Fourth Industrial Revolution is the AI Revolution: With Reference to Different Industry Perspective

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Abstract

The World Economic Forum's founder and executive chairman, Klaus Schwab, coined the phrase "fourth industrial revolution" to characterize a situation in which people use linked technology to facilitate and govern their lives, allowing them to seamlessly transition between offline and digital worlds. Our lives and economy are drastically altered by the first industrial revolution, which replaces the rural and handicraft economies with one dominated by industry and machine production.

During the second industrial revolution, mass manufacturing is facilitated and accelerated by oil and electricity. Information technology was introduced during the third industrial revolution and was utilized to automate production. The industrial revolutions are sometimes seen as distinct events, but when taken as a whole, they make more sense as a chain of developments that built on the inventions of the preceding revolution and resulted in increasingly sophisticated modes of production.

The so-called fourth industrial revolution, which includes a number of cutting-edge technologies and has the potential to advance faster and more broadly than any previous period in human history, might see artificial intelligence completely transform everything.

The government, academia, business, and civil society are all interested in comprehending the complex effects of the impending industrial revolution, but it is difficult to forecast how it will unfold. Experts believe that while developing technologies could be extremely beneficial to humanity, they also carry a risk to our very existence.

If we talk with reference to India, Artificial intelligence is still at the start of business developments in all levels. This article discusses the major features, benefits, risks, opportunities and challenges of the fourth industrial revolutions with respect to Artificial intelligence with reference to various industries in India.

Key Words: *Fourth Industrial Revolution, Artificial Intelligence (AI), Emerging Technology.*

1. INTRODUCTION

Today, we are facing lots of diverse and fascinating challenges but the most intense and important is how to understand and shape the new technology revolution, which will results in the drastic transformation of humankind. In fact, we are at the beginning of a revolution that will change the way of our living, working, and relating to one another. In its every parameter whatever it is scale, scope or complexity, what I consider to be the fourth industrial revolution is unlike anything humankind has experienced before.

The breadth and pace of this new revolution are yet beyond our complete comprehension. Should we focus on the seemingly limitless potential of billions of people being linked via mobile devices, or on the astounding convergence of cutting-edge technological advancements across diverse domains like artificial intelligence (AI), robots, and the internet of things (IoT)? Among the few other names on this list are 3D printing, self-driving cars, nanotechnology, biotechnology, materials science, energy storage, and quantum computing. While many of these inventions are still in the early stages of development, they have already reached a point where significant or definitive changes can occur in their trajectory as they build upon and enhance one another in a fusion of technologies spanning the physical, digital and biological worlds.

All industries are undergoing enormous change, whether it is due to the introduction of new business models, the upending of established ones, or changes to the systems for distribution, transportation, and production.

The magnitude, speed, and breadth of these transformations will be unprecedented. Deep ambiguity still surrounds the creation and uptake of developing technologies. Given their complexity and interconnectedness across sectors, the changes brought about by the industrial revolution are not yet fully understood, but all parties involved in global society—governments, corporations, academic institutions, and civil society organizations—have an obligation to respond to these emerging trends and collaborate toward a deeper understanding.

A complete and universally accepted understanding of how technology is affecting our lives and the lives of coming generations, as well as how it is transforming the social, cultural, economic, and human context, in which we live, ought to exist. From the standpoint of human history, which has never been encountered before, the alterations are quite significant.

2. HISTORICAL BACKGROUND

Abrupt and revolutionary transformation is what the word "revolution" refers to. Throughout history, revolutions have happened when new technologies lead to major changes in social structures, economic systems, and new ways of interpreting the world. The earliest and biggest shift in human history was the transition from foraging to farming, which happened some 10,000 years ago and was made possible by animal domestication. Animal labor and human labor were joined during the Agricultural Revolution to facilitate production, transportation, and communication. Larger human settlements were made possible, population expansion quickened, and food production gradually improved. Eventually, this resulted in urbanization and the creation of cities. In the latter half of the 18th century, a number of industrial revolutions took place in response to the Agricultural Revolution. The shift from physical strength to mechanical power, which is still developing today, was signaled by this revolution.

The first industrial revolution took place between roughly 1760 and 1840. It brought about the advent of mechanical production and was sparked by the building of railroads and the development of the steam engine. The invention of the assembly line and the development of electricity enabled mass manufacturing during the second industrial revolution, which began in the late 19th and continued into the early 20th centuries. In the 1960s, the third industrial revolution got underway. Since it was sparked by the advancement of semiconductors, mainframe computing in the 1960s, personal computing in the 1970s and 1980s, and the internet in the 1990s, it is commonly referred to as the computer or digital revolution.

We currently hold the view that the fourth industrial revolution is only getting started. The Internet, increasingly common mobile phones, more potent and compact sensors, AI, and machine learning are the hallmarks of this revolution.

Digital technologies are not new; rather, they are breaking with the third industrial revolution and becoming more complex and integrated, which is changing society and the global economy. At its foundation, digital technologies are computer hardware, software, and networks.
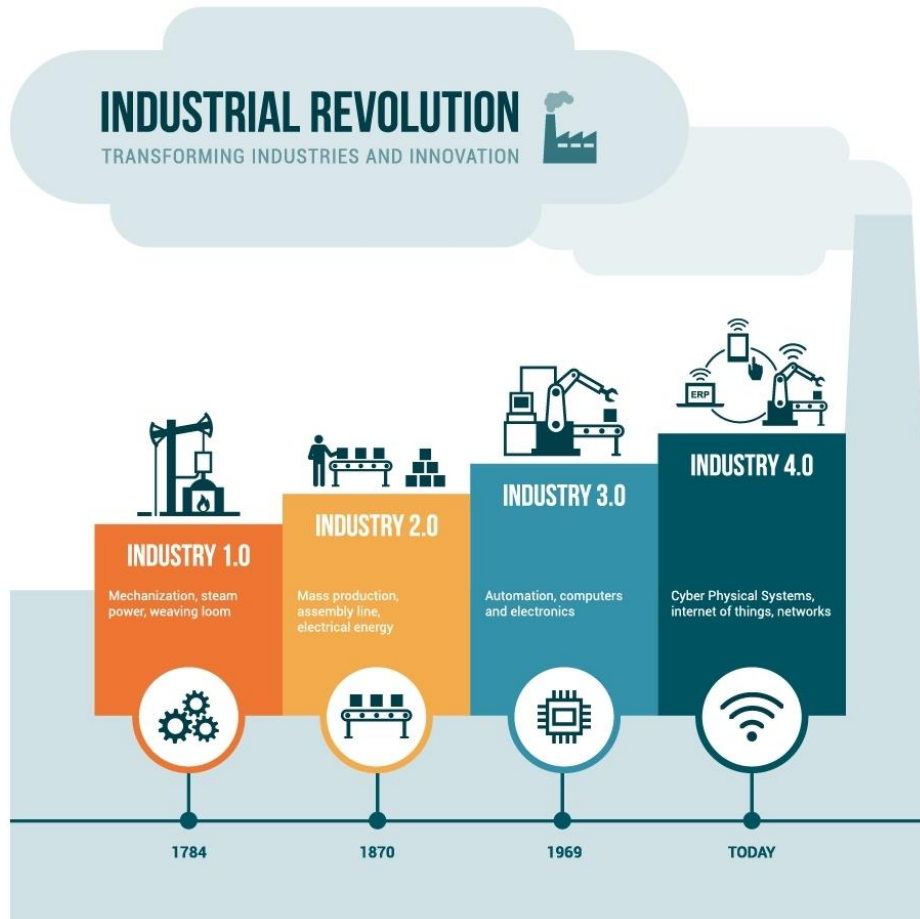
Intelligent and networked devices and systems are not the sole aspects of the fourth industrial revolution. Its reach is even greater. Waves of new discoveries in fields like genome sequencing, nanotechnology, renewable energy, and quantum computing are happening concurrently. The combination of these technologies and how they interact with one another in the digital, biological, and physical worlds is what sets the fourth industrial revolution apart from earlier ones. Emerging technologies and broad-based innovation are spreading far more quickly and broadly in this revolution than in the others that are still happening in some regions of the world.

