

Upskilling Initiatives By IT Companies in the Age of Industry 4.0

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Abstract: As the types of skills required on the labour market shift rapidly, individual employees will need to engage in life-long learning. This is not only to remain employable but to pursue satisfying and rewarding careers that enable them to optimize their job opportunities. Reskilling and upskilling programs would be crucial for businesses if they are to attract the talent they need and lead to socially responsible solutions to the future of jobs. This study has focused to understand the level of awareness the top five Indian IT companies have on Industry 4.0 and what are the practices that they follow to tackle the threat of digitization to their employees. This has been evaluated by studying the learning and development practices, the mission, vision, values of the organization from the homepage of their website and also their annual reports for the year 2018-19. This study would be useful to other organizations in the industry in getting an idea of what are the L&D practices the top five organizations has been doing. The chosen top companies can have a look at the current programs being practised by them and the improvements that can be brought up to upskill and reskill their employees. All organizations chosen for study has been carrying out upskilling or reskilling initiatives along with other learning and development programs. Three organizations have elements of learning inculcated in their core values whereas all five of them have no elements of learning or digitization mentioned in their mission and vision statement.

Keywords: IT industry, Industry4.0, Upskilling, E-learning

I. INTRODUCTION

Developments in automation like Artificial Intelligence (AI) arguably generate great advantages for individual customers, companies, and economies, resulting in an increase in productivity and economic growth. As machines offer better efficiency and productivity compared to humans, an increasing number of organizations are trying to replace men with machines.

Even when one considers the employees of the bygone days, innovation in the field of science and technology was a threat which outdated people's skill sets and the importance or significance of the path to a successful work life. It has become a belief that the rise of AI, robotics and other digital products is replacing the value that a human being brings to an organization.

The individuals who are most likely to taste success in the coming years will be those who are capable and can support the work done by machines. Employers are also not spared from the complications that automation has brought to the table, Companies have been investing highly on upskilling and reskilling initiatives also in the employee engagement programs.

The era of automation that is ever prevalent in this generation calls for the expertise of a professional hybrid of talent. The culmination of human and robotic intervention in dealing with day-to-day events are very complex and they define the scope of the skills sought. The mastery of such talent benefits any individual, and would give them the edge that they seek for. The best candidate would thus consistently travel in the direction of organizations providing upskilling and reskilling benefits. Candidates are searching for employers that provide career advancement through job coaching to improve their careers in ways such as applying the skills required to be a business analyst to become a business architect.

This study is aimed to find out the importance each organization gives to the learning and development (L&D) of the employees in this age of Industry 4.0. The second objective was to identify various learning and development initiatives taken by IT companies in India to prepare its workforce for digitization. This study is important because the future of an organization would depend on the unique and relevant skillsets that their employees possess which gives them a competitive advantage over their rivals. As finding on what the organization does to achieve this is crucial, the study aims to identify it. To achieve above mentioned objectives, researcher has studied top five IT companies' websites and their annual reports for the year 2018-19.

II. LITERATURE REVIEW

McKinsey & company characterizes Industry 4.0 as the next step of manufacturing digitization, driven by four developments, an unprecedented increase of data volume, computing power and connectivity, the advent of analytics and business-intelligence capabilities, improvements in the transition of digital instructions to the physical world, such as advanced robotics and 3-D printing (McKinsey&Company, 2015)[7]. With the advent of technology, more innovation, investment (both domestic and foreign) and economic growth, new occupations arise.

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However, the biggest challenge would be to ensure the availability of people with the skills to adapt and learn quickly and in providing them with adequate support. Companies are thereby offering upskilling and reskilling opportunities in order to cope with Industry 4.0.

Reskilling means mastering new skills, so you can do another job. Workers can be reskilled and employed in a completely different profession. By completing the program, the employee can once again become employable. Upskilling involves learning new skills or teaching new skills to the staff. It increases the potential of employees who stay in the same job profile.

Manpower Group’s survey 2017 reported that 40% of employers informed of challenges in getting skillful labour, while employers filling these gaps by re-training and developing people who are internal to the organization has more than doubled post-2015.

A research conducted by the World Economic Forum (WEF) reported that in one year’s time more than 33% of the most important and critical skills needed to perform most jobs will be composed of skills that are yet to be identified as critical to those jobs [9].

