

 OPEN ACCESS

Manuscript ID:  
IJEBAMPSR-2024-  
010101

Volume: 1

Issue: 1

Month: October

Year: 2024

E-ISSN: 3065-9140

Submitted: 15-Aug-2024

Revised: 30-Aug-2024

Accepted: 15-Oct-2024

Published: 31-Oct-2024

DOI:

10.5281/zenodo.14230884



This work is licensed under a Creative Commons Attribution 4.0 International

Address for

correspondence: Ms.

Ashima Joseph, C/o- Mr. Manoj Varghese, Plot No. 40, F/2, Carmel Enclave, Popular Society, Besides Mission India, Opposite to Wadi Naka No.10, District Nagpur, Maharashtra, India, Pin- 440023

Email:

ashimavarghese8@gmail.com

# Technology Adoption and Upskilling to Manage Employee Attrition in It Companies: A Correspondence Analysis

Ashima Joseph<sup>1</sup>, Dr. Anand Muley<sup>2</sup>

<sup>1</sup> Research Scholar, Department of Business Management, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, Maharashtra, India  
ORCID ID: 0009-0003-9006-2036

<sup>2</sup> Research Supervisor, Department of Business Management, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur, India.

## Abstract

The process through which individuals or companies embrace and employ new technologies is known as technology adoption. The IT industry was one of the first to employ digitalization. The main purpose of this research is to ascertain the preferences of IT employees for various digital skill sets. The relationship between soft skills & competencies and the advantages they offer to stay longer is a further objective of this study. The researchers employed a well-designed questionnaire to gather data for this study from 201 IT professionals of Nagpur city. A correspondence analysis was performed to determine the relationships between the aforementioned variables. The Statistical Package for Social Science (SPSS - 21) was used to analyse the data. According to the findings, IT professionals would rather acquire skills in artificial intelligence, machine learning, cyber security, cloud computing, and data science in order to advance their professional prospects and to seek pay increases. The relationship between different soft competencies such as communication, collaboration, problem-solving, creativity, critical thinking and their associated advantages such as advancement, career development, and confidence-building is demonstrated by the joint correspondence plot. Researchers concluded that IT companies which embrace and make investments in technology adoption increase their operational effectiveness, acquire a competitive edge, and effectively handle employee attrition.

**Keywords:** Technology Adoption, IT Sector, Employee Attrition, Correspondence Analysis, Digital Skills, Soft skills, IT Companies, Employee Turnover

## Introduction

### Technology Adoption:

The process of involving and empowering significant stakeholders to incorporate and apply new technologies into business processes, workflows, and strategies is known as technology adoption. The IT industry was one of the first to employ digitalization. Technology adoption is now a necessary investment for IT businesses looking to succeed over the long run. In a constantly evolving digital landscape, businesses may take leverage of new opportunities, maximize productivity, and future-proof their operations by using technology intelligently. According to (Li, 2022), 50% of the workforce is expected to upskill by 2025 as an outcome of the adoption of new technologies. More than two thirds of the skills needed for jobs in today's market will change in five years. Isolde Kanikani (plat4mation) [12] explored the reasons and advantages of prioritising technology adoption.

### The need and reasons:

Competitive Advantage: Businesses that embrace technology can set themselves apart from competitors by providing cutting-edge goods, services, and solutions.

## How to Cite this Article:

Joseph, A., & Muley, A. (2024). Technology Adoption and Upskilling to Manage Employee Attrition in It Companies: A Correspondence Analysis. *International Journal of Economics, Business, Accounting, Agriculture and Management Towards Paradigm Shift in Research*, 1(1), 1–9. <https://doi.org/10.5281/zenodo.14230884>

**Enhanced Productivity and Efficiency:** The implementation of technology can lead to improved productivity and operational efficiency by utilizing data-driven insights, automating repetitive operations, and optimizing workflows. Employee concentration on high-value tasks promotes development and profitability.