Since about 1.3 billion people do not yet have access to electricity, 17% of the world's population has not yet completely experienced the second industrial revolution. This also applies to the third industrial revolution, since 4 billion people worldwide—the majority of whom resides in developing nations—do not have access to the internet. It took over 120 years for the spindle—the symbol of the first industrial revolution—to become widely distributed outside of Europe. In contrast, it took less than ten years for the internet to spread around the world.

We all agreed that the next industrial revolution will be just as strong, significant, and historic as the first three.

However, there are a few things that worry us since they could limit the potential of our invaluable human resource, which is used across India's various industries.

First, we believe that, in comparison to the necessity of rethinking our political, social, and economic structures in order to adapt to the fourth industrial revolution, the levels of leadership and comprehension of the changes that are occurring, across all sectors, are low. Consequently, the necessary institutional framework to control the spread of innovation and lessen the disruption is, at best, insufficient and, at worst, nonexistent on a national and worldwide scale.

Second, there isn't a single, unified story that describes the advantages and disadvantages of the fourth industrial revolution in the world.

3. RATIONALE OF THE STUDY

This study is basically design for assessing the impact of evolution of Fourth Industrial Revolution with respect to Artificial Intelligence.

The purpose is to find out the pros and cons of evolution of Artificial Intelligence on our human resource working in different industries or sectors of India. Now days, a conflict is generally in discussion that Artificial Intelligence can be a substitute of various traditional system adopted for the functioning in our industries as well it will be a cause of replacement of human resource via technology, i.e. AI. This study is proposed to examine the effect of Artificial Intelligence and to identify the satisfaction level among employees.

4. STATEMENT OF RESEARCH PROBLEM

In past few years, the whole world has undergone immense change in pattern and advancements of technology. Recent upturns and increased demand of AI has put pressure on industries and organization in every sector to adopt an unexpected change in the form of technological up-gradation. Especially our human resource, either they are white collar or blue collar feel under pressure to adopt technological advancements at the working place and also found a fear in their mind of loosing job opportunities due to the introduction of this bloom of advance technologies in the form of AI as a result of fourth industrial revolution.

5. OBJECTIVE OF THE STUDY

a) To increase an awareness regarding comprehensiveness and speed of the technological revolution and its multifaceted impact.

b) To create a framework for thinking about the technological revolution that outlines the core issues and possible strategies.

c) To know the opportunities and challenges before various industries of India due to AI.

6. SCOPE OF THE STUDY

The scope of study revolves around two factors i.e. one is positive impact of fourth industrial revolution with respect to Artificial Intelligence and secondly negative effects of AI on the ambitious workforce of India working in different industries or sectors.

7. RESEARCH METHODOLOGY

A) Data Source:

Primary Data: Questionnaire is a main tool for collecting primary data. To make the study more practical in nature, primary data were collected through structured questionnaire from persons working in different industries of India by creating Google Form.

Link of Google Form:

https://docs.google.com/forms/d/e/1FAIpQLSdMuMyNXxzcxuXz_aBhaWNYDe_3Cr0lTHRfY YT56NhDLk7a2w/viewform?usp=sf_link

Secondary Data: Secondary data were collected from related research works, published books and journals, reports of government, news paper and websites.

B) Tools used for Analysis: Statistical tools used for the study analysis are:

[i] Percentage Analysis
[ii] Statistical Averages
[iii] Chi-Square Test

8. ANALYSIS OF DATA AND RESULTS

As mentioned above, that this study is based on the data collected from employees working under different industries, so the results find out through this survey from approximately 260 employees are discussed as under:
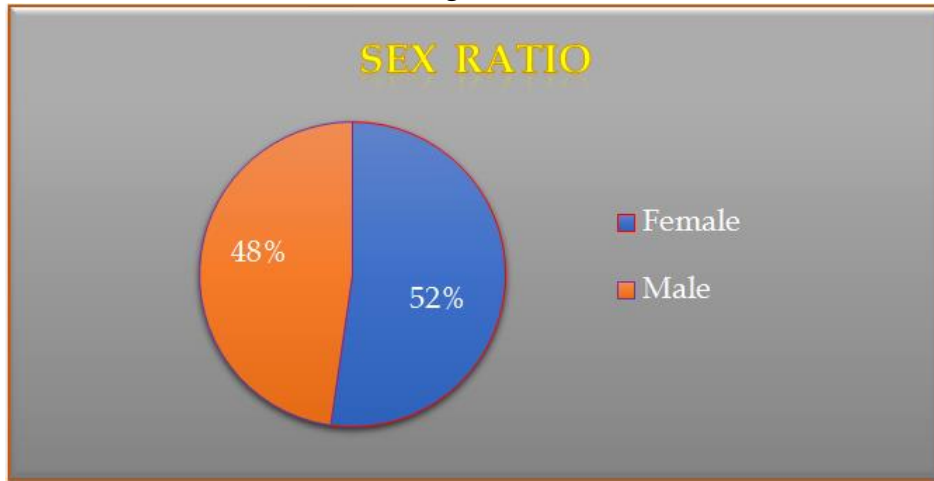
Result: 1

The sex ratio of the sample is 52% females and 48% males.

Table: 1

Sex Ratio	
Sex	Respondents
Male	125
Female	135

Figure: 1
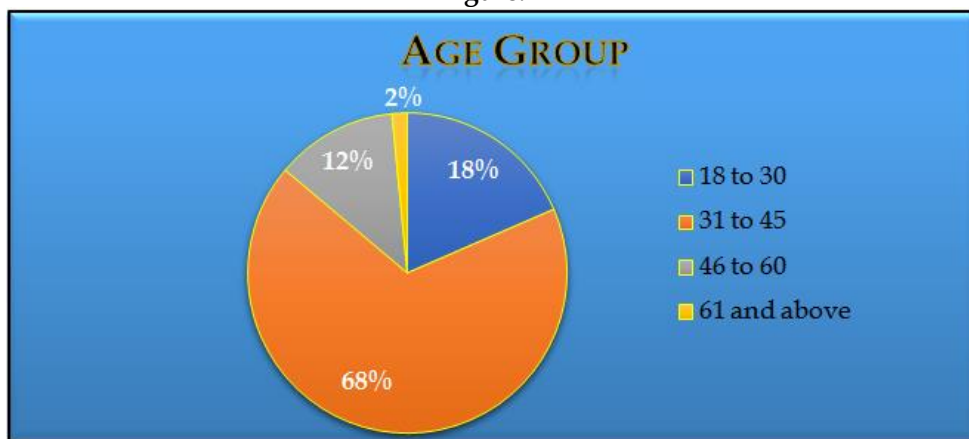

SEX RATIO

48% 52%

■ Female
■ Male

Result: 2

Approximately 68% of the respondents are the youth, i.e. persons of the age group 31 to 45 years and rest from other age group.