In the 2017 Global Human Capital Survey, India was ranked 103 out of 130 countries (it is an index that measures a nation's readiness to contribute to economic growth and productivity). Automation threatens 69 percent of India's jobs, according to the World Bank, and the country has a two to three-year time window to bring about large-scale reskilling reforms (World Economic Forum Global Human Capital Report, 2017)[8].

PwC in a recent study found that 79% of CEO’s regularly worry about their workforce existing skills and 55% of the employers feel the skills shortage is causing an inability to innovate effectively (PwC’s 23rd Annual Global CEO Survey, 2019)[10].

NASSCOM has reported that the overall IT-BPM industry employee base in India is approximately 3.9 million. Nonetheless, due to rising automation, the advent of disruptive as well as emerging technology about 30 per cent of the current workforce would require re-skilling to remain active and around 50-60 per cent of the workforce would need continuous re-skilling (NASSCOM, 2019)[13].

III. METHODOLOGY

This study was conducted in top five IT companies. The criteria used to select the companies were its market capitalization in Bombay Stock Exchange as of 7th November 2019. The top five companies as per the criteria were, Tata Consultancy Services Limited, Infosys Limited, HCL Technologies Limited, Wipro Limited and Tech Mahindra Limited.

The companies were evaluated for the initiatives that they have taken for upskilling, training, reskilling and learning in this age of automation.

Table- I: Indian IT companies ranked by BSE based on market capitalization (As of Nov 7, 2019)

Company name	Rank by BSE
Tata Consultancy services	2
Infosys Limited	8
HCL Technologies Limited	18
Wipro Limited	19
Tech Mahindra Limited	40

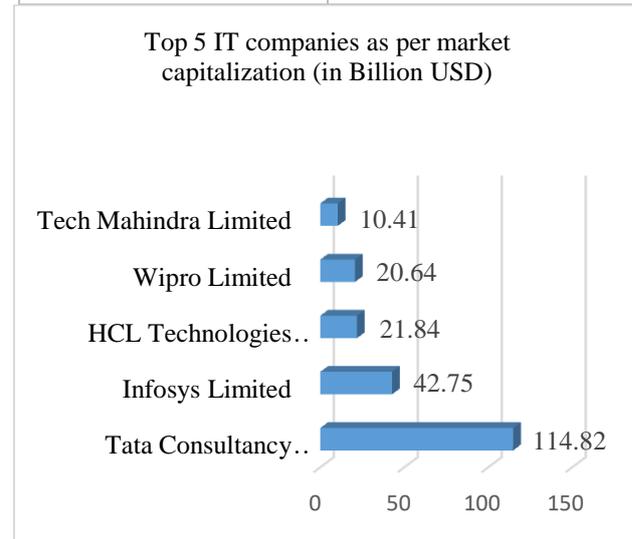


Fig.1. Market capitalization of top five Indian IT companies (As of Nov 7, 2019) [6]

A. Sample Size

The study was conducted on top five Indian IT companies, who were ranked on the basis of their market capitalization by Bombay Stock Exchange.

B. Data Collection

Data used for this study were secondary data. The sources for the study were the official website of the company and their annual reports for the year 2018-19. The company websites were visited in the last week of February 2020 and first two weeks of March 2020.

C. Data Analysis

Inductive Content analysis was conducted on the basis of how the companies are giving priority to automation, learning and development initiatives especially to upskilling and reskilling programs in the homepage of the companies’ official website and their annual report. The first level was to check the year the company was founded to know its background in IT industry.

The next level was to check the mission, vision and values of the organization from their official website to see whether words related to learning, upskilling, automation/digitization, training and reskilling were identified or not. The next level evaluation is to check the company website in identifying whether the organization uses words related to Industry 4.0, automation/digitization, upskilling, reskilling, learning and training in the home page of their website. The

annual report for the year 2018-19 was then studied, 1) To count on the number of times the words like Industry 4.0, upskilling, reskilling, automation, training and learning was used in the report. 2) To understand various learning and development initiatives developed or completed or proposed by the organization with major focus on the upskilling and reskilling programmes.

IV. RESULTS

A. Tata Consultancy Services Limited (TCS Ltd.)

Table- II: Summary of results for TCS Ltd.

