, L. C., & Andrey, J. (2008). 'I'm home for the kids': contradictory implications for work-life balance of teleworking mothers. *Gender, Work & Organization*, 15(5), 454-476.
2. Hill, E. J., Ferris, M., & Märtinson, V. (2003). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office)

- influence aspects of work and personal/family life. *Journal of Vocational Behavior*, 63(2), 220-241.
3. Hill, E. J., Miller, B. C., Weiner, S. P., & Colihan, J. (1998). Influences of the virtual office on aspects of work and work/life balance. *Personnel psychology*, 51(3), 667-683.
  4. Hoffmann, E. M., Konerding, V., Nautiyal, S., & Buerkert, A. (2019). Is the push-pull paradigm useful to explain rural-urban migration? A case study in Uttarakhand, India. *PloS one*, 14(4), e0214511.
  5. *Karan (2016, June 14) Sridhar Vembu Founder & CEO of Zoho Corporation Your success stories <https://www.yosuccess.com/success-stories/sridhar-vembu/>*
  6. Khullar DR. India: A comprehensive Geography, Kalyani Publishers, New Delhi, 2014.
  7. *Krishna v (2020, June 23) The Zoho experiment: Sridhar Vembu dabbles with village offices as employees move home Your story <https://yourstory.com/2020/06/zoho-experiment-founder-sridhar-vembu-village-offices-saas-company/amp>*
  8. Kundu A, Saraswati LR. Migration and exclusionary urbanization in India. *Economic and Political Weekly*. 2012;47(26-27):219-227.
  9. Tripathi N. (2020, June 3) Cover story: Sridhar Vembu's vision from the village *Forbes India <https://www.forbesindia.com/article/big-bet/cover-story-sridhar-vembus-vision-from-the-village/59833/1>*

## CHAPTER 19

# DIGITAL TECHNOLOGY AND ITS ADDICTION

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### **Abstract**

“Education is the third eye of man”, according to Rig-Veda. In the twenty-first century, technology dependency is rapidly increasing. Television, computer, cell phone, and internet dependency are the most common forms of technology dependency. While technological advancements make our lives easier, their misuse can lead to psycho and physio-pathologic symptom in children and teenagers. This article discusses about the excess usage of digital technology and its impact on society who used digital gadgets excessively which result in digital addiction. This paper also includes considerations for digital wellbeing, digital detox etc.

*Keywords: Digital wellbeing, apps, digital technology, digital addiction*

### **Introduction**

The mode of teaching-learning is totally changed due to new advancement of technological era. Now, online mode of education is preferred comparatively traditional teaching methods. There are pros as well as cons of this digital technology. Email, instant messaging (Whatsapp, Instagram, Telegram), mobile and desk phones, dial-in conference calls, video conferencing, Twitter, LinkedIn, SMS, and so on are just a few of the digital communication tools available to us. And this will continue to be the case as technology evolves at a breakneck pace. Health practitioners, researchers, and device developers use the phrase "digital wellbeing" to describe the idea that when people interact with technology, the experience should improve their mental and physical health in measurable ways. The goal of increasing digital wellbeing is to build technology in such a way that it encourages healthy behaviour and actively supports users in maintaining their health. Some firms-built features that are less disruptive or offered the ability to turn off distracting notifications in response to a request for apps and technologies that respect a person's time. Furthermore, businesses have developed new apps that track digital wellbeing and keep track of things like screen time spent on various apps. They assist the consumer in reducing unwanted screen time, or to be more deliberate about how technology is used.

**Objective:**

- To identify main cause of digital addiction
- Considerations for Digital wellbeing
- Digital tools that provide services and applications for digital wellbeing.

**Methodology**

This paper is based on the review of different research articles, blogs, newspaper articles based on digital technology.

**Digital –Wellbeing**

According to digital capability website, “Digital wellbeing is a term used to describe the impact of technologies and digital services on people's mental, physical, social and emotional health. They also need to empower and build capability in users so that all who engage with them are equipped to do so in a way that supports and/or improves their wellbeing.”

**Considerations for Digital wellbeing:**

When optimizing digital health, multiple health-related components can be taken into consideration. This can include:

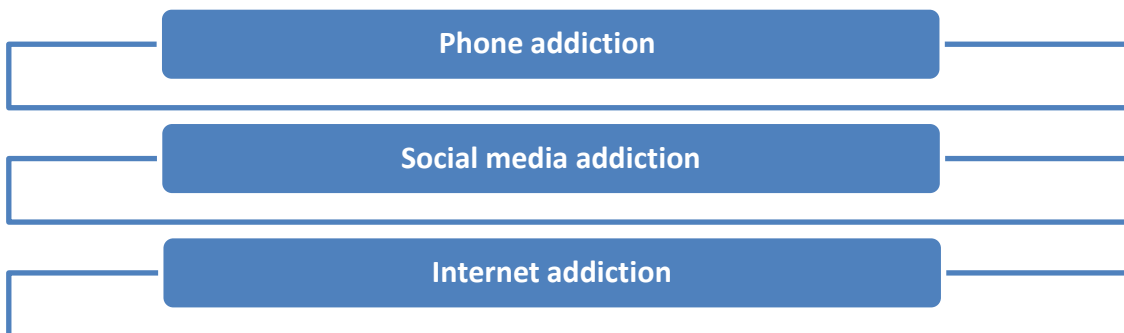
- Setting a daily or weekly screen time limit of a specified number of minutes or hours.
- Reducing eye strain in people who use a lot of devices. To help with eye strain, products like dark panels that cover screens or special lenses that put over spectacles to reduce glare have been developed. There are additional recommendations regarding how large information on the screen should be, what settings and resolution should be used, how often eyes should be rested, and what the best distance between them should be.
- Being aware of the potential for negative mental health consequences. The endless scroll function on social media sites like Facebook and Instagram is one example of a negative feature for mental health. Internet addiction has been linked to high levels of anxiety, ADHD, depression, poor time management, and impulsiveness.
- Supporting good sleep habits, particularly for those who sleep with their devices. Users can lessen eye strain by turning off specific functions, changing the screen contrast, or switching to grayscale on their devices before going to bed. The iPhone, for example, has a built-in feature that reminds users to go to bed at a set hour.