Table: 2

Age Group	
Age (in years)	**Respondents**
18 to 30	48
31 to 45	176
46 to 60	32
61 and above	4

Figure: 2

AGE GROUP

2%
12% 18%

68%

□ 18 to 30
■ 31 to 45
□ 46 to 60
□ 61 and above

Result: 3

Out of total respondents 48% are Post-Graduate, 42% are Doctorate and rest who are only Graduate, Diploma holder or any other qualification.

Table: 3

Highest Level of Qualification you achieved?	
Qualification Level	**Respondents**
Diploma	4
Graduation	16
Ph.D.	108
Post – Graduation	124
Any Other	8

Figure: 3
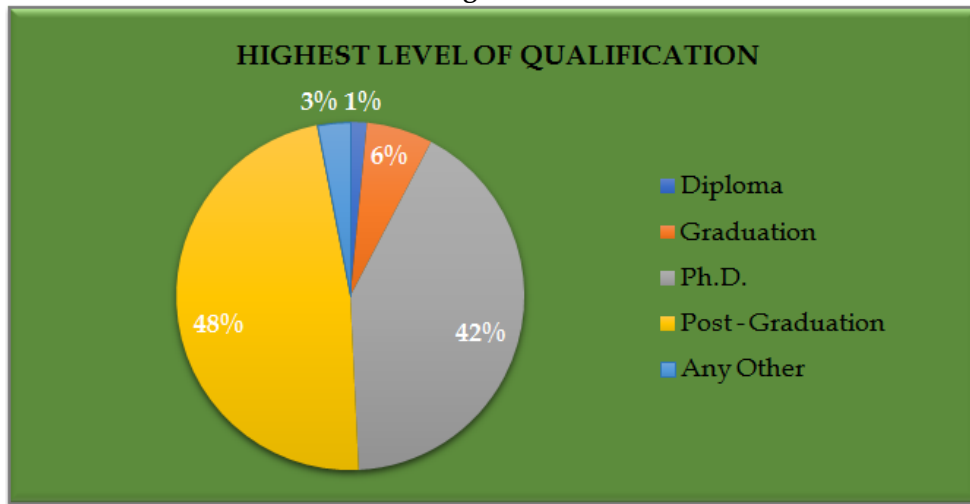
Result: 4

45 % of respondents worked at Private Sector, 41 % at Government Sector, 11 % at Public Sector and 3 % are from Non-Profit Organizations.

Table: 4

Sector in which you are working?	
Sector	**Respondents**
Government	108
Private	116
Public	28
Not - for - Profit	8

Figure: 4
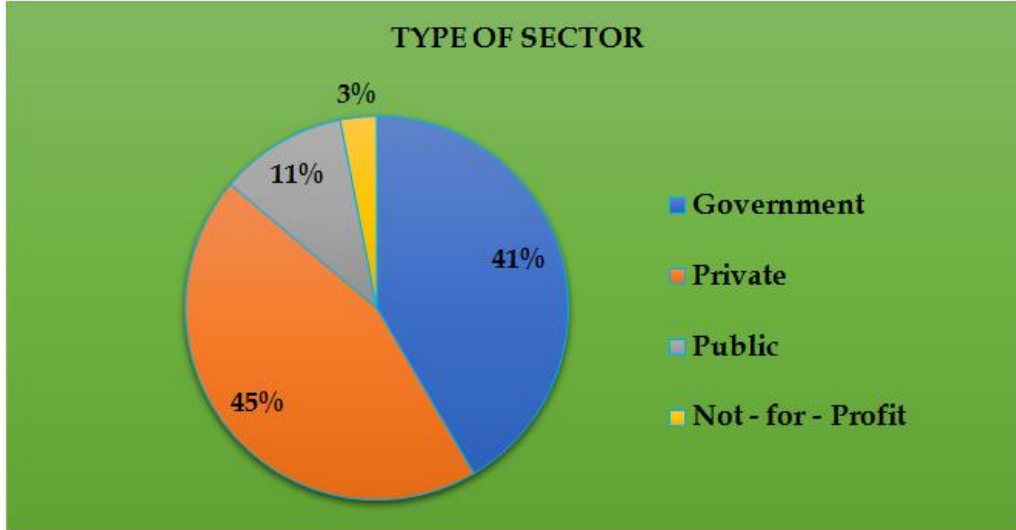
Result: 5

Majority of respondents i.e. 66 % are from Education industry, 9 % from Professional and Technical Service industry, 8 % from Financial and Insurance Services and rest 17 % from some other different industries.

Table: 5

| What is the type of your organization?	
Type of Organization	**Respondents**
Education	172
Professional and Technical Services	24
Financial and Insurance Services	20
Agriculture	12
Public Administration & Safety	8
Information Media & Telecommunication	4
Manufacturing	4
Any other (Please Specify)	16

Figure: 5
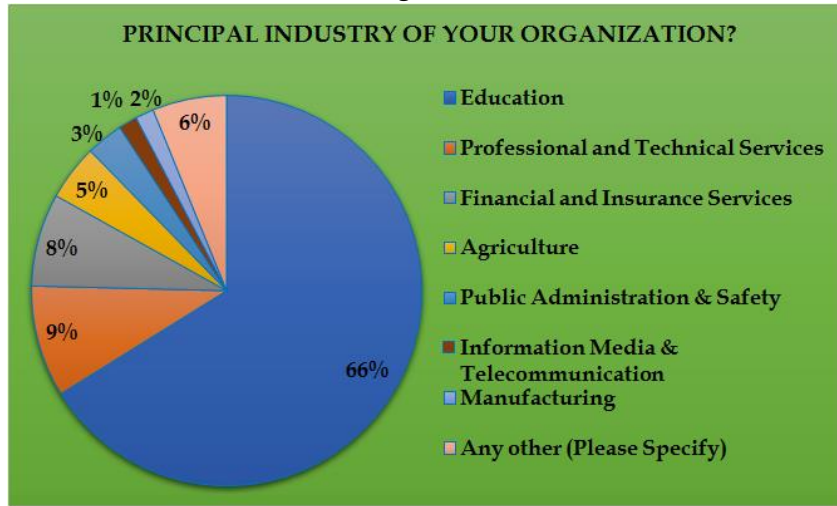
Result: 6

Organizations of 49% are working at Third, 26% at Fourth, 20% at Second and remaining 5% at First Technological stage.