Founded year	1968
Mission	Not mentioned
Vision	Not mentioned
Values	Mentioned
Homepage	Mentioned
Annual Report	Industry 4.0(1), Upskilling(0), Reskilling(5), Automation(32), Learning(32), Training(22)
L and D efforts	<ul style="list-style-type: none"> • TCS Digital Learning Platform: A platform where beginners can strive out their learning, with a social connect so they can seek advice from peers. • Agile practitioners have trained 348k employees. • Employees trained in digital technology are 311k. • Leadership training • TCS Inspire2Lead • Culture and Language Initiatives: Provision of first-visitor training to a new country, English training to non-English speaking associates, and 11 foreign language training.

* The number in the bracket denotes the frequency if that word in the respective companies annual report for the year 2018-19

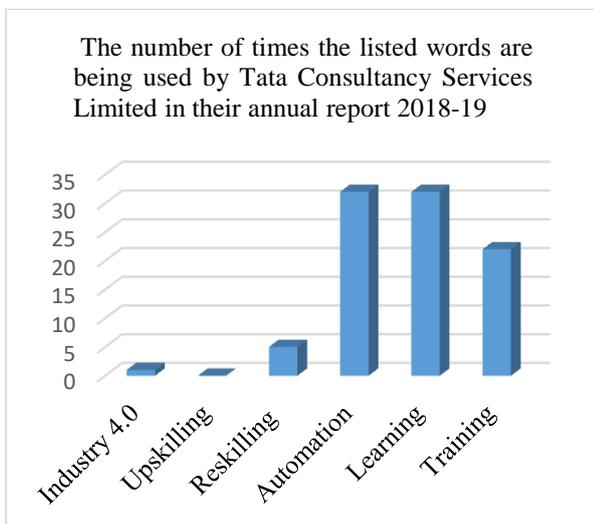


Fig.2. Frequency of word counts for TCS Ltd.

TCS is by market capitalization the largest Indian firm, and the largest IT service provider in the world. The company has been in existence for the past 52 years. TCS has not mentioned any of the words related to upskilling, reskilling or learning in their mission and vision statements but has used the terms relevant to Industry 4.0 in their home page. One of TCS core values is learning and sharing that reflects the emphasis given to by the TCS top management. The company's annual report speaks about a Digital Learning Platform where it teaches the skills for the future. Other steps for workforce development have also been taken by leadership activities and language learning programme.

B. Infosys Limited

Table- III: Summary of results for Infosys Limited

Founded year	1981
Mission	Not mentioned
Vision	Not mentioned
Values	Not mentioned
Homepage	Mentioned
Annual report	Industry 4.0(0), Upskilling(0), Reskilling(17), Automation(25), Learning(56), Training(38)
L and D efforts	<ul style="list-style-type: none"> • Lex: A self-learning app to develop and broaden digital competencies. • Expanding partnerships with universities around the world to build workplace curricula in areas such as machine learning, block chain. • Manager enablement: Enhance managers by tailor-made learning resources such as MPACT, MSPEED and Pravesh aimed at employee reskilling. • Skill Tags and Bridge programs: Allow workers to transfer their careers into new work areas. • Infosys Leadership Institute

* The number in the bracket denotes the frequency if that word in the respective companies annual report for the year 2018-19

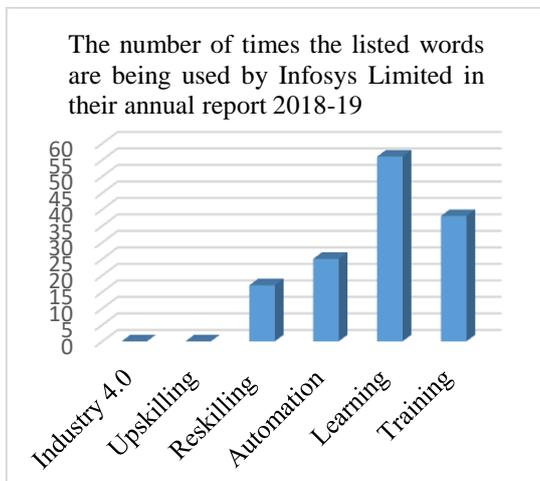


Fig.3. Frequency of word counts for Infosys Limited

Infosys Limited was incorporated as Infosys Consultants Private Limited in 1981 and then became a public limited company in 1992. The company's mission and vision statements have little to do with learning, nor do their core values, but their homepage talks about digital transformation and inspiring future talent. In their annual report the use of the word reskilling was comparatively high. They have a 4-pronged strategy that involves agile digital scale, and reskilling employees as two main pillars. Infosys believes in lifelong learning and the growth of skills for which they have built initiatives such as Lex, Skill Tags and Bridge Programs, MPACT, MSPEED to reskill their employees.