**Improved Customer Experience:** Companies that use technology effectively may provide convenient, easy, and customized customer experiences by ensuring that their applications and services are always available and responsive. Examples of this technology include chatbots, self-service portals, and targeted marketing campaigns.

**Cost Savings:** Although adopting new technology necessitates an initial outlay of funds, there are frequently large long-term cost savings. Automation cuts labour expenses, gets rid of inefficiencies, and decreases manual errors.

#### Advantages of investing:

**Enhanced Accuracy and Performance:** Process automation and digitization lower manual error rates, expedite workflows, and improve accuracy. IT companies are able to achieve more with fewer resources as a result of the increase in total performance.

**Data-Driven Decision Making:** Adopting technology gives access to a wealth of data and robust analytics capabilities. IT companies may find patterns, make well-informed decisions, and use data insights to identify new growth opportunities.

**Scalability and Flexibility:** Such systems may allow companies to quickly adapt to changing market conditions and customer demands.

**Enhanced Security:** Investing money in strong cybersecurity defences, protects important company information from attacks and weaknesses. This shields IT businesses against possible monetary losses and harm to their brand.

**Competitive Edge and Innovation:** IT companies may create new software products, services, and business models by embracing technology adoption, which stimulates innovation. They may outperform competitors and prosper in dynamic markets by staying ahead of the technological curve.

#### Upskilling:

As adapted from M. Binkley et al. "21st century skills, including digital skills, are also defined by UNESCO as creativity and innovation, critical thinking, problem solving, decision making, learning to learn metacognition, communication, collaboration, and information literacy."

(Minor, 2024) emphasized that the skills gaps in AR, VR, artificial intelligence, and robotics are the largest at the moment, indicating that future need for professionals with training in these domains will rise. As demonstrated by the substantial decline in the proportion of companies forecasting that having expertise in AI & robotics (40%) and AR/VR (63%) will be necessary. There is a need to get customized training techniques that emphasize digital proficiencies and transferable skills in order to lay the foundation for a larger range of IT businesses to adopt these technologies.

**Figure 1.** Global demand for Digital skills



**Source:** <https://nasscom.in/knowledge-centre/facts-figures>

In two-fifths of the gaps that were found, the absence of underlying digital abilities was linked to the lack of "people and soft skills" as per the Industrial Strategy Council (2019); (Minor, 2024). It predicted that by 2030, 5 million workers will probably be "acutely under-skilled" in basic digital capabilities, and that two-thirds of the workforce may suffer from some form of digital under-skilling. This is especially concerning as the rate at which technology is being digitalized and adapted is accelerating; according to the World Economic Forum (2020) [19] [20], 90% of occupations in the future will require digital skills.

According to the NASSCOM [10] Annual Strategic Review report, the technology sector in India surpasses \$250 billion in revenue annually. The industry is predicted to expand at a slower rate of 3.8% to reach \$253.9 billion by the end of the fiscal year 2023–24. Figure 1. displays the global demand for digital skills like cloud computing, AI, machine learning, data analysis, coding etc. Hence, IT specialists with these skills will be in great demand in India and abroad.

