

Automation in Accounting

(Subtheme of topic Automation in production, marketing and Human Resource Accounting)

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Abstract:- The world runs on automation, and work environments in various industries around the world are rapidly evolving. The fast developments in the accounting industry throughout the decades appear to be overpowering. To compete in a fast-paced environment across many business sectors, human resources in every firm must acquire specialised skill sets and adapt to challenges and changes. Automation had accelerated the pace of change in human existence and had a greater impact on employment prospects. It is an undeniable fact that automation has resulted in job losses in certain industries. Several manual work situations have become automated, which has displaced manual labour and employment in large numbers. Among other things, automation had resulted in greater job prospects. The purpose of the study was to see how 'Robotic Process Automation' (RPA) affects employment in India's accounting industry. It also emphasises human resources readiness with skills to meet the problems that come with Automation and its Employment Impact.

The goal of this thesis is to determine how automation is affecting the employability of Indian accountants. The study examines the potential implications of automation in the accounting industry, accounting skills, issues, and hurdles to deploying automation in accounting, as well as the benefits and challenges of automation. The thesis summarises the results of a study of Indian professional accountants to determine their willingness to adapt to new problems, attitudes about automation, and willingness to learn new skills.

The current thesis contributes to the development of India's accounting workforce by providing opportunities for them to obtain professional skills. Accounting organisations in India, corporate leaders, and anybody who works in or impacts accounting operations should evaluate the various components of professional growth addressed in this paper. The application of research findings may include educational improvements, methodology revisions, and national standards.

Keywords:- Accounting Skills, Automated Accounting Systems, Accounting Workforce, Robotic Process Automation, Indian Accounting.

I. INTRODUCTION

Businesses in numerous sectors have raised their standards and become more competitive, which has given rise to several reasons to cut organisational expenses, promote sustainability, and improve market efficiency. Accounting has evolved from a manual process to one that is largely automated. Every professional accountant's reputation and job are placed at the crossroads of artificial intelligence's highly skilled and integrated Automation process.

The purpose of this thesis is to learn how automation is benefiting the accounting sector's employability and overall tendency toward corporate growth, as well as the sort of adaptability gained by India's personnel. How crucial, on the other hand, is the skill match of human resources in the accounting profession who can use Automation techniques to overcome the rapid problems that Automation brings in Indian accounting?

The following are the research questions that the author has chosen:

- To determine the influence of automation on the accounting industry's employability.
- The elements that influence Automation in a favourable way.
- To assess the accounting workforce's acceptance of automation approaches.
- Is the accounting workforce equipped with the necessary skills to meet future difficulties posed by automation?
- To assess the future employability of accounting professionals.
- The author followed a series of instructions to fulfil the goal and research questions.

Finding answers to the following study questions needs careful planning, material arrangement, and survey execution. The author followed a specified set of steps to reach the goal and research questions:

Objectives	Tasks
<ul style="list-style-type: none"> • To determine the influence of automation on the accounting industry's employability 	<ul style="list-style-type: none"> • Questionnaire on the effects of Automation on accounting jobs. • Justify the accounting automation definition
<ul style="list-style-type: none"> • The elements that influence Automation in a favourable way 	<ul style="list-style-type: none"> • What are the primary advantages of automation, according to a survey?
<ul style="list-style-type: none"> • To assess the accounting work force's acceptance of automation technique 	<ul style="list-style-type: none"> • What prerequisites do you seek for in order to complete accounting duties in today's automated scenarios, according to survey
<ul style="list-style-type: none"> • Is the accounting workforce equipped with the necessary skills to meet future difficulties posed by Automation? 	<ul style="list-style-type: none"> • What pre requisites do you seek for in order to complete accounting duties in today's automated scenario's, according to survey? • Implementing automation in accounting presents a number of challenges and difficulties.
<ul style="list-style-type: none"> • To assess the future employability of accounting professionals 	<ul style="list-style-type: none"> • Questionnaire to determine where you believe automation is most useful in accounting tasks. • Analyze the data and draw conclusions about the influence of automation on India's accounting employability.