C. HCL Technologies Limited

Table- IV: Summary of results for HCL Technologies Limited

Founded	1991
Mission	Not mentioned
Vision	Not mentioned
Values	Not mentioned
Homepage	Mentioned
Annual report	Industry 4.0(1), Upskilling(1), Reskilling(1), Automation(49), Learning(49), Training(36)
L and D efforts	<ul style="list-style-type: none"> • Over 79,970+ staff had taken 3.02 million hours of training available to develop their existing skills and to learn new skills. During this time more than 31,130 workers were also trained in digital skills.

- Stepping stones, ASCEND program, PRELUDE, senior hire integration are all leadership development programs for women.

* The number in the bracket denotes the frequency if that word in the respective companies annual report for the year 2018-19

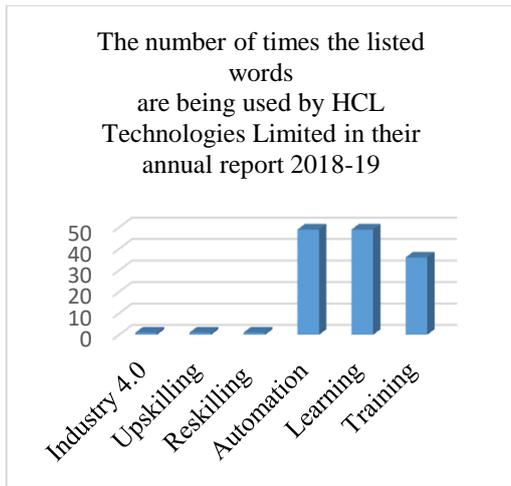


Fig.4. Frequency of word count for HCL Technologies

HCL Technologies Limited was established in 1991. The company has a market capitalization of 21.84 Billion USD as of November 7, 2019. The companies' mission and vision statement does not talk about learning or development nor does their core values. Yet one of the company's most striking core value is 'employees first' which makes them different from their competitors. The homepage do talk about IoT transformation and digital technology, but their annual report does not speak much about the projects the organization has implemented for upskilling and retraining, nor is there any detail on the workforce development programs. In the annual report, the word automation has been used in plenty.

D. Wipro Limited

Table V: Summary of results for Wipro Limited

Founded	1945 (Entered IT business in 1982)
Mission	Not mentioned
Vision	Not mentioned
Values	Mentioned
Homepage	Mentioned
Annual report	Industry 4.0(5), Upskilling(2), Reskilling(2), Automation(29), Learning(47), Training(22)
L and D efforts	<ul style="list-style-type: none"> Digital Upskilling: Through this program 133,000 employees have received basic, intermediate and advanced digital skills. TopGear: A social learning and crowdsourcing platform. ADAPT: To encourage employees to take leadership in delivery. Mentoring Networks

* The number in the bracket denotes the frequency if that word in the respective companies annual report for the year 2018-19

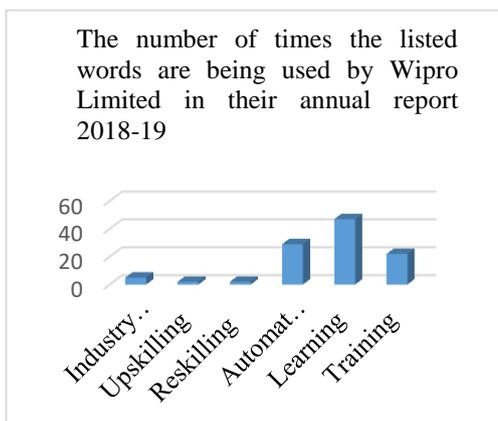


Fig.5. Frequency of word counts for Wipro Limited

Wipro began as a vegetable and refined oil manufacturer in 1945 and switched to Information Technology in 1982. One of their core principle is to treat each person with respect, mentions about how the organization respects its employees and encourages them to learn and grow. The company's homepage includes terms such as digitization, block chain, analytics, AI. Their annual report reports that major improvements have been made in re-skilling their digital technology workers. There are three stages of training starting from awareness programmes, comprehensive learning programs through virtual labs and immersive programs providing opportunities to develop deep expertise. They have developed a technology training

system that trained more than 133,000 workers in basic, intermediate and advanced technology skills as of the 2019 financial year.