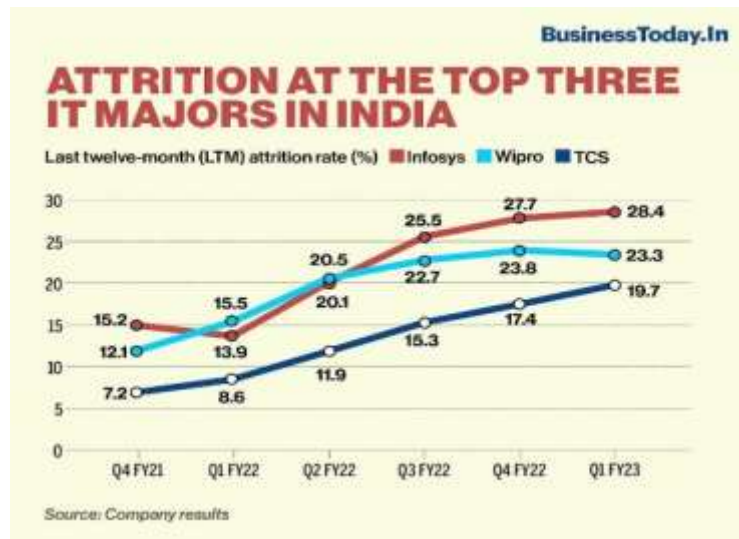
**Employee Attrition:**

According to (Shine David, 2015) the term "attrition" is described as the process of reducing an organization's workforce. It happens when an employee retires, resigns, or passes away. When an employee's expectations are not satisfied by the organization as compensation for the services they

obtain, attrition occurs. Employee turnover is influenced by a number of factors, including pay, benefits offered by the employer, job stress, work environment, and job satisfaction.

The departure of significant people would have an enormous impact on the brand's financial and organizational growth, as IT sector is a vital component of India's economic development. According to LinkedIn, Infosys had the highest attrition rate among Indian IT companies in 2022-23, at 28.4%. Wipro was second at 23.3% and TCS was at 19.7%, as displayed in Figure 2. However, attrition rates have been declining for the past couple of quarters, from 24-26% to 20-21% over the last year. For example, Infosys' attrition rate dropped from 28.4% in Q1 FY23 to 20.9% in Q4 FY23.

**Figure 2.** Attrition rates in Top IT companies in India



**Source:** BusinessToday.in

Indian IT businesses need to evaluate their approaches to workforce retention and attrition. (Kumar, Raja, & Ranjith, 2015) summed up the requirements for retaining employees as follows: adequate compensation, ample opportunities for professional growth and progress, challenging work that makes efficient use of employees' skills, and competent technical guidance.

To fight attrition, TCS is preparing talent engagement and online learning programs. Infosys implemented a number of beneficial improvements in response to employee feedback. Wipro offers a robust framework for employee engagement via PULSE, EAG, Mitr, and the Ombudsman process.

**Literature Review**

The intensely competitive IT sector has an enormous demand for competent employees as they deal with a new workforce retention issue. They train and upskill their staff in technological skills for the future in order to manage attrition, according to (Pallathadka, et al., 2021).

(Adeyinka-Ojo, Lee, Abdullah, & Teo, 2020) distinguished between employability skills and more transferable skills that are not connected to any particular technology. The first category of competencies is known as "industry practitioner and employability skills," and the second is associated with the utilization of specific technologies and is dubbed "digital literacy and technologies." These skills might be classified as "hard" or "soft." The former encompasses a range of competencies, including communication, problem-solving, critical thinking, and continuous improvement. These seem a lot like the list of digital abilities provided by (Ferrari, Punie, & Brečko, 2013) which includes technical operations, communication and sharing, and information management. On the other hand, technical, operational, strategic, and fundamental work skills are considered "hard" skills.

(Sousa & Rocha, 2019), emphasised on distinct skill sets that were needed for various technologies.

The authors observed that a person will require distinct skills based on whether they work with internal IT technologies (such as analytics, search engine optimization, competitive intelligence, and social media monitoring) (Minor, 2024) or external IT technologies (such as websites, advertisements, landing pages, email campaigns, and cloud storage).

Furthermore, research by (Gui, 2007); (van Deursen & van Dijk, 2008); (Minor, 2024) indicated that the proportion of people with low digital skills increases significantly when employment and socioeconomic status are taken into account. These studies also highlighted the fact that people's digital gaps vary depending on their geographic location as well as their economic and educational circumstances.

Authors (van Deursen & van Dijk, 2008); (Saikkonen & Kaarakainen, 2021) mentioned unequal chances frequently lead to disparities in access to digital technologies and an uneven allocation of resources, which in turn causes varying levels of societal engagement.