Table 1

II. THEORETICAL FOUNDATIONS OF ACCOUNTING AUTOMATION

Theoretical framework that explains the concept of automation and its application in the accounting profession. It provides a definition of the term Automation as well as a brief summary of Automation and its adoption in accounting around the world, as well as Indian accounting practices and Automation and its impact on the accounting sector in India.

A. Automation and its Implementation:

Since the early 2000s, the term "Robotic Process Automation" (RPA) has been in usage. 'Robotic Process Automation' (RPA) may appear to be a physical robot that performs human duties, but it is actually an automated software setup that does so (Lacity, Willcocks & Craig, 2015). RPA is a systematic procedure that combines computer programming kept in a computer store to automate manual activities, according to Bataller, Jacquot, and Torres (2018). Although there are considerable benefits to automating a process, it also comes with distinct imbalances in long-term human resource development, which can provide issues to personnel. Workers' health, education, security, equality, and a healthy environment could all benefit from good employment, allowing for a better standard of living and economic development.

B. Accounting automation and its implementation

Accounting automation had made complicated operations easier to understand. The programme, for example, has made complex ledger files and manually entering numerous data rows more easier. The reports may be prepared in a matter of seconds, and Automation seeks to make the process more efficient. It had reduced the amount of time an accountant spent processing large amounts of data, making the process easier and more efficient. Since the 1800s, accounting software has been in use. Accounting is an area where, as observed over many decades, there has been a steady progress in its functioning, and further, its Automation has taken over the pace.

C. Automation and its Possible Consequences:

A survey on the impact of automation on labour, "A future that works automation, employment, and productivity," published by the McKinsey Global Institute in January 2017, looked into data analytics, automation, and artificial intelligence (AI) and how they affect workforce patterns and the global economy. The belief that automation in the workplace will eliminate full employment is a misconception that is rarely supported by evidence. The McKinsey Global Institute, which was founded in 1990 as McKinsey & Co.'s research arm to obtain a better understanding of the changing global economy, claims that only about 5% of workers can today be entirely automated (McKinsey Global Institute, JANUARY 2017). Automation may have an influence on 60% of workers. In contrast to other polls that look at entire occupations, this one concentrates on job activities and draws more detailed conclusions about the future of human labour.

D. Review of the Literature

According to a widely cited research by (Carl Benedikt & Michael A. Osborne, January 2017), approximately half of all employment in the United States are at risk of being automated, with an estimated chance of 0.94 for accountants and auditors.

It also shows that, unlike low-skill positions, which were thought to be threatened by factory automation in the late 20th century, even high-skill jobs with cognitive capacities are at risk of being automated (Carl Benedikt & Michael A. Osborne, January 2017). Many jobs are being mechanised, which could result in employment loss.

Figure 1 depicts the possibility for finance tasks to be automated, including back-office functions. (April 2018: The rise of accounting automation.) Financial and accounting technicians, finance managers, finance account managers, and payroll managers all have a high weighted chance of automation.