E. Tech Mahindra Limited

Table- VI: Summary of results for Tech Mahindra Limited

Founded year	1986
Mission	Not mentioned
Vision	Not mentioned
Values	Mentioned
Homepage	Mentioned
Annual report	Industry 4.0(1), Upskilling(4), Reskilling(5), Learning(23), Automation(15), Training(34)
L and D efforts	<ul style="list-style-type: none"> • Reskilling programs like BOTIFY, AQT proficiency framework. 2300+ associates are certified in AI technologies. • Ride with pride: Training on the new and most wanted technologies. Includes training on 13 new skills. • DEXT: A program where workers take lessons from a range of sites, such as Edx and Future training where the best instructors in the world teach lessons. • ExtraMile: Helps staff to collaborate on business projects in real time. • Programmes for employee enhancement and growth: Global Leadership Cadre (GLC), Young CEO Program, Shadow board, and 1000 Leaders program. • Company invests in Centers of Excellence • Reverse Mentoring

* The number in the bracket denotes the frequency if that word in the respective companies annual report for the year 2018-19

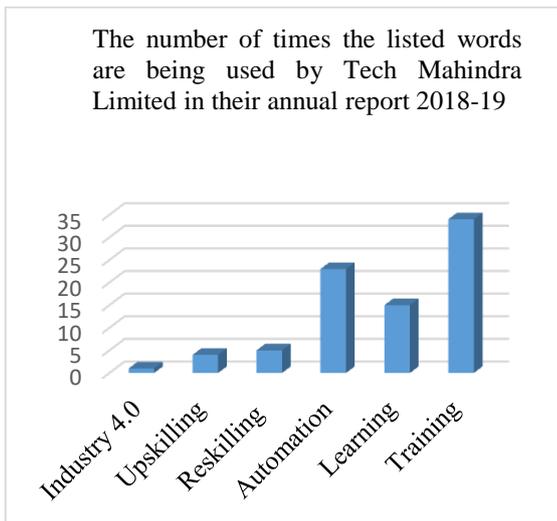


Fig 6. Frequency of word counts for Tech Mahindra Limited

Tech Mahindra Limited is a company established in 1986 chaired by Anand Mahindra. The companies’ mission and vision statements does not reveal information’s associated with learning or automation. Their core value of ‘professionalism’ declares that the company will provide opportunities for growth and development to its employees. Company has used words like upskilling and reskilling comparatively more than the other companies listed above. There are also ample words and content on the homepage talking about AI, robotics, automation and they call themselves ‘digital change makers’. Tech Mahindra has got several initiatives for upskilling like BOTIFY, AQT Proficiency framework, DEXT, Ride with pride and the company invests in Centers of Excellence (CoE's) and provides its workers with various incentives through internal and external technology and domain capability improvements, as well as focusing on reskilling and upskilling workers. However the number of total employees trained in each initiative is not provided in the report.

F. Combined Analysis of Five Companies

The number of times the listed words are being used by the top 5 IT companies in their annual report 2018-19