- The importance of physical activity and nutrition is being emphasised more. Many technology devices have been created to assist users in increasing fitness levels, tracking heart rate, reporting daily step counts, and monitoring food.

## Digital Addiction

It's a type of addiction or mere dependence. However, developing a compulsive need to use your digital devices, to the extent where it interferes with your life and stops you from doing things you need to do, is the hallmark of an addiction.

Symptoms of digital addiction: There are three different types of digital addiction –



**Phone addiction** is a dependence syndrome and a clinical addiction where users are affected by smartphone overuse which impacts their daily lives in a negative way. Addiction expert and therapist Paul Hokemeyer explains that this addiction can be a result of underlying behavioral health and personality issues.

**Social media addiction** is quite easy to define. If you spend far too much time on Facebook, Twitter, Instagram and Snapchat to the point where you document each and every aspect of your life on any/all of the platform, you could be a social media addict. Although there's no medical recognition of social media addiction, the term itself has become subject to research and investigation within recent years and overuse of Facebook in itself has been proven to be linked to a decrease in feelings of satisfaction and happiness.

**Internet addiction** is defined as an impulse control disorder, also known as pathological internet use, where some may find it difficult to differentiate between the virtual world and reality. Sufferers tend to spend excessive amounts of time online, not only eating up time but also causing a higher risk of overspending by getting involved in online gambling and gaming.

## **Digital Wellbeing Tools and Social Sites**

YouTube and YouTube Kids have added new safety and digital wellbeing features for kids: younger people use YouTube on a daily basis to find new hobbies, learn about the world, and connect with others via online video. However, it's critical that they have the alternatives and precautions they need to create the perfect experience for them.

- YouTube provides following features:
  1. Changing the default privacy settings for children and teenagers
  2. Increasing the visibility of digital well-being characteristics
  3. Providing protections and information on commercial content
- Website blockers, which allow users to block specific websites at all times or for specific periods of time in order to reduce distraction and boost productivity. Cold Turkey is one example of a website blocker.
- Website blockers that allow users to block certain websites, either at all times or during certain time intervals, to decrease distraction and increase productivity. An example of a website blocker is the tool Cold Turkey.
- Usage dashboards, like the one integrated into the Android OS, that track how many hours a user spends on different apps or websites. This can be used to limit or track average use.
- App timers that limit how many minutes or hours a user can spend on certain website or applications per day. These can also be used to restrict access after a certain time of day.
- Google Shush is a feature that switches a device to "do not disturb" mode whenever it is placed screen down and Google Wind Down is a feature that flips the screen to grayscale at a specified bedtime.

## **Conclusion**

Thus, we can conclude that there are number of ways to prevent and treat digital addiction. Some of popular ways are psychotherapy, counselling, be personalized with family and friends etc. People who spend hours on internet start to see some negative impact in their life. When we return, recharged, we are more productive and have a different perspective.

## References

<https://whatis.techtarget.com/definition/digital-wellbeing>

<https://blog.youtube/news-and-events/new-safety-and-digital-wellbeing-options-younger-people-youtube-and-youtube-kids/>

<https://www.itstimetologoff.com/digital-addiction>

<https://www.healthfitnessrevolution.com/top-10-health-benefits-digital-detox/>

<https://www.digitalcapability.jisc.ac.uk/what-is-digital-capability/digital-wellbeing/>



## CHAPTER 20

# AUGMENTED REALITY: A TECHNOLOGY ORIENTED APPROACH TO INTENSIFY CUSTOMER EXPERIENCE

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### **Abstract**

Augmented reality (AR) is a technology that has swept the globe in recent decades. Its applications are now found in almost every field imaginable. A computer technology stores graphics, images, and other computer data. It is use of computer-generated information to augment real-world. It is constructing a new environment where actual and virtual items are combined at various levels. The customer experience environment is developing into new sorts of hybrid experiences as a result of the development of portable and embodied technologies, as well as highly interactive, physical-virtual linkages. Augmented reality is changing how companies interact with customers. It has the potential to widen consumers' product consideration set while also reducing their options. Augmented Reality (AR) is developing as a strategic experience design tool across a variety of customer engagements. This research adds to a growing body of knowledge about the usage of augmented reality (AR) in the early phases of client buying experiences.

**Keywords:** - AR, IOT, Purchase journey, Customer engagement, Customer experience

### **Introduction**

Many businesses have begun to use augmented reality (AR) as a frontline technology to provide customers with a more engaging experience. This dynamic was especially important in the context of social distancing mandates issued in response to the Covid-19 pandemic AR enables a distinct form of product or service visualization that reduces intangibility, enhances inspiration and promises to enable creativity in customers' purchase decisions by seamlessly projecting virtual content into the customer's view of the real world. Customers interact with companies at several touch points during various stages of their decision-making (before, during, and after consumption), and these sensory, affective, behavioral, and cognitive sub-experiences make up the fundamental customer purchasing experience (Brakus, Schmitt, & Zarantonello, 2009). For businesses, managing the client experience is critical (Accenture, 2015; Raw, 2015). In augmented reality, people are placed in their physical surroundings, and

digital information is projected on top of it (Azuma, 1997, Rauschnabel et al., 2018). Virtual objects that complement a customer's direct contact with the world, on the other hand, can turn basic interactions with standardized products and services into creative playgrounds for customers through Augmented Reality (AR) (Scholz & Duffy, 2018).

### **What is Augmented Reality?**

Augmented reality (AR) is a digitally enhanced version of the real physical world achieved with digital visual elements, sound, or other sensory stimuli delivered through technology. It is a growing trend among companies involved in mobile computing and, in particular, business applications. A technology expands our physical world by superimposing digital information on top of it.

### **Working of Augmented Reality**

Augmented Reality transforms your surroundings into a digital interface by placing virtual objects in real-time in the real world. AR apps typically link digital animation to a special 'marker,' or use GPS in phones to pinpoint the location. Augmentation occurs in real time and within the context of the environment, such as overlaying scores to a live feed of sporting events.