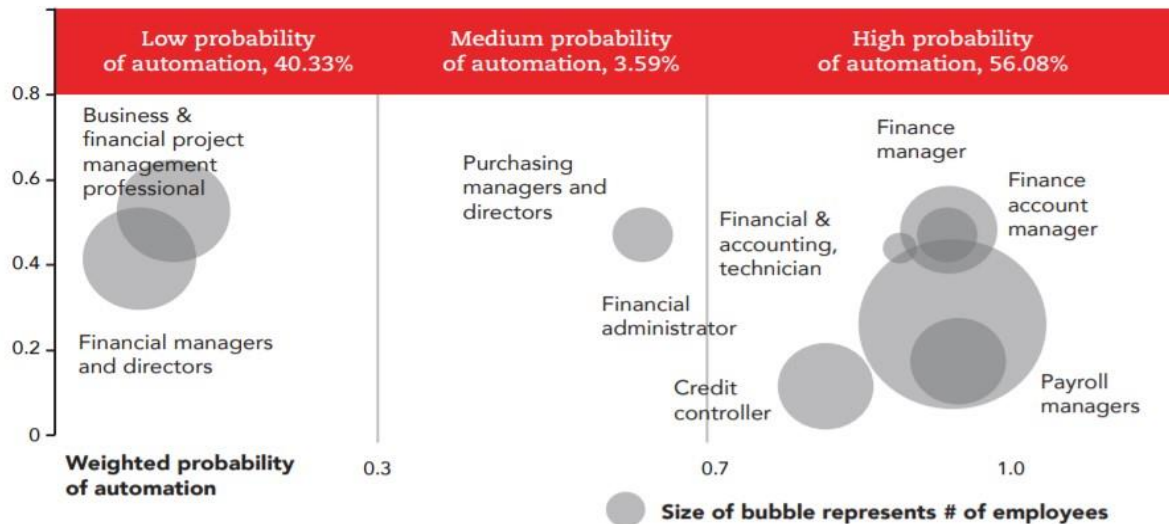


Fig. 1: depicts the possibility for finance tasks to be automated, including back-office functions. (April, The Rise of Accounting Automation)

E. The influence of automation on global and Indian economic growth

The Case for Action on Automation and a Shifting Economy discusses the history of automation and how it will affect worker economic security and opportunities in the future. While automation promotes economic growth, job creation, and higher living standards, it also poses significant challenges for workers and communities, such as job loss, local economic disruption, changing skill demands, and rising inequality.

Artificial intelligence and other new technologies could emerge as a result of more profound, faster, more comprehensive, and disruptive automation. To justify stronger governmental intervention in the future, automation does not need to be more disruptive than it has been in the past, but it is ne

cessary since increased automation disruption could occur soon.

F. Accounting knowledge

Employees may need to learn new skills as they work with robotics, and additional responsibilities or role alterations may be required. Many procedures have been optimised as a result of implementing RPA in the app'purchase to pay,' changing the job from repetitive and manual to tracking tasks that only require human interaction in decision-making.

Accounting, unlike many other occupations, requires mathematics as well as communication, interpersonal, organisational, personal, and intellectual abilities, as well as technical skills, which involve hands-on experience with a variety of software. In general, the figure below depicts several sorts of cognitive and behavioural abilities.

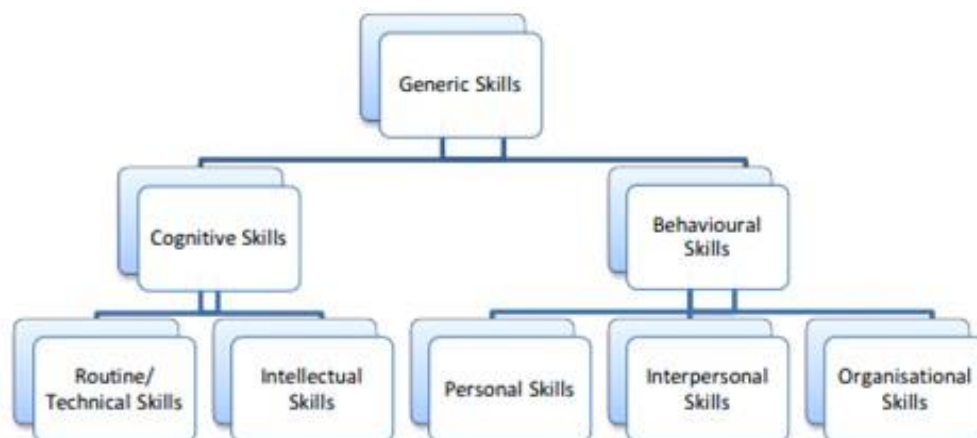


Fig. 2: Skill framework

Source: (Britton & Atkinson, DG, 2017)

Accounting, as seen in Figure 2, necessitates both specialised hard skills and soft skills/generic abilities. Cognitive (technical and intellectual capabilities) and behavioural skills are examples of generic skills. Analytical

skills include the ability to compare and comprehend figures and data. Auditors, for example, examine data when examining finances and their use.

G. Obstacles and challenges in applying accounting automation

When it comes to automating current processes, organisations may confront a number of problems. This could involve concerns with data quality, cyber security, data leaking, and privacy, as well as the high expenses of using automation. Impact of bot-related processing errors, bot-related errors can lead to incorrect results (which may necessitate changes in software programming), as well as an increase in the number of errors and mistakes. Other challenges include the demand for and importance of highly skilled labour, which is currently a widespread issue in every industry. This may necessitate further training for current human resources or requalification of personnel.