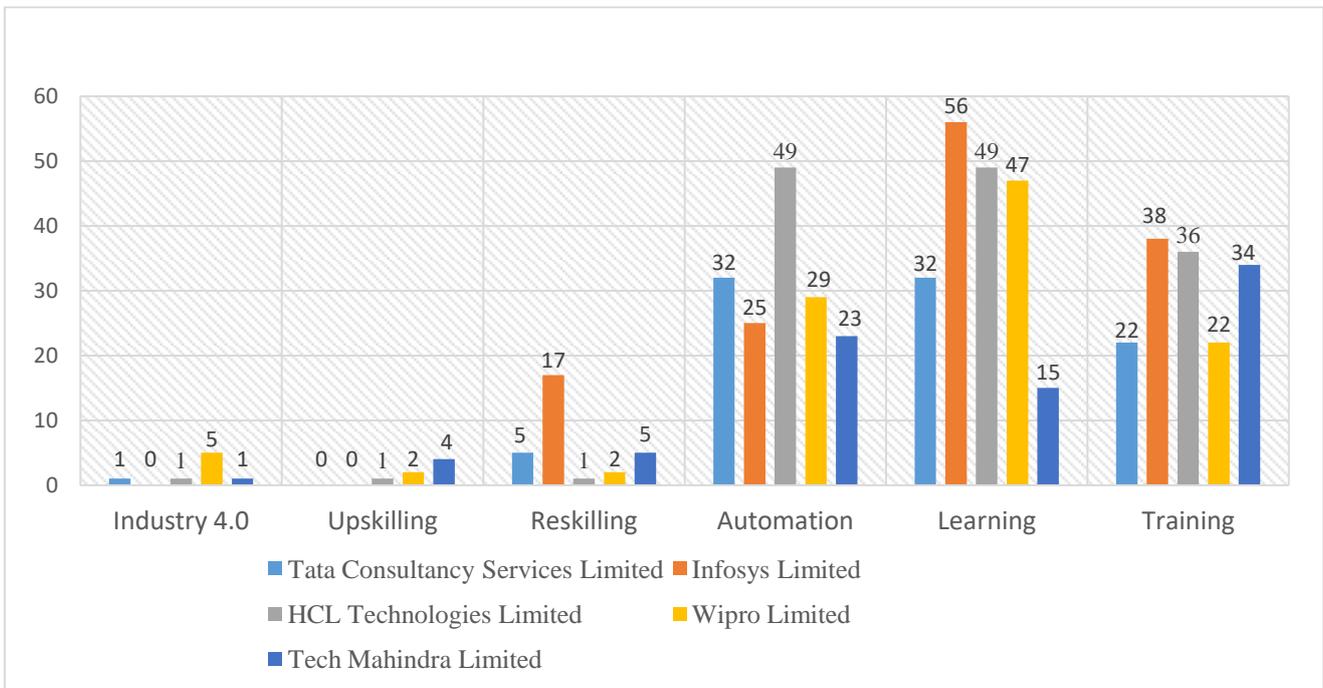


Fig.7. Frequency of word counts by all the five companies

When reviewed, the annual report of these top 5 IT firms reveals,

- Although the five companies hardly use the word Industry 4.0 in their annual report, they have used the word automation extensively.
- Even though Infosys Limited has not used words such as Industry 4.0 and upskilling in their report, they have employed words like reskilling (17), automation (25), learning (56) and training (38) in the report.
- Wipro is the only company to have used the word Industry 4.0 five times in its annual report for the year 2018-19.
- HCL Technologies Limited has all the chosen words in their annual report and it should be noted that words such as automation (49), learning (49) and training (36) are present in significant numbers. Wipro Limited and Tech Mahindra Limited also have all the chosen words in their report but compared to HCL Technologies Limited the number of the words like automation (23) and learning (15) is lower for Tech Mahindra Limited and number of words like automation (29) and training is lower for Wipro Limited (22).

The following findings can be summarized from the study conducted,

- All the top 5 organizations chosen for this study based on their market capitalization are aware of the phenomena of automation or digitization and has been coming up with initiatives to upskill and train their employees.
- It can be seen from the study that all the organizations chosen have been coming up with one or the other L&D

initiatives in this age of Industry 4.0 indicating that they are enough bothered about the growth and development of their employees and have been considering learning as a key element in the organization. This can be substantiated with the number of times the word learning has been used by each company in their annual report i.e. TCS Ltd. (32), Infosys Limited (56), HCL Technologies Limited (49), Wipro Limited (47), Tech Mahindra Limited (15). Also, one core value of organizations like TCS Ltd., Wipro Limited, Tech Mahindra Limited, are related to the term learning and automation.