## Research Methodology

### Correspondence Analysis method:

The researchers use Greenacre's [5] and Benzecri's [3] classic texts for a thorough explanation of this method. A descriptive method of factoring categorical variables and mapping their connection in two or more dimensions is called Correspondence Analysis (CA). It can be applied in situations when the highly complicated, huge tables make the contingency table approach less successful. Thus, tabular data, often two-way cross-classifications, is where CA begins, as per (András Farkas & Nagy, 2008). Given two points, which represent values or categories of discrete variables, a distance measure between any two points is defined. The dissimilarity (or similarity) of the frequencies in each table cell is determined by CA using chi-square distances. After that, the frequencies in the cross-tabulation table are standardized so that the sum of the relative frequencies in each cell is equal to one. Representing the values in the relative frequency table in terms of the separations between specific rows and/or columns in a two-dimensional, low-dimensional space is the aim of this type of analysis. This is accomplished by factoring the chi-square distance matrix's basic structure (using singular value decomposition), which yields a set of row vectors, column vectors, and singular values. The process asks the researcher to select one of many normalizing techniques at this stage. In order to provide scores for each participant and each variable, the CA finally scales the vectors. These scores are plotted to illustrate which category values are closest to one another in a visual display. This graphical representation of

low-dimensional solutions, which allows the researchers to compare row and/or column variables (after principal normalization) as well as row and column variables (after symmetrical normalization) in their relative placement in shared low-dimensional space, is the interpretive strength of CA, according to Greenacre [5] and Benzecri [3].

### Objectives of the study:

1. To investigate the association between preferred digital skill sets by IT employees and the causes for their development through Correspondence Analysis
2. To ascertain the association between the kinds of soft skills or competencies that IT employees have acquired and their perceived advantages. \

### Research Hypotheses:

H1: There is no association between preferred digital skill sets and the causes for their development by IT employees

H2: There is no association between soft skills or competencies developed by IT employees and their perceived advantages

## The Research Method

### Sampling:

To collect the data, 201 IT professionals from Nagpur, Maharashtra, India were surveyed. Table 1. displays the samples' profiles. The approaches of availability sampling and purposive sampling were used to choose the respondents at the end. Based on their desire to actively participate in the study, the respondents were selected.

### Measure:

A well-structured questionnaire that the researchers had created to obtain pertinent information was used to collect primary data. There are three distinct components to the questionnaire. The first section's questions focused on sociodemographic factors such as age, gender, and technology adoption programs. It also covered digital skills and employee attrition, as well as upgrading skill sets and a sustainable future. The second section of the study examined the preferences of IT workers for learning digital skills (Cyber Security, Cloud Computing, Artificial Intelligence, Machine Learning, and Data Science) for a variety of reasons, including pay increases, job security, career advancement, feeling of accomplishment, and professional development. The third section of the survey asked questions about the preferences of IT workers for new soft skills or competencies, such as critical thinking, collaboration, creativity, problem-solving, & communication skills, as well as their perceptions of the advantages of these competencies, such as career development, confidence-building, job security, promotion, and increments & perks in

salary. The questions came in both multiple-choice and check-list formats. The participants were requested to indicate the skills they would typically like to upgrade by checking the appropriate box.

**Data Collection:**

An online survey was used to collect the necessary data. The survey was converted into a google form and shared with the IT professionals on Facebook, WhatsApp and among other social media platforms.

**Descriptive statistics:**

A total of 201 IT professionals in the Nagpur region provided the original data. Table 1. The sociodemographic profile of respondents shows that there were 49% female respondents and 51% male respondents in the sample. 97% of the

participants were between the ages of 21 and 30; 0.50 percent were between the ages of 31 and 40; 1.49% were between the ages of 41 and 50; and 1.00% were between the ages of 51 and 60.

When asked if their company offered training for technology adoption programs, 40.30% of respondents said "yes," 18.41% said "no," and 41.29% said "not sure".

Do upgrading skill sets create sustainable future in IT? roughly 67.66% of respondents said "yes," 13.93% said "no," and 18.41% said "not sure."

When asked, whether acquiring new digital skills reduce employee turnover and attrition in IT companies? Over 56.22% of respondents said "yes," 12.93% said "no," and 30.85% said they weren't sure.