Table: 6

| Your organization is currently working at which technological stage?	
Stage of Industrial Revolution	Respondents
First Industrial Revolution	12
Second Industrial Revolution	52
Third Industrial Revolution	128
Fourth Industrial Revolution	68

Figure: 6
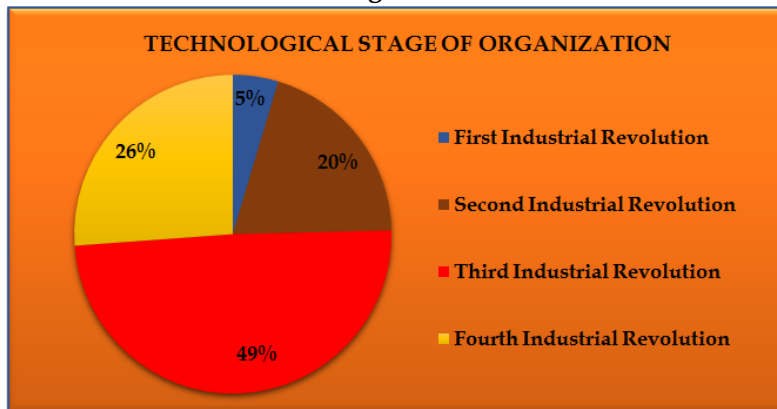
Result: 7

32% of respondents said that IT experts are attached to each department, 28 % have Central IT department at their organizations, 28% have Local IT departments in each functional area and 12 % have any other form of IT function at their organization.

Table: 7

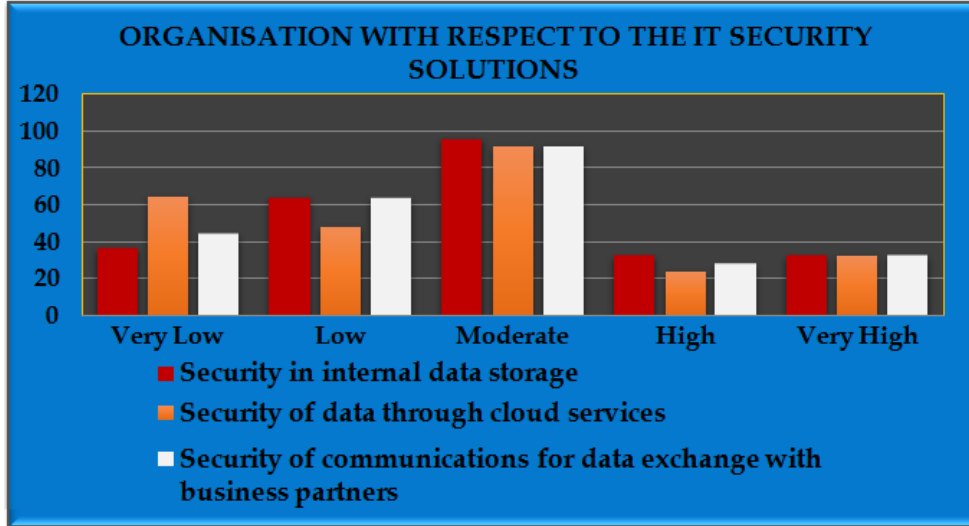| How is the information technology (IT) function organized in your company?	
Particular	Respondents
Central IT department	72
IT experts attached to each department	84
Local IT departments in each functional area	72
Any other	32

Figure: 7
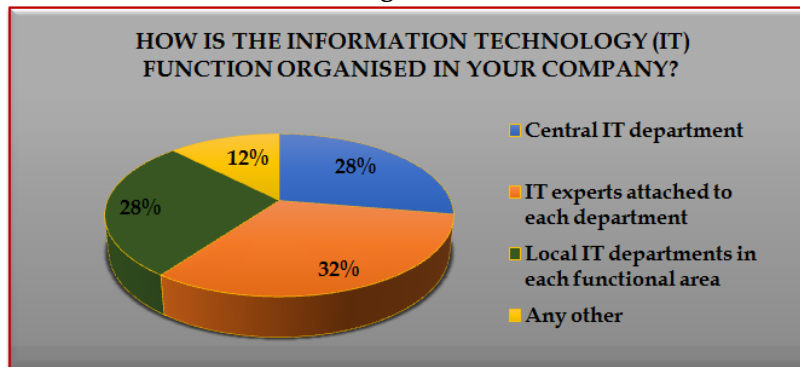
Result: 8

According to 38% respondents, their organization have a moderate approach with respect to security in internal data storage, security of data through cloud services and security of communications for data exchange with business partners.

Table: 8

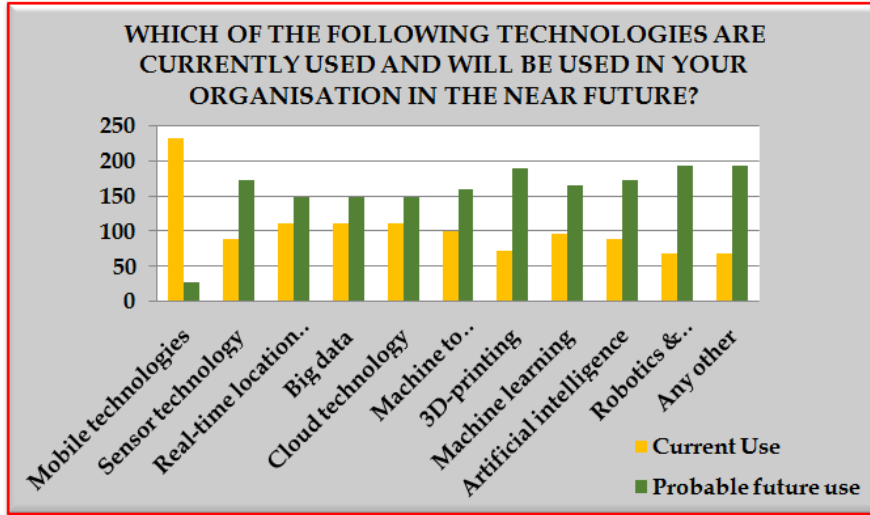| Organization with respect to the IT security solutions			
Particulars	Security in Internal Data Storage	Security of Data through Cloud Services	Security of Communications for Data Exchange with Business Partners
Very Low	36	64	44
Low	64	48	64
Moderate	96	92	92
High	32	24	28
Very High	32	32	32

Figure: 8

Result: 9

According to majority of respondents, currently their organizations are using mobile technologies but in near future they seek a change in the technologies get on to be adopted by their organization, i.e. a shift from mobile technology to Sensor, Big data, Cloud, Artificial Intelligence, Robotics and Animation and many other coming up advanced technologies.

Table: 9

Which of the following Technologies are Currently Used and will be used in your Organisation in the Near Future?										
Particulars	Mobile technologies	Sensor technology	Real-time location systems	Big data	Cloud technology	Machine to Machine Communications	3D-printing	Machine learning	Artificial intelligence	Robotics & Automation	Any other
Current Use	232	88	112	112	112	100	72	96	88	68	68
Probable future use	28	172	148	148	148	160	188	164	172	192	192

Figure: 9

Result: 10

Out of the total respondents more than 61% are satisfied by the policies of the Indian Government to deal with the impact of Artificial Intelligence on the jobs in the coming up future.