Companies must spend a lot of money to hire professional consultants to increase staff abilities, which may involve more work, time, and money from the company. This can be extremely difficult for businesses to adopt. These have drawbacks, and while organisational management may attempt alternative solutions in these instances, existing human resources may be forced to lose their jobs as a result.

Accounting operations are more closely related to the organization's accounting positions. Accounting lecturers are being urged to modify their attitudes and increase the knowledge and abilities required for smart technology and its extended business applications, given how AI affects and will continue to affect the accountant's position. The accounting courses will be examined, and graduates who intend to pursue a career in accounting will be considered.



Fig. 3: Areas of AI impact on accounting profession

Source: (Stewart, 2015)

Figure 3 depicts the areas of the accounting profession that are most impacted by the implementation, such as skill upgradation, which may be achievable with work force education and training, but which also adds to the organization's expense.

H. Advantages of Computerized Accounting Systems

- **Time saving** : Automation in a process saves time, which contributes to the company's real advantage. It assists the firm in saving time for a more productive job by utilising simple data processing techniques and decreasing manual effort. The most major benefit of automation for accountants is at financial close. Using a spend management tool, for example, can help you manage expenses and other costs (helps the company track its fees and additional charges). An employee from a team could request payment by providing the required information, such as receipts, documentation, and so on. It all contributes to making things simple and quick.
- **Efficiency**: As time is saved, greater productivity can be achieved, allowing for more time with Automation.
- **Data accuracy**: Accounting software can quickly report multiple ledger entries, ensuring that no data is mishandled.

- **Fast data retrieval**: There are days when accountants have to go through a large stack of paperwork in storage rooms, and retrieving and reviewing documents from storage rooms takes longer. But with new tools, it's even better, because automation makes it simple to store, organize, and locate ledger items.
- **Secure storage**: Government tax offices and many businesses have reduced the amount of data stored on paper records over the years. Data storage has become simple to achieve using digital means or copies. Cloud storage has largely replaced the use of USB sticks and floppy discs, allowing access to software and files from anywhere in the world.
- **Real-time process integration**: Using an accounting platform, it is always possible to digitise a company's procedures. Payroll, for example, can be integrated with spend management software, allowing for accurate and timely data transfer from one place to another. RPA has the ability to change the way business processes, IT processes, and workflow processes are thought about (IRPA 2014). To make operations easier, the finance process and accounting systems can be kept simultaneously on cloud storage.

I. Future challenges in the accounting profession due to automation

Using profound learning models, large amounts of unstructured knowledge, such as emails, contracts, diagrams, photos, blogs, and so on, can be greatly increased. The study is also a huge success. Industry-specific big data sets can provide fresh insights and lead to enhanced decision-making and business strategy solutions. Big Data Analytics necessitates unique technology and new work abilities due to its diversified and dynamic existence and scope. Accounting professionals are expected to develop these skills through suitable preparation and education. The concept of continuous learning is a key to making a major shift to the ever-changing competency expectations.

J. Accounting skills and their applicability:

Many countries have begun to adapt to automation through educational policies that encourage workers to enhance soft skills while also learning STEM (Science, Technology, Engineering, and Mathematics) in school. The graph below depicts the educational policy of many countries throughout the world. (Company ABB, 2018). ABB looked at automation through educational policy and the rate of automation in countries, both developed and developing, and found that developed countries had a high use of automated systems. Developing countries, on the other hand, have fewer resources to invest in research, despite the fact that there is a lot of room for progress in these countries. Education policies are a significant component that differs throughout countries.

K. Companies' Attitudes Toward Automation

Employees are the major stakeholders in an organisation, and they have a significant impact on its success and failure. As a result, learning about staff abilities is critical in the face of increased automation in the financial management sector, which is particularly vulnerable to change. As a result, an employee must improve their abilities in order to overcome the problems that Automation presents, and it is equally vital for a company to manage its employees in order to prepare talent to achieve the productivity that the company requires.