The kind of upskilling program offered differs widely across companies. Infosys Limited was using a self-learning app called Lex whereas Tech Mahindra Limited has used the guidance from world class professors for their upskilling program DEXT and Wipro has used mentoring networks. Digital Learning Platform of TCS Ltd. tried to integrate online learning and peer learning. When these programs matches with the learning style preferred by the employees, the effectiveness of the program would be great.

The number of initiatives that companies have been using for L&D differs and it does not depend on their market

- Capitalization but here it can be concluded that companies with huge market capitalization has come up with handful number of programs for learning and development.
- The annual report of the companies when studied identified that 2 companies namely, Tata Consultancy Services Limited and Infosys Limited does not have the word upskilling in their annual report but has used the term reskilling as an alternative. Even though Infosys Limited has not used the word Industry4.0 in their annual report it has mentioned words like reskilling and automation in the report, which is related to Industry 4.0.
- All annual reports mention about the leadership development programs that each company offers, out of which HCL Technologies Limited has come up with the largest number of leadership development initiatives for women. Leadership programs like ASCEND take a blended learning approach where the women are given virtual learning opportunities through LinkedIn and Harvard and PRELUDE focuses on providing women leaders with tools and skills to successfully carry out their next level role.
- Tech Mahindra has been using partners like EdX to offer training in technical skills. These online learning platforms help employees to take these courses when and where needed by them. Only Infosys Limited has exclusively mentioned industry-academia partnership to develop workforce to lead in the Industry 4.0 era.

V. LIMITATIONS OF THE STUDY

The information for this was conducted through the homepage of the company website and annual report of the company for the financial year 2018-19. It is possible that company may have several initiatives but it doesn't disclose it on these platforms. Moreover the main focus of the annual report is financial disclosure hence digitization related initiatives may not get the main attention of the report producers. This study is one of the first attempt to look into the question of L&D efforts to overcome the challenges of Industry 4.0. Further studies can be built using other methods such as case study or interviews of head of L&D to further explore how IT companies in India are dealing with Industry 4.0 changes.

VI. CONCLUSION

It's a challenge for business of all shapes and sizes to keep up with the speed of technical advancements. While technology creates strong business opportunities, it also creates gaps in skills. The ability of an organization to improve its expertise, or its ability to train and grow its workers, provides a major competitive advantage in our increasingly technologically driven world. Upskilling or reskilling costs lower than recruiting a new worker and training him. When you retrain your staff, you are building a well-bounded, cross-trained workforce, and growing the productivity of your team.

Reskilling the employees lets them see the road to job growth before them, and excites them about what could be next. Knowing that they are working for something which will make their lives easier provides a stronger sense of intent. Upskilling keeps the staff up-to-date on business

trends and helps them to give clients and prospects the latest advice and insights.

The study has shown that companies in Indian IT industry has been carrying out several upskilling initiatives where employees are being trained in different relevant and upcoming skillsets. Organizations should come up with programs considering the learning style preferred by the employees. In the study it can be seen that different companies have been using different methods for training the employees, this would give maximum results if the chosen method matches with the employees preferred learning style. While some workers may be best off training in a traditional classroom setting, others may opt to learn online without teachers and trainers. Training modules with multiple short videos covering large topics can also help workers who choose to learn from smartphones, as done by Infosys using Lex.

Companies should ensure that all workers have equal access to all resources for training and expertise, and discrimination as such is not differentiated also encourage workers to choose their career paths by holding them accountable for their self-development, thus enabling them to make rational decisions about growth prospects. The system of encouraging employee learning and upskilling will drive the importance of reskilling and upskilling in their minds, developing a learning culture throughout the company. Employees who are upskilled and reskilled have proven to improve productivity while improving the organization's retention rate of employees. Investing in training programs through expertise firms and online learning sites as done by organizations like Tech Mahindra Limited should therefore be given priority.

In short, automation and technology is an indicator of both hope and challenges. It is like the two sides of a coin with advantages on one side and disadvantages on the other. Economies need the boost that it will offer to efficiency and development. Machines can take on monotonous, dangerous, or dirty work and allow us all to use more completely our inherently human talents. Societies will need to prepare for complicated changes in the workforce ahead, however, to capture these benefits. For businesses and individuals around the world, the challenge is to plan for a more digital future by focusing on new technologies, forecasting in-demand skills in the coming years, and developing training programs to meet those needs.

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