Table: 10

From your observation, how impressed are you by the policies of your government in preparation for the impact of Artificial Intelligence (AI) on jobs?	
Particulars	Respondent
Strongly Satisfied	16
Satisfied	160
Dissatisfied	60
Strongly Dissatisfied	24

Figure 10
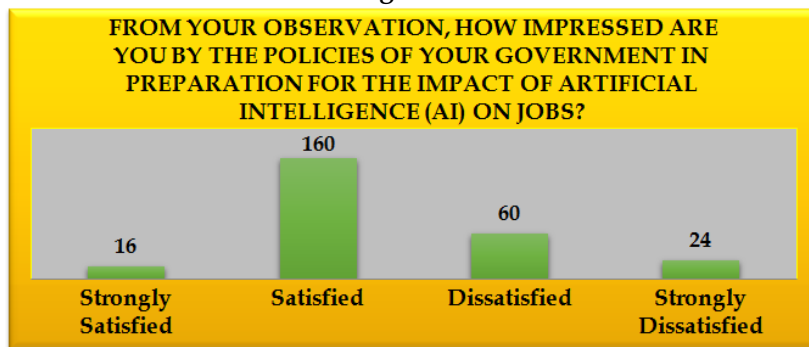
Result: 11

Out of the total respondents more than 75% think that there is a need of upgrading the skills of employees within their organization to cope up with the future changes in the technologies.
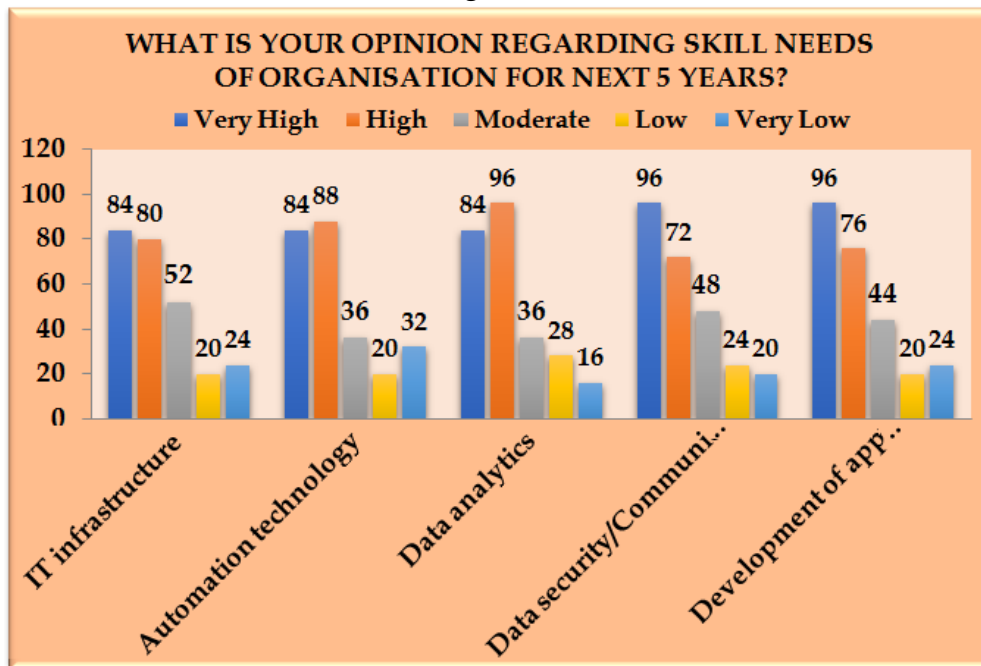
Table: 11

What is your opinion regarding Skill needs of organization for next 5 years?				
	IT infrastructure	Automation technology	Data analytics	Data security/Com munications security	Development of application of assistance systems
Very High	84	84	84	96	96
High	80	88	96	72	76
Moderate	52	36	36	48	44
Low	20	20	28	24	20
Very Low	24	32	16	20	24

Figure: 11

Result: 12

Out of the total respondents most of them feel insecure with respect to job security due to the implementation of Artificial Intelligence Software.

Table: 12

	Give your opinion with respect to the feelings of your employees regarding their job security due to the implementation of AI/Software/Applications			
	Employees are very confident that they will not be able to keep their jobs despite the implementation of AI/Software/Applications	Employees think that they will not be able to continue working in the organization despite increases in the use of AI/Software/Applications	Employees fear that they might be made redundant due to increases in the use of AI/Software/Applications	Employees worry about the continuation of their careers due to increases in the use of AI/Software/Applications
Strongly Agree	86	78	76	88
Agree	94	112	116	104
Disagree	52	38	40	42
Strongly Disagree	28	32	28	26

Figure: 12

GIVE YOUR OPINION WITH RESPECT TO THE FEELINGS OF YOUR EMPLOYEES REGARDING THEIR JOB SECURITY DUE TO THE IMPLEMENTATION OF AI/SOFTWARE/APPLICATIONS
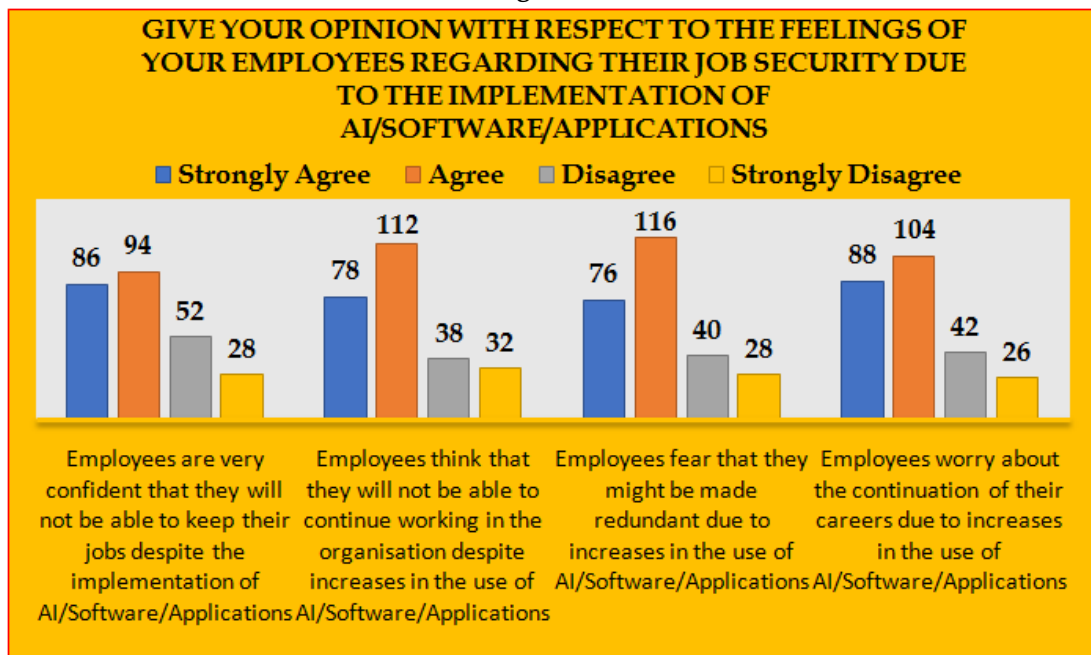
Result: 13

As per the respondents in context of AI/Robotics Technologies etc. there will be a very high demand of employees with good communication skills, knowledge of IT, critical thinkers, positive attitude towards team work and ongoing learning new skills in coming up future.