III. METHODOLOGY

This chapter begins with the survey's preparation and description. The author discusses the sample design and rationale for selecting it, the questionnaire supplied to respondents, and the survey channels in the methodology section. The survey results, conclusions, and implications are then thoroughly examined.

A. METHOD OF DATA COLLECTION AND SURVEY:

Because questionnaire data is widely accessible by many participants, the author has chosen the survey as the study technique, giving individual attention to their personnel experiences. Other methods are ineffective for a variety of reasons, the first of which is the limited number of times. Second, the researcher can effectively use the research instrument with the survey method because a questionnaire contains both open-ended and closed-ended questions. A five-point Likert scale is used to gauge the respondent's viewpoint.

The processes for preparing and collecting data using the survey method are listed below in order:

- Create an online questionnaire based on a conceptual framework and local expectations;
- Conduct an online survey;
- Analyze the results and draw conclusions about the influence of automation on India's accounting employability.

a) Data and methods

Professional accountants in private and public enterprises were the study's target population. Non-accounting candidates will not be considered because this position is only focused on the impact of automation on the accounting industry. Accounting groups are skilled with awareness of real-time accounting technical knowledge, and automation in accounting is regarded to be a continual process across working contexts, according to the literature review. As a result, they are the study's target audience. Non-practitioners being surveyed may cause results and conclusions to be skewed. Only practitioners - those who deal with accounting on a daily basis and are expected to encounter a variety of issues - can assess the impact of automation on employment.

The following types of questions were used: 1) A single choice inquiry is one in which the respondent selects one option from a list. There were a total of five of these questions. 2) A multiple-choice question, in which the respondent had to select one answer from each column. There have been five such inquiries. 3) Linear scale question: respondents must choose a rate from a plate. There were a total of 22 of these questions. Two people were chosen, and the questionnaire was validated on them: an accountant assistant and a top accountant in a government agency. Following the completion of the test, the author conducted a pilot run to ensure that the questionnaire would be clear to the audience. Minor changes to the phrasing of several questions were made for testing purposes. In addition, the questionnaire structure was redesigned for consistency and navigational simplicity.

The key dissemination platforms for the poll were social media, professional accountant organisations, and communities linked with accountants from various Indian businesses. These organisations publish frequent accounting news, as well as current legislation, technology, and other related information. Because of their reputation, the feed attracts a large number of accounting professionals. Facebook and Gmail are the most popular social media platforms in India. The author approached the managers of the professional communities and got their permission to publish about the ongoing survey. The following is a list of all the groups where the author announced the survey. The survey was open for 18 days, from November 11th to November 28th, 2020.

Table 1 depicts the key features of the accountant population that were considered or not when designing the sample for a survey. As demonstrated in Table 1, there were no preferences given to sex, geography, or economic sector among

the audience demographics. Aside from occupation, the accountants were studied based on their age, job position, amount of education, working experience, and the type of business they worked for.

Sample Feature	Consider while you're signing the sam ration.		Justification
	Yes	No	
Sex		No	There are no preferences among participants in terms of sex.
Age	Yes		The age of the children was used to separate them.
Education is complete.	Yes		The age of the children was used to separate them.
Occupation	Yes		Only accountants who work for businesses and government agencies are considered professional accountants.
Job Description	Yes		Senior manager, Mid-level manager, Executive, Intern
Type of business entity	Yes		Private sector, Public sector, Self employed
Sector of Economy		No	No preferences, accountant can represent any field
Work experience	Yes		Senior manager, Mid-level manager, Executive, Intern, Student
Region of India		No	No preference towards location

Table 2: Displays the characteristics of survey sample questions

Source: prepared by the author

b) Discussion of the findings

The results were broken down into smaller blocks for study, which allows for a more focused and professional investigation of a field or problem. This enables external readers to go through survey results more qu

ickly and efficiently.

c) Analysis of Demographics

Understanding the profiles of respondents is required before proceeding with the examination of significant survey findings. Age, employment status, employment type, and level of employment are all factors in demographic analysis.