**Table 1. Sociodemographic profile of respondents in the conducted survey**

Characteristics	Number of Respondents	Percent (%)
<b>Gender</b>		
Male	103	51.24
Female	98	48.76
Total	201	100.00
<b>Age</b>		
21-30	195	97.01
31-40	1	0.50
41-50	3	1.49
51-60	2	1.00
Total	201	100.00
<b>Technology Adoption Programs by Company</b>		
Yes	81	40.30
No	37	18.41
Not Sure	83	41.29
Total	201	100.00
<b>Upgrading Skill Sets create Sustainable Future in IT</b>		
Yes	136	67.66
No	28	13.93
Not Sure	37	18.41
Total	201	100.00
<b>Upskilling Digital skills minimize Employees Attrition</b>		
Yes	113	56.22
No	26	12.93
Not Sure	62	30.85
Total	201	100.00
<b>City</b>		
Nagpur	201	100.00

**Data Analysis:**

**(1) Association between employee preferences and digital skills:**

A correspondence analysis was conducted to investigate the correlation between the

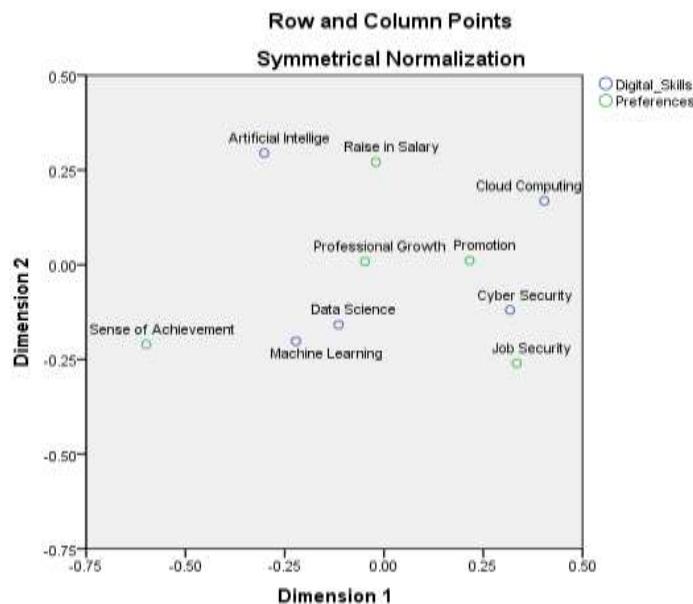
employees' digital skill sets and their intentions for further skill development. The computer program SPSS was utilized to analyse the answers. Table 2. and Figure 3. provide the results of CA.

Table 2. Contingency Table						
Top Digital Skills	Preferences by IT Employees					
	Raise in Salary	Job Security	Promotion	Professional Growth	Sense of Achievement	Active Margin
Artificial Intelligence	144	72	74	97	73	460
Machine Learning	115	81	67	90	71	424
Cyber Security	102	82	70	78	45	377
Cloud Computing	123	86	75	83	42	409
Data Science	126	87	78	94	72	457
Active Margin	610	408	364	442	303	2127

The employees' choices for improving their digital abilities for a variety of reasons are shown in Table 2.

relationship between the different kinds of digital abilities and the intentions behind obtaining them is demonstrated by the joint correspondence plot.

In Figure 3. a combined correspondence plot of symmetrical normalization is displayed. The



**Figure 3.** Correspondence Perpetual Mapping of Employee Preferences and Digital Skill Types

Interpreting the meaning of the dimensions that were retrieved from employee preferences and digital skills in relation to those dimensions is the main focus. The primary analytical outcome is displayed in Figure 3. Nearly 95% of the original data is contained in this biplot, a perceptual map in two dimensions. This correspondence plot makes it easy to ascertain which skill sets are most essential, how the distances between the skills are measured compared to one another, and what kinds of correlations exist between them. The correspondence analysis's findings indicate that:

- IT workers would prefer to adopt technology related to artificial intelligence to ensure raise in salary and professional growth.
- In order to secure promotion and salary hike, IT staff would rather become proficient in cloud computing. The next two motives are found to be career progression and job stability.
- To make certain about promotion and job security, employees would prefer to develop become skilled in cyber security.
- IT professionals would prefer to acquire data science skills in order to advance their careers professionally. Additionally, they want to hone these abilities for the sake of increments and job security.