Brands have begun to creatively apply AR to enhance customer experiences in recent years, providing an added level of immersion while operating at a distance. This dynamic was especially important in the context of social distancing mandates issued in response to the Covid-19 pandemic.

### **Types of augmented reality:**

**Marker-based augmented reality:** It is a type of augmented reality that is location-based or position-based, and it uses a GPS, a compass, a gyroscope, and an accelerometer to provide data based on the user's location. This data is then used to determine what AR content is available in a given area. With the availability of smart phones, this type of AR typically generates maps and directions, as well as information about nearby businesses. Events and information, business ad pop-ups, and navigation support are examples of applications.

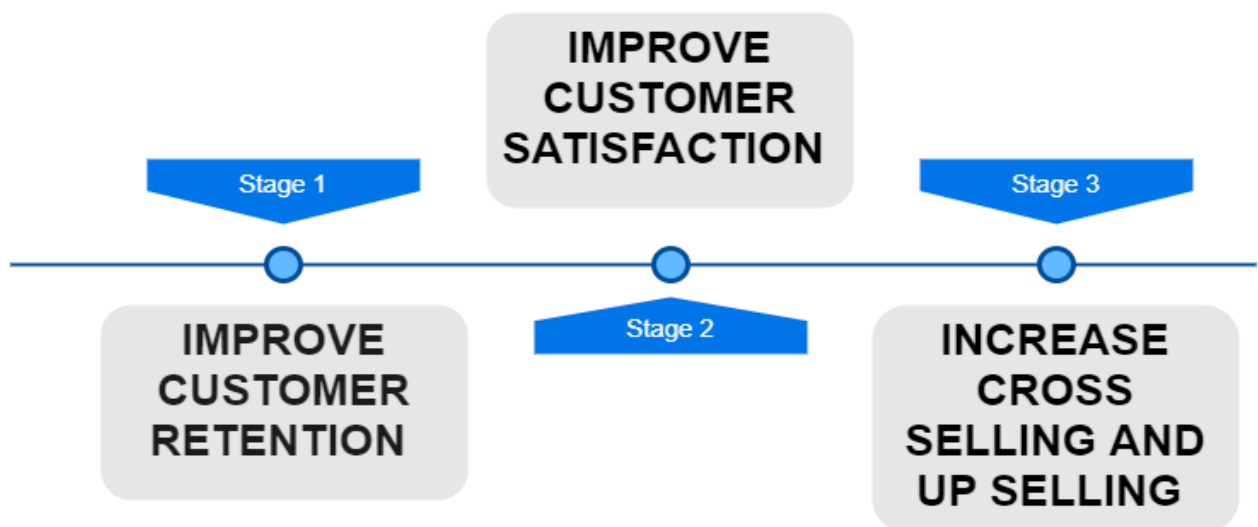
**Projection-based augmented reality:** Projecting artificial light onto physical surfaces and, in some cases, allowing interaction with it. These are the holograms we've all seen in science fiction films like Star Wars. It detects user interaction with a projection through its changes.

**Superimposition-based augmented:** Replaces the original view with an augmented view, either completely or partially. Object recognition is critical; without it, the entire concept is impossible. We've all seen the IKEA Catalog app's use of superimposed augmented reality, which allows users to place virtual items from their furniture catalogue in their rooms.

### **Importance of Augmented Reality in Business**

Owner of business can take advantage of Augmented Reality by incorporating it in business. Its market value is expected to be \$198 billion in 2025. As a result, startups and businesses want to capitalize on its limitless opportunities as it expands and integrates with other technologies. Every customer must have felt the need to see and try the product before purchasing it when shopping online. Because the purchaser must have been concerned about the product's size, quality, color, and general appearance. Nothing beats the delight of experiencing a product firsthand, no matter how many videos and photographs of it are compared.

**Figure 1**  
**Technology-enhanced experiences to the customer journey**



Augmented Reality make the entire process easier for online clients, it can be used to ensure the customers that all of their worries and doubts are addressed. It will not only give only greater pictures of products, but it will also allow them to virtualize them. It creates interesting ways to personalize customers' experiences with products to ensure that they interact with them interactively. As a result, online customers will be pleased with their purchases and will return in the future.

## Augmented Reality helps to enhance customer Experience

Augmented reality features are embedded in retail apps, allowing customers to digitally superimpose clothing and accessories onto themselves using their smart phone's camera. These features provide customers with more information about whether products meet their needs in terms of fit or style. This allows customers to make more informed decisions while also protecting them from risks like the pandemic. The seven examples below show how AR can improve customer service.

**Figure 2**  
**Improving Customer Experience using AR**



When looking at products, making a purchase, or filing a complaint, many people prefer to speak with a live person. The company's customer service representatives must be able to expertly explain each item to potential customers. AR can make training quicker and more efficient. It contributes to a better customer experience at both ends of the buyer's journey. It reduces friction before a purchase by demonstrating how the product will affect the customer's day-to-day life. AR-enabled interactive packaging provides customers with a more engaging and valuable experience. Customers can view compelling visuals by pointing their phone at a product's packaging. At the point of sale (POS), AR delivers a two-pronged benefit. Business can leverage the tech at this point in the buyer journey to offer 'try-as-you-buy' experiences.

Many customers find it difficult to report product flaws. Customers frequently lack a thorough understanding of a product and struggle to explain what went wrong to a customer service representative. Customers can avoid having to deal with customer service representatives entirely with the help of augmented reality. Many businesses use augmented reality (AR) to provide self-service support after a purchase has been made. Customers can use an AR app to point their phone at a product and get an in-depth self-service overlay. Previously, companies would provide user manuals to help with product use and maintenance. However, with the advent of augmented reality, businesses can now do a lot more.

AR allows brands to create immersive experiences that engage customers more deeply than many other digital channels. It allows customers to interact with a brand in a novel way by encouraging them to participate in the creation of their experience. McDonald's has begun to capitalize on this benefit by including instructions with its 'Happy Meals' that invite children to build their own set of AR glasses using the meal box as a screen and their smart phone as a screen. Children can use these DIY AR glasses to watch interactive digital stories on the Happy Meal app once they've been built. Engaging children can be difficult, so this inventive use of augmented reality could be just the differentiator that brands require to keep their attention. AR is being used by some fashion retailers, such as Gucci and Tommy Hilfiger, to provide an additional layer of interaction for customers to experiment with products. Coca-Cola has recently embraced this technology to create an engaging customer experience initiative that uses a smart phone app to overlay interactive features onto the user's surroundings.