No of responses (% of total)	
Age	49 (41 %)
<25	
26-35	39 (33 %)
36-45	18 (15 %)
≥46	12 (10 %)
Total	118
Employment Status	
Professional employee	62 (52 %)
Vocational employee	24 (20 %)
Student	32 (27 %)
Total	118
Employment type	
Private sector	40 (33 %)
Public sector	19 (16 %)
Self employed	7 (5 %)
Intern	37 (31 %)
Student	15 (12 %)

Total	118
Level of Employment	
Senior manager	24 (20 %)
Mid-level manager	27 (23 %)
Executive	30 (25 %)
Intern	38 (32 %)
Total	118

Table 3: Profiles of respondents were distributed.

Source: prepared by the author

Table 3 shows the characteristics of different demographic groups. Accounting professionals were the study's target audience. Professional accountants contributed 118 responses, accounting for 64 percent of all respondents (including Senior managers, Mid-level managers, and Executives), with Accountant Interns accounting for 32 percent.

d) Answers to the question "Impact of Automation on Accounting Sector Employability."

The survey results are shown in the table below, which includes accountant responses to some of the survey questions, such as automation having a positive impact on the accounting industry, increasing the rate of employment, improving business, and thus employability, but underlining features come with some challenges that require skill upgradation of employees to the changes.

Characteristic	1-Strongly disagree	2-Disagree Somewhat	3-Neither Agree nor Disagree	4-Agree	5-Strongly agree
I see automation as a threat to employment?	43 (36 %)	44 (37 %)	17 (14 %)	10 (8 %)	4 (3 %)
I believe automation is making significant impact on accounting in recent times.	3 (2 %)	8 (6 %)	10 (8 %)	52 (44 %)	45 (38 %)
I agree automation brings a positive change in accounting/finance industry.	4 (3 %)	4 (3 %)	9 (7 %)	53 (44 %)	48 (40 %)
I believe automation increase the rate of employment.	3 (2 %)	10 (8 %)	20 (16 %)	42 (35 %)	44 (37 %)
I believe automation results in losing jobs among accounting sector.	28 (23 %)	32 (27 %)	19 (16 %)	27 (22 %)	12 (10 %)
I am aware of the skills required in accounting job.	5 (4 %)	8 (6 %)	17 (14 %)	49 (41%)	39 (33 %)
My education had taught me the required skills for accounting job.	5 (4 %)	16 (13 %)	19 (16 %)	38 (32%)	40 (33 %)
I lack in certain skills which are required for real time employment.	13 (11 %)	9 (7 %)	22 (18 %)	37 (31%)	37 (31 %)
I believe and accept automation improves the overall business thus employability.	3 (2 %)	4 (3 %)	11 (9 %)	43 (36%)	57 (48 %)
Automation can be more challenging and requires more skills in near future.	6 (5 %)	2 (1 %)	15 (12 %)	39 (33%)	56 (47 %)

Table 4: The Effects of Automation on Accounting Jobs

Source: prepared by the author

Table 4 summarises and displays the average score obtained from the responses in general. Most of them believe that, as a result of automation, accounting will face more issues.

Characteristics	1-Strongly disagree	2-Disagree Somewhat	3-Neither Agree nor Disagree	4-Agree	5-Strongly agree
Time consuming	16 (13 %)	51 (43 %)	16 (13 %)	27 (22%)	8 (6 %)
High costs associated with implementation	14 (11 %)	29 (24 %)	21 (17 %)	35 (29%)	19 (16%)
Requires requalification of labor	13 (11 %)	19 (16 %)	27 (22 %)	32 (27%)	27 (22%)
Requires changes in accounting software	13 (11 %)	17 (14 %)	20 (16 %)	42 (35%)	26 (22%)
Increase number of errors and mistakes	27 (22 %)	31 (26 %)	31 (26 %)	21 (17%)	8 (6%)

Table 5: Implementing automation in the accounting business has a number of challenges.

Source: prepared by the author.

e) To determine the impact of automation on the employability of the accounting sector. The attitude of employees toward automation. Participants in this study agree and accept that automation has an impact on the labour market and consequently enhances employability. They do not believe it poses a threat to their livelihood. As a result, they will not be laid off from their accounting employment. It's also worth mentioning that the usual, fear-based narrative surrounding automation

ignores the good transformation that occurs as new technology evolves and adapts.