Table: 13

Type of Skills your Organization needs when Recruiting new Staff in the Context of AI/robotics Technologies likely to be Implemented in your Organization by 2027 against the following Criteria				
	Communication	IT Knowledge	Team work	Critical Thinking/Problem	Positive Attitude towards Ongoing Learning of new Skills
Very High	92	100	112	108	116
High	60	52	44	48	44
Moderate	60	64	56	56	56
Low	28	24	32	24	24
Very Low	20	20	16	24	20

Figure: 13

Result: 14

Respondents seek very moderate preparation with respect to forthcoming changes in context of AI/Robotic technologies at their organizations.

Table: 14

To what extent is your Organization Prepared for the Forthcoming changes in AI/Robotics Technologies?	
Particulars	**Respondent**
Very High preparation	24
High preparation	48
Moderate Preparation	80
Low Preparation	36
Very Low Preparation	72

Figure: 14
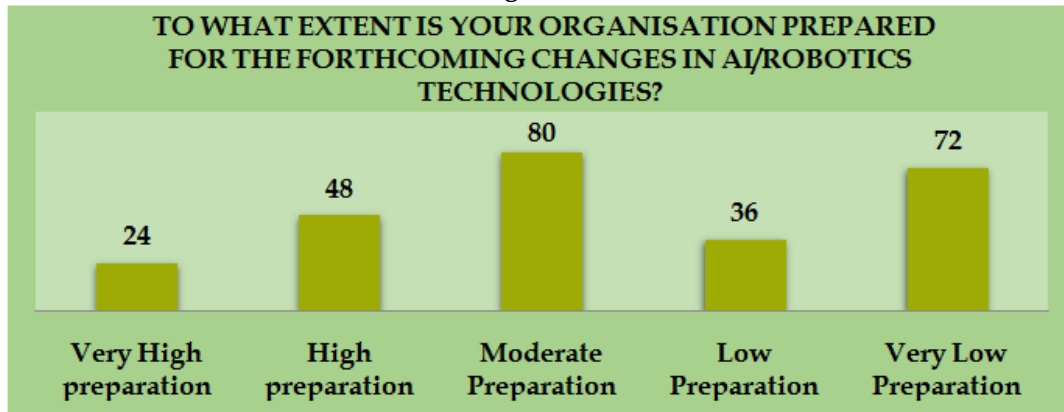
Result: 15

According to respondents there is a moderate to vey high need at their organization with respect to revised attraction and selection of staff with new skills/ competencies, new learning and development programs for existing as well as for new staff, new employment conditions and revised career development criteria and process.

Table: 15

	Revised attraction and selection of staff with new skills/competencies	New learning & development programs for existing staff	New learning & development programs for new staff	New employment conditions (especially, contracting, casualization, outsourcing)	Revised career development criteria and processes
How might the following factors impact on your organization by 2025?					
Very High	48	64	68	56	64
High	68	56	72	60	68
Moderate	64	76	48	76	56
Low	36	32	40	28	36
Very Low	44	32	32	40	36

Figure: 15
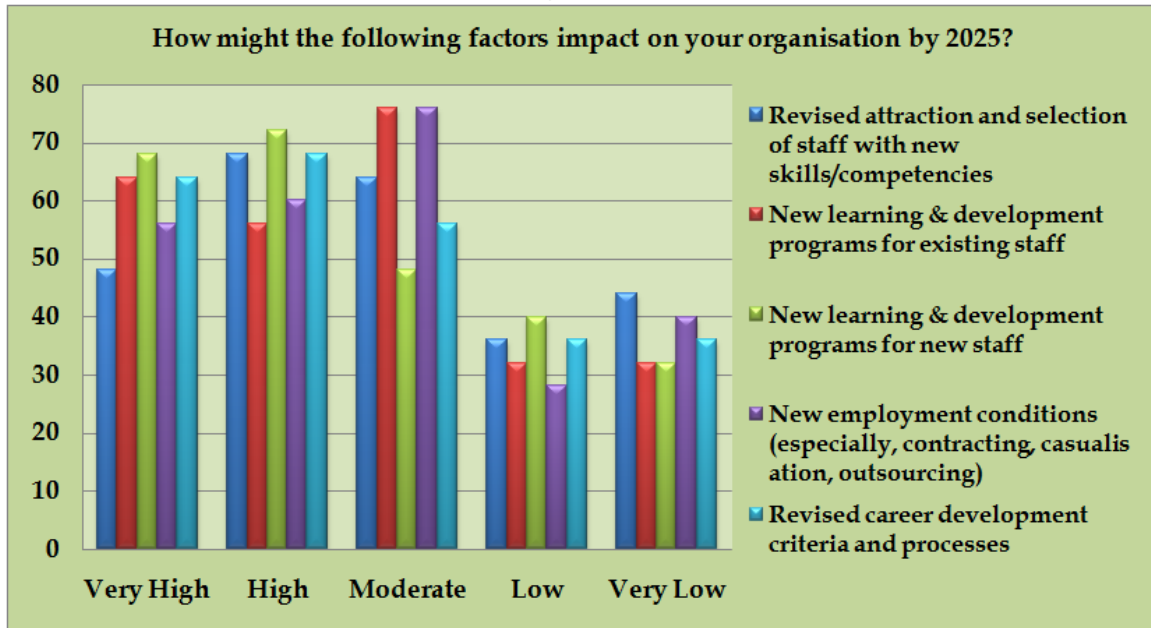
Result: 16

According to respondents there seems a drastic change that seems to occur in the coming up decade due to the impact of Artificial Intelligence and automation in their organizations with respect to jobs.

Maximum of the change is expected in the field of Information Technology/Data Security/ Communication Security and Research & Development.

Table: 16

Percentage of jobs that will change significantly in different functions in the next decade due to the impact of artificial intelligence and automation in your organisation.								
Less than	Manufacturing, Production and Operations	Research and Development	Information Technology / Data Security/ Communication Security	Marketing, Sales, Distribution and Customer Support	Human Resource Management	Accounting and Finance	Transport and Logistics	General Administration
10%	24	26	18	30	40	28	22	26
20%	34	28	25	42	44	35	32	46
25%	67	34	25	66	74	64	48	76
30%	87	74	90	80	62	89	86	64
40%	48	98	102	42	40	44	72	48