### **The Future of Augmented Reality Customer Experience**

As customer experience becomes a differentiator, customer relationships are changing dramatically. Brands have recognized the game-changing potential of incorporating augmented reality (AR) into their pre-sales, point-of-sale, and post-sale support operations. AR enhances practical elements of personalized marketing, sales, and technical support via a smart phone by extending content and interaction capabilities and providing value that goes far beyond simple novelty. These are just a few examples of the value AR can bring to the customer relationship value chain and throughout the customer journey.

## **Conclusion**

From above discussion, it is clear that the new technologies, like, Augmented Realty have a tremendous impact on customer experience, offering a great number of avenues for future research. As brands become more aware of the unique applications and benefits hidden within AR, we can expect to see more innovative applications that will provide customers with moments of delight. Brands that avoid the possibilities of AR will lose a competitive advantage as customer expectations rise with the technologies' adoption and standards for what a truly excellent customer experience looks like rise a little higher.

## **References**

Azuma, R. T. (1997). A survey of augmented reality. *Teleoperators and Virtual Environments*, 6(4), 355–385.

Accenture (2015). Improving customer experience is top business priority for companies pursuing digital transformation, according to Accenture Study. Retrieved from <https://goo.gl/44NXHc>, Accessed date: 14 January 2018.

Brakus, J. J., Schmitt, B. H., & Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? *Journal of Marketing*, 73(3) .

Van Kerrebroeck, H., Brengman, M., & Willems, K. (2017a). Escaping the crowd: An experimental study on the impact of a Virtual Reality experience in a shopping mall. *Computers in human behavior*.

## CHAPTER 21

### COMPUTER VISION APPLICATIONS AND ITS FUTURE

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#### **Abstract**

Image processing is playing very important role in Computer Vision. In starting, Past computers had only computational capability, but in last few years computer can see and analyze the things by using the image processing and deep learning. Digital images stores in matrix form and each cell are known as pixel. Computer vision use each pixel value of determine the type of object and analyze deeply. In this paper various applications of computer vision are discussed with some challenges and future scope. Machines work automatically by this technology and getting smarter day by day.

**Keywords:** *computer vision, image, pixel, deep learning, image processing.*

#### **Introduction**

Computer vision have very vast area of applications. The main aim of these applications to work automatically and provides facility to the humans in particular field. The steps which are involved in computer vision are, namely, capture image, convert the RGB image to grayscale, blur the image, if required, identifying the edges in an image, apply the operation to be performed on image. These are the common steps but these steps can change from problem to problem.

#### **Computer vision in Object Detection**

In this technology, various data sets of hand written images digits and characters images are used to detect the digits and character at a given input. Detection of handwritten text is done by using the large image data sets and its labels to classify the digit and character. Each pixel of image analyzed and compare against the data set images to produce the result. The same technique also applies detect the objects inside the images and videos.

#### **Computer vision in Agriculture**

The Camera and Computer can be use instead of Human eyes to identify growth of fruits and vegetables. To counting the number of fruits on particular tree and feature obtaining from the fruits and vegetables. By using the computer vision crop monitoring can do remotely.

Crop diseases are a major threat to food security But Computer vision is very much helpful in classification of diseases in crops. In this technique datasets of different images that contain healthy and diseases plants are used to find out the diseases in crops and other features.

### **Computer vision in Sports**

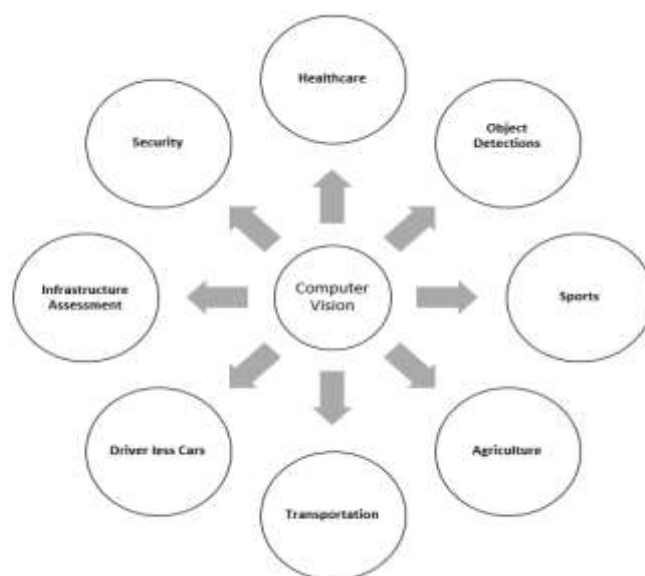
There are lots of computer vision applications in sports such as player pose tracking, player performance assessment, shot recognition and automated scorecard in different sports. This information is use to improve the player’s performance in future.

### **Computer vision in healthcare**

Images related to healthcare are processed at pixel level and large datasets are used to analyze the detection of cancer and brain tumor. The most recent use of computer vision is to detecting COVID-19 using a chest x-ray. Further chest x-ray check against various online data sets and identify patient is suffering from pneumonia or not.

### **Computer Vision in Transportation**

There are various types of vehicles moving on the roads and for well traffic management some rules are issued for smooth running of traffic. But some people not follow the traffic rules. To manage the traffic in better way computer vision technique is apply to detect the automating violations such as cross red lights, over speed, wrong side driving etc. It also useful in automatically number plate detection. This technique also works very fine to counting the number of vehicles passed from the road.





### **Driver less Cars**

Self-driving car use lots of sensors and cameras. The cameras capture the real time images and then these images are processed, based on the outcome of image processing and object shown in images decision taken by the system whether to stop or give direction to car. The backbone of this system is similar to the human brain which take decision by using the cameras and sensors instead of eyes.