- The employees prefer to master machine learning abilities for job security, promotion and to get sense of achievement.

(2) Association between soft skills or competencies and their perceived advantages:

CA was performed again to ascertain the association between the employees' respective perceived advantages and the kinds of soft skills or competencies they had developed. The results of CA are provided in Table 3. and Figure 4.

Soft Skills or Competencies	Perceived Advantages					
	Increments & Perks	Job Security	Job Promotion	Career Development	Confidence Building	Active Margin
Critical Thinking Skills	105	73	61	101	82	422
Collaboration	85	72	62	88	79	386
Creativity	116	78	73	103	74	444
Problem Solving Skills	125	93	70	95	80	463
Communication	112	91	69	94	113	479
Active Margin	543	407	335	481	428	2194

The employees' preferences for developing different soft skills and their perceived advantages are shown in Table 3. In Figure 4, a combined correspondence plot of symmetrical normalization is displayed. The

relationship between different soft skills or competencies and the perceived advantages that employees believe they offer is displayed in the joint correspondence plot.

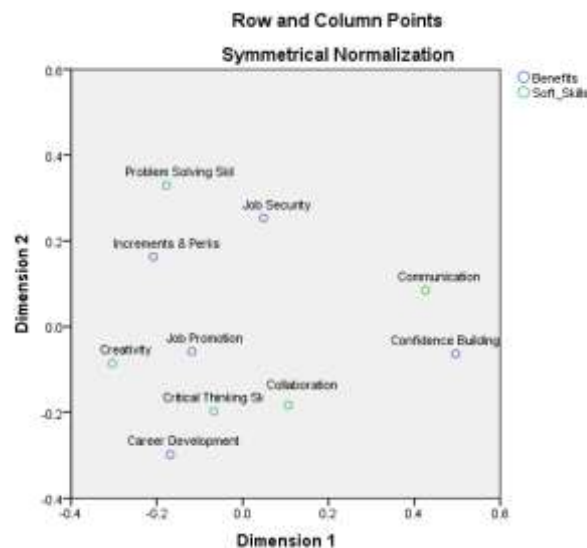


Figure 4. Perpetual Correspondence Mapping of Soft Skill Types and Perceived Advantages

The correspondence analysis's findings indicate that:

- To be certain to get raises and benefits, the employees prefer to improve their problem-solving abilities. The next two motives to improve problem solving abilities are found to be career progression and job stability.
- Workers would rather improve their critical thinking abilities in order to be paid increments & perks and benefits. Additionally, they want to hone their critical thinking abilities for the sake of their confidence and career advancement.
- To ensure the promotion in their careers and be eligible for benefits like perks & hikes,

employees would rather strengthen their collaborative skills.

- In order to advance in their careers and obtain pay raises, employees prefer to hone their creative skills. They discovered that cultivating creative abilities is beneficial for job security.
- Employees should enhance their communication abilities to boost self-assurance. Gaining promotions and getting salary hike in their job are the other two main benefits of learning communication techniques.

**Theoretical Implications:**

This study supports the findings of (van Laar, 2017), which demonstrated that rapid

adoption of digital technologies might exacerbate already-existing societal injustices. As such, the development of digital skills ought to be a primary focus of industrial training programs and educational initiatives. The report underlines how SMEs and rural firms may face constrained growth and missing income due to a lack of digital competences that might restrict business potential.

#### **Practical Implications:**

Certain skill sets examined in this study will persist, while additional skills will constantly emerge in conjunction with the advancement of new technologies and equipment.