Figure: 16
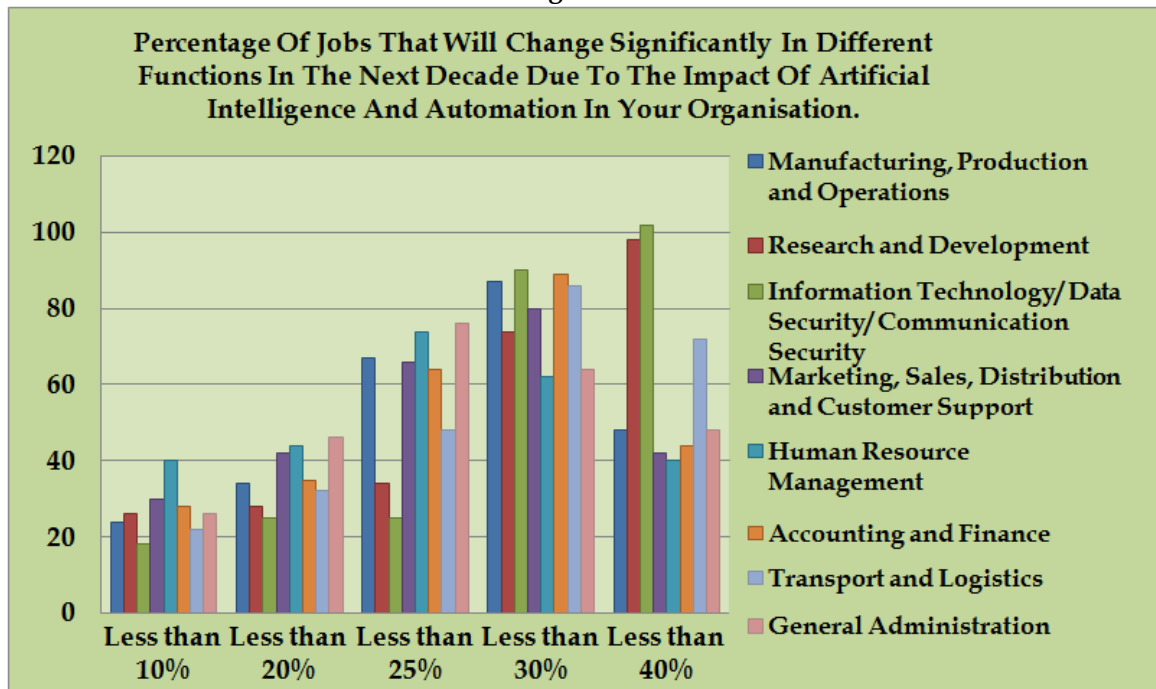
Result: 17

According to respondents, more than 60% of them thought that there will be approximately 20 to 25 % jobs will be created within their organization as a result of AI/Robotics technologies.

Table: 17

Percentage of jobs overall created in general within your organization as a result of AI/Robotics technologies.	
Particulars	**Respondents**
Less than 10%	26
Less than 20%	82
Less than 25%	79
Less than 30%	38
Less than 40%	35

Figure: 17
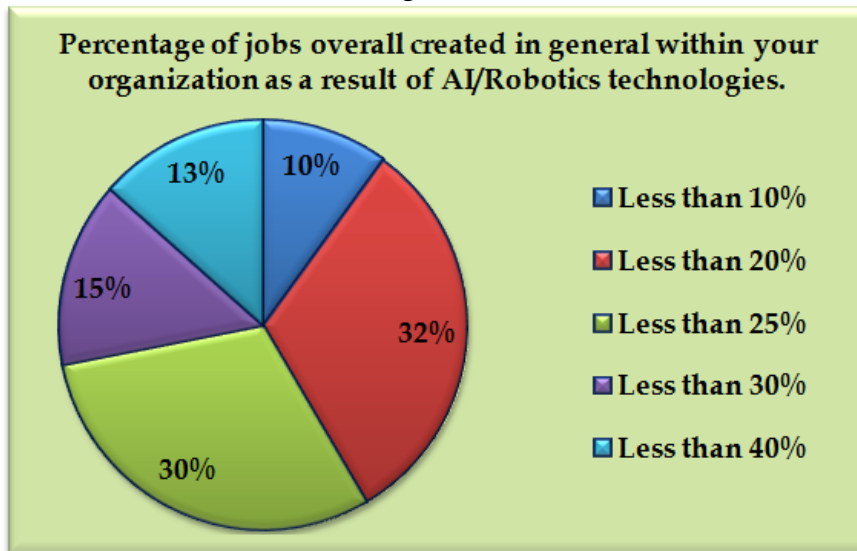
Table: 18

The degree of top management support for the use of AI - Software - Applications in your organization				
	Top management enthusiastically supports the adoption of AI/Software/Applications in different departments	Top management has allocated adequate resources for the adoption of AI/Software/Applications in different departments	Top management is aware of the benefits of implementing AI/Software/Applications in different departments	Top management actively encourages employees to use AI/Software/Applications in their daily task
Very Low	64	60	56	52
Low	36	60	48	52
Medium	88	72	72	72
High	36	32	44	44
Very High	36	36	40	40

Hypothesis

H0: Top Management does not support AI

H1: Top Management support AI

Table: 18(A) Chi-Square Test

d.f.	χ^2	Sign	TV	p value	Sign	α	Result A/R
12	13.22	<	21.03	0.35	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 18, it is concluded that currently in the organizations, the top management does not support as well motivate for the use of Artificial Intelligence.

Table: 19

AI/Software/Applications will be useful in your organization				
	Using AI/Software/Applications in jobs would enable employees to accomplish tasks more quickly	Using AI/Software/Applications would improve employees' job performance	Using AI/Software/Applications would make it easier for employees to do their job	Employees will find AI/Software/Applications useful in their jobs
Strongly Agree	116	112	120	140

Agree	100	108	112	100
Disagree	24	16	16	12
Strongly Disagree	20	24	12	8

Hypothesis

H0: AI/Software/Applications is not useful for industries

H1: AI/Software/Applications is useful for industries

Table 19(A): Chi-Square Test

d.f.	χ2	Sign	TV	p value	Sign	α	Result A/R
9	19.30	>	16.92	0.02	<	0.05	H0 (R)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 19, it is concluded that AI/Software/Applications is useful for their industries in the coming up future to improve their performance by improving the work speed as well making their work easier.

Table: 20

Application of AI Software helps for accomplishing tasks in your organization		
	The application of AI/Software saves time for different tasks	The application of AI/Software increases productivity for different tasks	The application of AI/Software allows more work tasks to be accomplished than would otherwise be possible
Strongly Agree	84	88	80
Agree	152	148	145
Disagree	4	12	15
Strongly Disagree	20	12	20

Hypothesis

H0: AI/Software/Applications help in accomplishing tasks of organization

H1: AI/Software/Applications do not help in accomplishing tasks of organization

Table 20(A): Chi-Square Test

d.f.	χ2	Sign	TV	p value	Sign	α	Result A/R
6	9.27	<	12.59	0.57	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 20, it is concluded that AI/Software/Applications will help to save time , increases the productivity and allows to maximize the task to be done in comparison to the other possible way.

Table: 21

Application of AI Software helps in improving customer satisfaction within your organization			
	The application of AI/Software improves customer service	The application of AI/Software improves customer satisfaction	The application of AI/Software helps employees to better meet customer needs
Strongly Agree	76	92	100
Agree	148	124	112
Disagree	16	24	28
Strongly Disagree	20	20	20

Hypothesis

H0: AI/Software/Applications help in improving customer satisfaction
H1: AI/Software/Applications do not helps in improving customer satisfaction

Table 21(A): Chi-Square Test

d.f.	χ^2	Sign	TV	p value	Sign	α	Result A/R
6	11.89	<	12.59	0.35	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 21, it is concluded that AI/Software/Applications will help in improving customer service as well as their satisfaction level. It will also support to employees to meet customer needs in a better manner.