### **Computer vision in Infrastructure Assessment**

Civil infrastructure projects require monitoring in such way that the work going on in right direction or not. By using the images and video capture, the user can remotely trace the working of the civil infrastructures and if anything, going in wrong direction then, immediately actions can be performed towards the problem. By using this technology machines can easily monitor whether labor, engineer is working properly or not.

### **Computer vision in Security**

Computer vision can be used to monitor live or recorded video to analyse the crimes in public area. The footage from a public area to identify harmful objects such as weapons. By using the datasets from the past data, to discover suspicious behavioural or movement patterns that may forecast any unlawful conduct by individuals.

### **Future scope of computer vision in existing Applications**

With more research and refining of the technology, computer vision will be able to do a wider range of tasks in the future. Computer vision technologies will not only be easier to train, but they will also be able to know more from images than they do now. This can also be used with other technologies or AI subsets to create more powerful applications. Image captioning tools, for example, can be used in conjunction with natural language generation (NLG) to understand items in the environment for visually impaired persons. In the development of artificial general intelligence (AGI) and artificial super intelligence (ASI), computer vision will be crucial.

Computer vision has been widely used in a variety of fields, including agriculture. The role of computer vision in fruits and vegetables among various horticulture products in agriculture fields. The more proper used of this technology can be do in this field such as robot that helps in automating the watering, spraying process.

Computer vision can also be used to scan crowds of people to highlight the presence of any persons of interest or wanted individuals to the concerned authorities. Thus, using computer vision can help in expediting the apprehension of people of interest and preventing crimes. This present technology combined with sound API to work in better way.

The most recent use of computer vision is to detecting COVID-19 using a chest x-ray. This technique can also provide the more accuracy to detect and overcome from this disease. It can also be used in preventing the COVID-19 by hand washing detection, mask wearing and social distancing. Currently the Self-driving cars are running on the roads by using the computer vision only in limited regions. But customizing and improving the existing automated driving technologies to traffic patterns and specific scenarios relevant to some countries remains a major focus of research in this region. In future this technology can be clubbed with other technologies so that another vehicle can move without driver.

Object detection not only limited to detect real world objects but it can also give benefits to blind peoples by providing voice alerts. Combine the computer vision with text to speech API that will convert detected object into sound from particular distance so that blind peoples can make decisions. The objection detection applications of computer vision will useful for farmers to prevent the loss of ripe crops from birds and animals. The video and image capture to detect the animals and birds near by the ripe crops and then immediately will produce sound or alarm so that animals and birds can go back.

### **Challenges in Computer Vision**

Some of the real-world applications will requires higher performance from Hardware because having large datasets to solve the particular problem. Still a challenge to maintain performance of computer vision applications in low performance devices. Lack of quality and quantity of data leads to provide poor results. Image processing already has been using to access the quality of images and videos. But lack of data sets leads to poor results of Image quality assessment (IQA). There are lots of computer vision applications in sports but there are still critical challenges that need to be overcome such as tracking sports players, similar appearance of players in team sports and ball tracking. There are still some challenges in existing applications of computer vision because we still don't totally understand how human vision works.

## **Conclusion**

The use of computer vision applications day by day increasing. Some of applications are working successfully from past few years. But there are still some areas where computer vision can be used. The existing technologies can be used to explore new research areas. There are still some challenges in existing applications of computer vision because we still don't totally understand how human vision works, these will continue to be a difficulty in the computer vision. Improvement in this field also required so that computer vision work in better way in future.

## **References**

1. Mike Daily, Swarup Medasani, Reinhold Behringer, Mohan Trivedi, Self-Driving Cars, IEEE,2017
2. Arun Kumar, Assisting visually impaired people by Computer Vision-A Smart Eye, Turkish Journal of Computer and Mathematics Education Vol.12No.11(2021)
3. <https://viso.ai/applications/computer-vision-applications/>
4. <http://www.sportperformanceanalysis.com/article/computer-vision-in-sport>
5. <https://www.atriainnovation.com/en/7-applications-of-computer-vision/>

## CHAPTER 22

### MOBILE PHONE USAGE: BOON OR BANE FOR SOCIETY

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#### **Abstract**

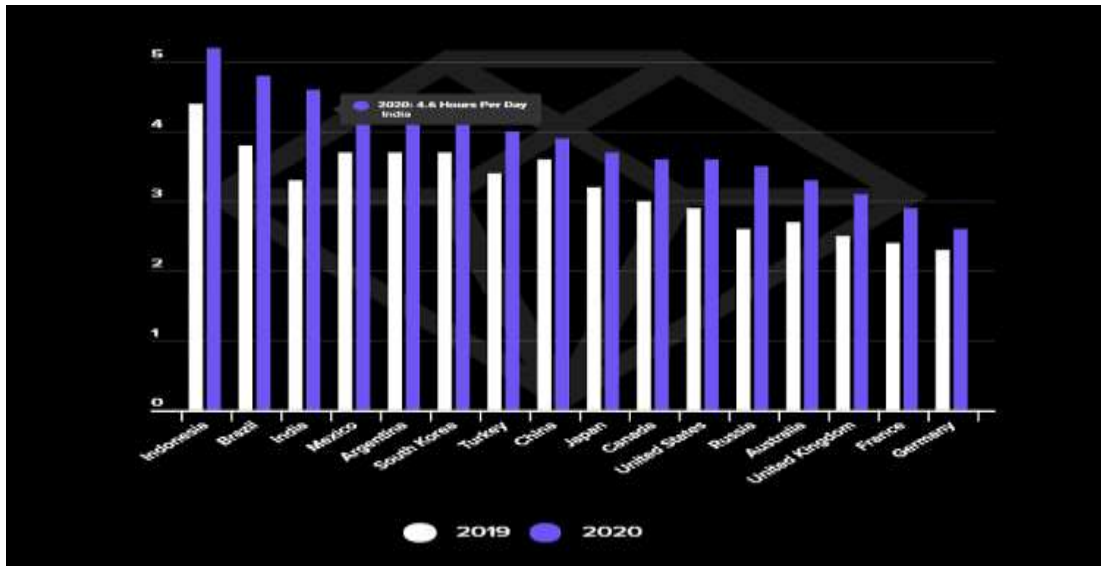
Mobile phones are indispensable these days of digitalized era. It appears as if the survival of the society is possible only through this gadget. Whether a person is working or non-working, younger or older, they all are mobile phone users. Life is unimaginable without a mobile phone. It is because of a mobile phone that we are able to access a wide range of data at our finger tips. Mobile phone has certain implications for the society. On one hand mobile phone is a handy gadget, on the other, it is bad as well. The present paper is an attempt to highlight the merits and demerits of mobile phone usage for the society and suggest some measures to get rid of excessive use of mobile phone.