Overall, accounting workforce thinking is seen to be linked to four mechanisms that effect employment, as follows: (Stewart, 2015). Furthermore, greater technology expands the market and then labour, lowering production costs and allowing consumers to spend more on goods and services, so increasing labour demand indirectly.

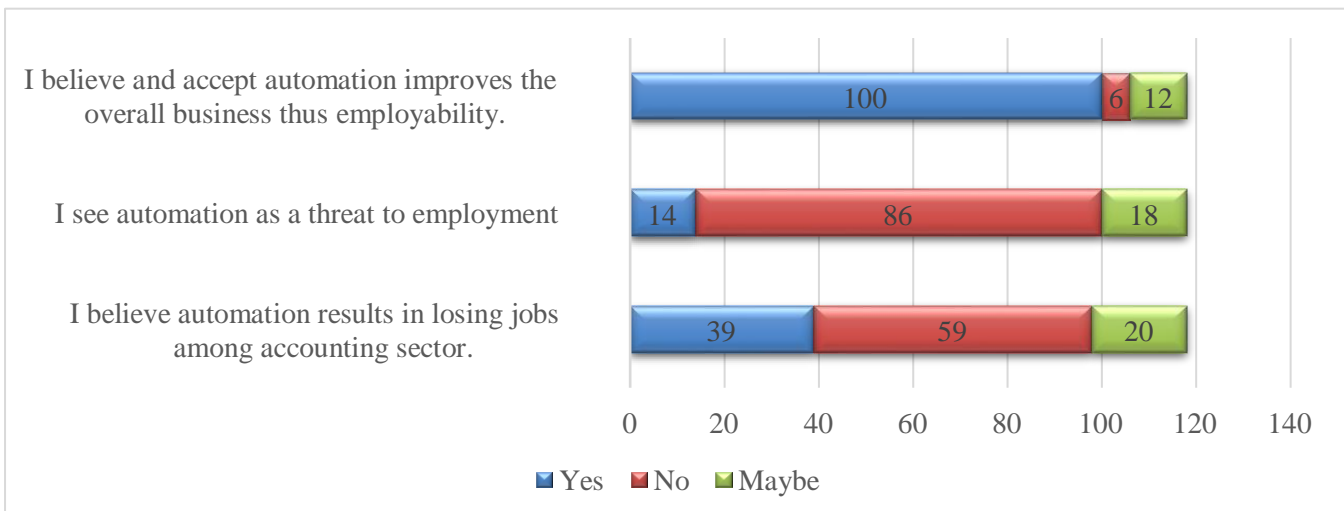


Fig. 4

IV. SUGGESTIONS AND CONCLUSION

The goal of this article was to determine the adherence to and the impact of automation on employability in Indian accounting profession, as well as a set of research questions stated at the start. For this objective, the author conducted a thorough investigation into the methodological framework of Impact, Benefits, Obstacles to Automation, and Requirements for Automated Tasks, as well as developing and launching an online questionnaire aimed at professional accountants in India.

Automation had a favourable impact on employee efficiency by decreasing repetitive chores and increasing the time efficiency of applying to higher qualitative decision-making duties. Professional workers' main opponents in the previous decades have been technology and constantly emerging inventions that would render human jobs obsolete.

V. THE RESULTS OF THE POLL, AS ANALYSED AND EXPLAINED ABOVE, ALLOW US TO DRAW THE FOLLOWING CONCLUSIONS

In conclusion, employability is expected to increase and encourage human resources in the not-too-distant future. The key is employee skill sets, which can help enhance the outcome of issues, but every challenge can be turned into a business and professional opportunity. In accounting and finance, adaptability and flexibility were regarded as essential qualities. This, however, comes with a slew of challenges and difficulties. Accounting professionals must be well informed about the technological developments that are anticipated to occur as a result of rapid environmental changes. In India, the accounting profession is expected to be quite difficult. As a result, unemployment is expected to be low, which is consistent with the Accounting profession. Employees' positive attitudes toward automation and its impact on employment are demonstrating success in the accounting industry, both in terms of business and

employability, according to this study. Automation is thought to be the sole answer that can better satisfy the expanding needs of businesses with greater capacities, and it could lead to more fast changes in the near future.

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