Table: 22

Application of AI Software helps for improving management control in your organization			
	The application of AI/Software helps management to better control the work process	The application of AI/Software improves management control	The application of AI/Software helps management to better control performance
Strongly Agree	80	94	108
Agree	138	124	125
Disagree	26	24	14
Strongly Disagree	16	18	13

Hypothesis

H0: AI/Software/Applications help in improving management control
H1: AI/Software/Applications do not help in improving management control

Table 22(A): Chi-Square Test

d.f.	χ2	Sign	TV	p value	Sign	α	Result A/R
6	9.80	<	12.59	0.13	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 22, it is concluded that AI/Software/Applications will also helps the management to control the performance of the organizations.

Table: 23

Application of AI Software will helps for improving organizational performance			
	The application of AI/Software will help the organization to increase revenues	The application of AI/Software will help to increase sales	The application of AI/Software will help to enhance profit margins	The application of AI/Software will help to improve competitive advantage
Strongly Agree	56	60	80	80
Agree	164	168	148	140
Disagree	24	24	20	24
Strongly Disagree	16	8	12	16

Hypothesis

H0: AI/Software/Applications help in improving management control
H1: AI/Software/Applications do not help in improving management control

Table 23(A): Chi-Square Test

d.f.	χ2	Sign	TV	p value	Sign	α	Result A/R
6	14.42	<	16.92	0.41	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 23, it is concluded that AI/Software/Applications will be helpful for the management to improve the overall performance of organization by increasing the revenues and enhancing the profit margins. It will also support to improve the competitive advantage of the organizations.

Table: 24

Impact of the latest AI Software/Applications on employees' job satisfaction		
	Use of AI/Software/Applications will enhance employees' satisfaction with their jobs	AI/Software/Applications will not affect the way employees work	Using AI/Software/Applications will help to enhance employees' satisfaction with the important aspects of their job
Strongly Agree	64	52	50

Agree	82	78	86
Disagree	80	76	90
Strongly Disagree	34	54	34

Hypothesis
H0: AI/Software/Applications have positive impact on employee's job satisfaction
H1: AI/Software/Applications do not have positive impact on employee's job satisfaction

Table 23(A) Chi-Square Test

d.f.	$\chi 2$	Sign	TV	p value	Sign	α	Result A/R
6	10.29	<	12.59	0.55	>	0.05	H0 (A)

Findings and Analysis
As per the Chi-Square test applied on the data provided by the respondents given in Table 24, it is concluded that AI/Software/Applications will laid positive impact on enhancing the job satisfaction level of employees.

Table: 25

	Employees are very confident that they will not be able to keep their jobs despite the implementation of AI/Software/Applications	Employees think that they will not be able to continue working in the organization despite increases in the use of AI/Software/Applications	Employees fear that they might be made redundant due to increases in the use of AI/Software/Applications	Employees worry about the continuation of their careers due to increases in the use of AI/Software/Applications
	Feelings of the employees regarding their job security due to the implementation of AI/Software/Applications			
Strongly Agree	94	92	96	104
Agree	86	108	106	88
Disagree	52	38	30	42
Strongly Disagree	28	22	28	26

Hypothesis
H0: AI/Software/Applications will affect the job Security
H1: AI/Software/Applications will not affect the job Security

Table 23(A): Chi-Square Test

d.f.	χ2	Sign	TV	p value	Sign	α	Result A/R
9	12.15	<	16.92	1.39	>	0.05	H0 (A)

Findings and Analysis

As per the Chi-Square test applied on the data provided by the respondents given in Table 25, it is concluded that AI/Software/Applications will affect the job security. Employees have a fear that due the implementation of AI's they can lost their jobs in the coming up future.

9. RECOMMENDATIONS

- First of all in response of Fourth Industrial Revolution that will be an era of Artificial Intelligence, it is required to educate our human resources with Fourth Industrial Revolution technologies by offering technical and professional knowledge which can be possible by re-organizing our professional education system. There is a need to make collaboration between the industries and educational institutions of our country to develop a work – based learning system for the students of technical and vocational courses.
- Secondly, it is the need of hour to nurture all the enabling technologies of Fourth Industrial Revolution in every industry either it is a well established big companies or a Small and Medium Enterprises (SMEs) or start-ups. As well we have to focus on activating and motivating new entrepreneurs so that this new spark helps the economy to adopt the coming up changes through the introduction of Artificial Intelligence very quickly.
- The Fourth Industrial Revolution technologies will play a key role to bring people together with the evolution of new technologies with the development of new tools. So, there is a need to create an environment facilitative for innovation and technological development.
- There is a need of vibrant policies in the field of economics, innovation, education, research and technology which will play a pivotal role in the promotion of Fourth Industrial Revolution in developing countries. We have to focus to develop a collaborative linkage between well-established Science, Technology and Innovation policy makers and institutions. As well we have to continuously evaluate existing Innovation Policy and renew them on a regular basis.

10. CONCLUSION

The fourth industrial revolution will definitely set a land-mark in re-shaping the global economy because it is based on the fusion of different type of technologies such as Robotics, Machine Learning, Data Science, Internet of Things (IoT), Cloud Computing, Augmented Reality, Additive Manufacturing (3 D printing) and Cyber Security.

Most of the developed countries are doing their best to achieve the vision of Fourth Industrial Revolution (FIR), but the developing countries are facing several technical and societal challenges on the way of responding to FIR. These developing countries are facing lots of technical challenges such as lack of infrastructure, shortage of trained and skilled work force, lack of self-organization and self-actualization, lack of collaboration between government and civil society, and lack of massive technology–market–society projects.

To cope up with the challenges of Fourth Industrial Revolution (FIR), it is needed to bring together all of them i.e. government, academia, business organizations, dynamic startups, and society of the developing countries.

A high degree of collaboration between various national and international research groups and organizations will be the communication channel with other forums such as the United Nations. FIR will, perhaps, be unique in terms of AI as it will be a ubiquitous technology during the forthcoming industrial revolution, since it enables entities and processes to become smart. Organizations and economies adopting AI strategically will enjoy a competitive advantage over those who do not incorporate this technology timely and adequately. Education and soft-skills development will play an essential chapter in AI strategies. In the coming years, deep learning will remain popular in AI research. AI will be applied incrementally in every research field and industry, producing substantial improvements. Still, the views on how AI will impact society and firms will remain controversial, similarly to the opinions on whether AI will outperform biological intelligence.

The fourth industrial revolution promises great benefits, but entails massive challenges and risks. It seems plausible but remote to achieve the common good globally, as this will require global collaboration and shared interests.

According to the survey conducted for this research paper it is concluded that very high skills workforce are required for FIR but at the ground level neither the organizations nor the Government are taking as such required efforts for upgrading the skills of existing employees as well for new recruiters.

Employees also feel insecurity with respect to their jobs due to the implementation of artificial intelligence software applications. Although the application of AI will be a great help in providing better customer satisfaction services and for the management in putting better control system but still there is a very low preparation to adopt the AI software system and rest all the technologies which are a part of Fourth Industrial Revolution.

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