*Key Words: Mobile Phone Usage, Nomophobia, Cyberbullying, Gadget, Discovery, Innovations.*

#### **Introduction**

Science and technology have come a long way to help us by useful innovations and discoveries in the form of time saving, physical and mental labor-saving devices. Mobile phone is a vital discovery of science to facilitate and make the day-to-day life easier. Life is unimaginable without a mobile phone. A mobile phone is not mere a phone but also a tool of calculation, recreation, a camera, a computer, a music system, an emailing device and a store house of data. Due to its multi-functionality, its usage is increasing day by day in number as well as in per hour per person too (Singh, Gupta and Garg, 2013) The latest innovations in mobile phones have led to a massive increase in the sale of mobile phones. A person having more than one mobile phone is very common these days. The love for mobile phone usage in India has been shown by a recent report by App Annie. As per the report, Indian Smartphone users stand third in the list of 'Maximum time spent on devices' after Indonesia and Brazil. People of Indonesia spend an average of 5.2 hours a day on their Smart phones, after Brazil which is at 4.8 hours a day. Third on the list is India, with an average smart phone usage time of 4.6 hours a day, which is close to a 40 per cent year-on-year rise. ([www.republicworld.com](http://www.republicworld.com))

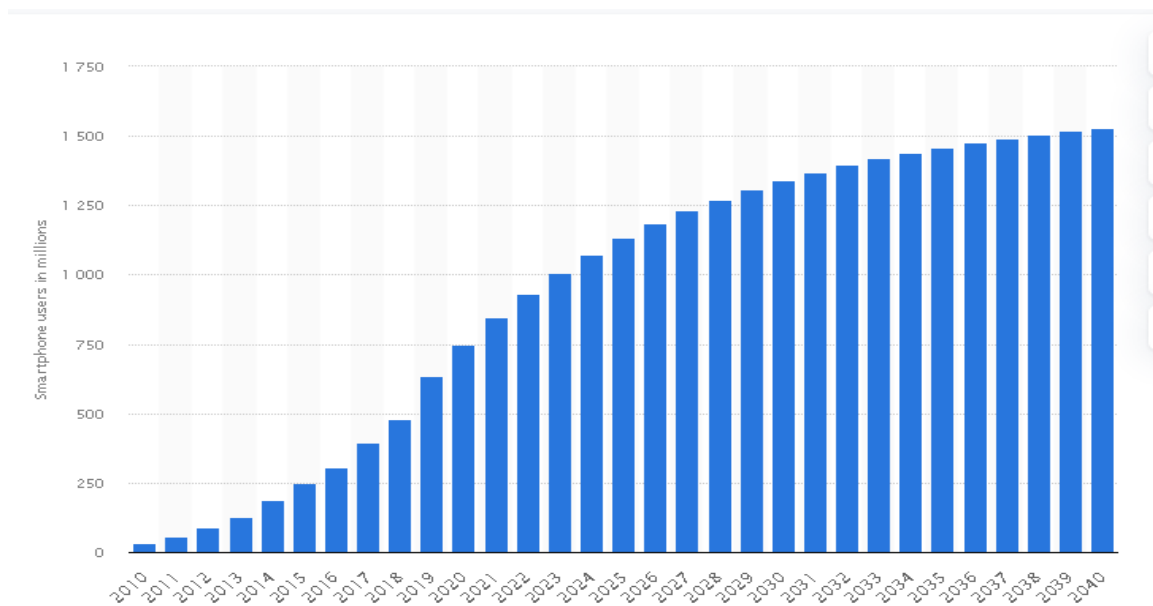
**Figure 1**  
**Average Hours Spent on Mobile per Day per User**



**Source:** www.republicworld.com

Statista Research Department estimated that the number of smartphone users in India reached over 748 million in 2020, while the number of smartphone users worldwide was forecasted to exceed to 1.5 billion users in 2040. Figure 2 reveals the facts of “Smartphone users in India 2010-2040” given by Statista.

**Figure 2**  
**Smartphone Users in India 2010-2040**



## **OBJECTIVES OF THE STUDY**

The present paper has the following objectives:

1. To review the possible outcomes of mobile phone usage for society i.e. whether it is a boon or bane
2. To suggest the way outs to limit the mobile phone usage

## **RESEARCH METHODOLOGY**

The paper is theoretical in nature. For the base of the study, secondary data sources have been used. Own observations and views have been presented in the paper.

## **MOBILE PHONE AS A BOON FOR SOCIETY**

Mobile phone came as a communication device in 1970s when on April 3, 1973; Motorola Company produced the first handheld mobile phone. People got crazy about it after 1980s, but now it has touched the level of esteem. When it was launched, it became a status symbol but these days it has become the necessity for everyone (Sheopuri and Sheopuri, 2014). We are not able to manage our lives without a mobile phone when it has turned into a smart phone. And if a phone is smart, how can we be at arm's length for its smartness!

It has changed our lives positively as well as negatively. First, chalking out the reasons for considering it as a boon:

### **Effective Communication Device**

Mobile phone is the best source of communication nowadays. It has replaced the traditional sources of communications with other people from different places. Writing letters and sending them to your near and dear ones is a matter of past now. It is because of the discovery of mobile phone. Using mobile phones, people can communicate with their relatives within seconds across the globe

### **Source of Information and a storage device**

Mobile phone is a great source of information. We can store required data information such as books, magazines, assignments, word documents, videos etc. in a mobile phone. Mobile phone with internet access helps to collect information required information with ease. Information may be of various fields.

### **A Gateway to social media**

Mobile phone is a powerful social media device. It connects us to various social media platforms e.g. facebook, whatsapp, instagram, twitter, snapchat etc. from where we share and retrieve the latest news and information of the world. We connect to our friends and relatives more easily.

### **Useful online Teaching and Learning Device**

Mobile phone, at present, is a useful online Teaching and Learning Device. The mobile applications such as teachmint, Google classroom and many more apps have proved as boon in online teaching and learning process during the period of lockdown due to COVID-19. Various activities like classroom teaching, seminars, conferences, symposia, workshops and panel discussions etc. are being conducted online and mobile phone is proving a handy tool for all these.

### **Helpful for Researchers**

Mobile phone is the most useful digital device for research purpose. Having a mobile phone means having a library in your hand. A researcher can access any kind of books, research journals, magazines, newspapers, video lectures, lectures and research papers easily through a mobile phone with internet.

### **A source of Recreation**

Mobile phone is an easily accessible tool of recreational activities. People play games, play songs and music, watch TV serials, movies, and documentaries on this device. Popular games played by people are Candy Crush, Luddo King, Cricket, bluewhale and PubG. People also nurture their hobbies by learning cooking recipes, cutting and tailoring, block painting, beauty tips, creativity on waste material and many more through a mobile phone.

### **Life Saver in Emergency**

We found many stories shared by people on social media where a mobile phone helped to save someone's life in case of emergency. In the case of emergency people can use a mobile phone to contact their relatives. If someone got an accident on the way to go somewhere then he/she can use a mobile phone to contact someone for help.

### **Mobile Banking/M-Banking**

It is only mobile phone that has made the banking much easier than the traditional/conventional type of banking by providing us the facility of mobile banking/M-Banking. We

are at ease by using mobile banking and various applications for online money transfers and transactions. Without going to the banks, we can access our bank account, check the status of our account and transfer money from one account to another just by using our finger tips on our mobile phones.

### **Other advantages**

In addition to the above-mentioned benefits of the mobile phone usage, a mobile phone is a camera to capture the melodious moments of our life. Latest technology based mobile phones have high resolution cameras to collect the quality moments of life. The moments captured can be shared with our near and dear ones.

A mobile phone provides GPS location services that help you to identify your current destination and location. This service guides you for the ways which are unknown destinations and places for you and makes your journey safe and secure while you are travelling through an unknown location. In our mobile phone we find various useful applications such as address book and contacts, alarm clock and reminders, calendar, calculator, flashlight/torch etc. These are the services that make a mobile phone indispensable for us.

In short, it can be said that mobile phone is a small and portable device with a large number of benefits. We cannot imagine the life without a mobile phone especially with internet pack of latest version. Thus, it is a boon for us.

### **MOBILE PHONE AS A BANE FOR SOCIETY**

When the benefits of a mobile phone usage are counted, it seems to be goody-goody. But the reality is different. Like the two sides of a coin, the mobile phone usage has another side also. We have discussed the brighter side of mobile phones usage. Now the turn comes for the darker side as well. Where a mobile phone is boon for us, at the same time it is a bane for society. The following points can help us to understand better:

#### **Addiction**

Mobile phone usage has become a serious addiction for people. In a study of college going students by Leonard (2015), was found that female college students use phones on an average of ten hours a day. Generally, people are suffering from NOMOPHOBIA (fear of being without phone). The most mobile phone users check and use their phones continuously. They



cannot go without it more than 60 minutes without checking their phones. This addiction is sometimes as serious as is drug addiction.

### **Declined Physical Social Interaction**

Addiction of Mobile Phone usage has caused declined physical social integrations. Mostly, too much mobile phone usage causes isolation in people. They, all the time, are so much engrossed in their mobile phones that they do not want to go outside and meet with their family members, relatives, and loved ones. Sometimes, family members are sitting together but they do not even talk because they remain busy on mobile phone. They can send texts to each other but do not interact physically.

### **Affects Relationships**

Mobile phones have proved to be disastrous for social relationships. Children get irritated when they are asked by their parents not to use phone. Youth gets involved in illegal relationships that result in drug addiction, crime, deaths, divorces and suicides. The moral aspect of social life is then found in danger zone.

### **Wastage of Time**

These days, people of all ages especially youngsters do not indulge in fruitful activities; rather they waste their precious time on phone. Teenagers and students do not focus on their study. They prefer to play video games, watch movies, listen songs and send texts and jokes to friends and relatives. While doing so; they do not understand the value of time for their career and future.

### **Distraction**

People use mobile phones while working, eating, walking, studying, talking to others, and even while they drive. Due to this, work efficiency gets adversely affected. Using mobile for listening music has been blamed for number of road traffic accidents, because of poor listening and attention to other vehicles and lack of concentration and control while driving (Singh, Gupta and Garg, 2013). Road accidents increase. Students get distracted from their study due to over use of mobile phones.

### **Wastage of Money on Mobile Phones**

Though mobile phone is for our convenience yet for some people it is a status symbol. Buying and using new and costly mobile phone is now a trend in our society. Under the demonstration effect sometimes those who are not able to buy a costly phone, sell their

important belongings to have the costly phone. They do not hesitate to waste their money. This phenomenon adds more woes to such kind of people.

### **Cyberbullying**

Cyberbullying is a modern form of bullying where mobile phones can be used for bullying. Mostly the teenagers use mobile phones for treating and bullying their fellows and friends for entertainment and amusement. But sometimes cyberbullying becomes very dangerous for them. Most of the researches show that most of the cyberbullied people attempt or commit suicide. Thus, using a mobile phone for such activities becomes a serious threat for society. The rising number of suicides among young cyber bully victims here is a definite cause for concern (Venkataraghavan, 2015).

### **Security Issues and Risks**

Security issues are common issues that happen with mobile phone users. Hackers can hack and access our mobile phone and our privacy and data breach. For them, it is very easy to copy the data from one device to another one. Unsafe and insecure personal information over mobile phones result in banking frauds, lost image and respect. Some people attempt suicide due to their privacy loss.

### **Psychological and Health Issues**

Many studies advocate that mobile phone usage is not health friendly. By using mobile phones we are caught in various psychological problems like tension, depression, stress, anxiety, anger, disturbed brain activity etc. Radiation emitting from mobile phones results in health hazards such as such as nerve pain, headaches, shoulder pain, back pain, eye pain, stiffness of muscles, sleep disorders, fatigue, hearing loss, skin diseases, cancer etc.

### **Other Disadvantages**

In addition to aforementioned disadvantages, committing suicides by playing games on mobile phones is also a serious issue. A number of youths has ended their life merely by playing dangerous games Bluewhale and PubG by name. PubG has caused financial losses to people.

The students are showing negligence towards their study because of their addiction for phone. Mobile phones are being used for cheating and copying. Adolescents are self-centered and do not mix up with their family members and friends because of their craze for mobile phones. They are getting weaker on social and moral grounds. Some of married couples cheat their

life partners using mobile phones. Many relationships break due to mobile phone usage and telling lies to their partners. After viewing different negative aspects of mobile phone usage, it can be rightly said that mobile phone is a bane for society. But considering mobile phone usage as a bane is valid only if we ignore the benefits a mobile phone provides. From a critical and analytical point of view, it can be said that mobile phone is a handy device having positive and negative effects. In the contemporary digitalized world, one cannot imagine life without a mobile phone. As a communication device it connects us to our near and dear ones at the time of need and when they are far off. With many more advantages, it has become an integral part of our life. Therefore, instead of completely getting rid of it, we should restrict or limit its use.

### **SUGGESTIONS FOR SAFE AND LIMITED MOBILE PHONE USAGE**

Larry Rosen, psychology professor and author of the book ‘The Distracted Mind’ mentioned that most people check their mobile phone every 15 minutes or less, even if they have no alerts or notifications” (D’Onfro, 2018) . Really this happens to all of us. Despite knowing the harmful effects of mobile phone usage, we remain stuck into our phones. We should restrict its usage for a healthy and hassle-free life. For this, following measures may help:

- Follow a strict schedule not to overuse the mobile phone.
- Keep your phone away from you when you do not need it
- Install only required apps
- Tools such as calculator, calendar, clock etc. must be on your home screen. Other apps that distract you must not be there.
- Use a landline phone if available
- Choose a mobile phone model that has a low specific absorption rate (SAR), which refers to the amount of RF radiation absorbed by body tissues
- Minimal use should be practiced by keeping frequency and duration of calls short.
- Use a hands-free kit
- Do not carry your mobile phone close to your body when it is switched on.
- Young children and pregnant women should restrict their mobile phone usage. For unavoidable circumstances, alternative use of hands-free earsets or Bluetooth devices is recommended for them.
- Do not share any kind of personal information if you receive a text or phone call from any unknown source.

- Do not get trapped by some fraudulent people when they ask for sharing any kind of PIN, OTP, and bank account detail.
- Do not use mobile phone while driving.
- Limit exposure to a mobile phone before and during sleep
- To avoid frequent explosions and fire caused due to mobile phones, it is highly recommended that safe cell phone battery practices including avoiding overcharging and direct skin exposure to minimize thermal injury risk should be adopted (Meena, Jitendra., 2017).
- In free time develop your hobbies of reading, playing, cooking, dancing, singing and so on.
- Put your phone on rest for a day in a week. Switch it off and chill. Celebrate “Mobile Phone Away For a Day”.

## **CONCLUSION**

Like other scientific devices, mobile phone too has pros and cons for society. We cannot ignore its disadvantages though it is indispensable for us today. What we find today are the blank faces of people full of anxiety, stress, depression, anger and hypertension. Why? The answer may not be fully true but partially it is true that the devices like mobile phones have controlled their lives. People are addicted to them. They are not able to manage their lives successfully. They waste a lot of time on mobile phones, get trapped into frauds, indulge in crimes, hardly balances their work and personal lives, invite health problems and lose their peace of mind. Therefore, keeping in mind the pros and cons of mobile phone usage for society, it is recommended that use it wisely and judiciously. It should more be a boon than the bane.

## **REFERENCES**

- Adil, M. (2021, March 15). Advantages and Disadvantages of Using Mobile Phones. Adil Blogger. <https://adilblogger.com/advantages-disadvantages-mobile/>
- Bhojane, V. (2019, October 4). Mobile Phones for Students: Boon or Bane?. MySchoolr. <https://www.myschoolr.com/blog/mobile-phones-for-students-boon-or-bane.html>
- Meena, J. K. and Rathore, M.S. (2017). Mobile communication: boon or bane? Possible dangers of mobile phone usage. *Journal of Clinical and Preventive Cardiology*. 6(2), 70-72.

[https://www.researchgate.net/publication/315714564\\_Mobile\\_communication\\_Boon\\_or\\_bane\\_Possible\\_dangers\\_of\\_mobile\\_phone\\_usage](https://www.researchgate.net/publication/315714564_Mobile_communication_Boon_or_bane_Possible_dangers_of_mobile_phone_usage)

- Mehrotra, S. (2021, July 26). *India 3rd On Smartphone Usage Globally: Users Spend About 4.6 Hours/day On Device: Report*. (<https://www.republicworld.com/technology-news/mobile/india-3rd-on-smartphone-usage-globally-users-spend-about-4-dot-6-hours-day-on-device-report.html>)
- Saini, S. (2012, July 1). India on Way to Smartphone Stardom. *New Indian Express*. <https://www.newindianexpress.com/thesundaystandard/2012/jul/01/india-on-way-to-smartphone-stardom-382473.html>
- Sheopuri, A and Sheopuri, A. (2014). Darker Shade of Smart Phones: Boon to Bane. *International Journal of Business Quantitative Economics and Applied Management Research*, 1(7), 120-130.
- Singh, B., Gupta, R., and Garg, R. (2013). Mobile Phones; A Boon or Bane for Mankind? - Behavior of Medical Students. *International Journal of Innovative Research and Development*, 2, 196-205.
- Statista Research Department (2021, September 3). Number of Smartphone Users in India in 2010 to 2020, with estimates until 2040(in millions). *Statista*. <https://www.statista.com/statistics/467163/forecast-of-smartphone-users-in-india/>



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