#### **Conclusion**

In this study, correspondence analysis was used to assess the soft and technical abilities of Nagpur IT professionals in relation to technology adoption. Users can visually assess the 'correspondences', or associations, between row and column categories at the category level. The combined correspondence plots shown in Figures 3. and 4. represent the results of the data's CA and provide an easily understood graphical representation. The employees' preferences for improving their digital abilities and soft skills for a variety of reasons are shown in Table 2. and 3. respectively. CA has proved to be a flexible and versatile method for managing categorical data as well as for identifying and elucidating connections within this intricate phenomenon.

Researchers concluded that IT companies should work to close any skills gaps that exist between the technology adoption of their current workforce and the skills that they really require. In order to satisfy their future goals for technology adoption, it is necessary for IT businesses to comply with their real training requirements to manage attrition. A methodical and comprehensive strategy is required for sustained retention.

The study suggests that the government should fund technology adoption programs, programs that take sector-specific requirements into account and are flexible in terms of content, timing, and execution mechanism. In the future, millions of workers are anticipated to be "acutely under-skilled." The companies that embrace and make investments in technology adoption will increase their operational effectiveness, acquire a competitive edge, and will handle employee attrition effectively.

#### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

#### **References :**

1. Adeyinka-Ojo, S., Lee, S., Abdullah, S. K., & Teo, J. (2020). Hospitality and tourism education in an emerging digital economy.

*Worldwide Hospitality & Tourism Themes*, 12(2), 113–125.

2. András Farkas, & Nagy, V. (2008). Student Assessment of Desirable Technical Skills: A Correspondence Analysis Approach. *Acta Polytechnica Hungarica*, Vol. 5, No.
3. Benzecri, J.-P., Correspondence Analysis Handbook. New York: Marcel Dekker. 1992
4. Ferrari, A., Punie, Y., & Brečko, B. N. (2013). DIGCOMP: A framework for developing and understanding digital competence in Europe. 26035. (*EUR, Scientific and Technical Research Series*).
5. Greenacre, M.J. (1984) Theory and Applications of Correspondence Analysis. Academic Press, London.
6. Gui, M. (2007). Formal and substantial Internet information skills: The role of socio-demographic differences on the possession of different components of digital literacy. *First Monday*, 12(9).
7. Kumar, Raja, D. V., & Ranjith, R. A. (2015). "A Study To Reduce Employee Attrition In IT Industries". *International Journal of Marketing and Human Resource Management*, pp.01-14.
8. Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers, Springer Science+Business Media, LLC, part of Springer Nature*, <https://doi.org/10.1007/s10796-022-10308-y>.
9. Minor, K. M. ((2024)). The Digital Skills Gap – Is it Time to Rethink the Needs of Tourism and Hospitality Organizations in the UK? *Journal of Hospitality & Tourism Education*, 1–12. <https://doi.org/10.1080/10963758.2024.2316338>, 1-12.
10. <https://nasscom.in/knowledge-center/publications/technology-sector-india-strategic-review-2024>
11. Pallathadka, H., Leela, V. H., Patil, S., Rashmi, B., Jain, V., & Ray, S. (2021). "Attrition in software companies: Reason and measures". *Elsevier*, journal homepage: [www.elsevier.com/locate/matp](http://www.elsevier.com/locate/matp).
12. <https://plat4mation.com/blog/everything-you-need-to-know-about-investing-in-technology-adoption/>Isolde Kanikani
13. Saikkonen, L., & Kaarakainen, M.-T. (2021). Multivariate analysis of teachers' digital information skills - the importance of available resources. *Computers and Education*, 168, 104206.
14. Shine David, S. K. (2015). Attrition in "IT" Sector. *International Journal Of Core Engineering & Management (IJCEM)*, Volume 2, Issue 1 ISSN: 2348 9510.



15. Sousa, M. J., & Rocha, Á. (2019). Skills for disruptive digital business. *Journal of Business Research*, 94, 257–263.
16. The Growth and Evolution of India's Software Industry by Pankaj Jalote, Pari Natarajan. *Communications of the ACM* 2019, 62(11) 2019 64-69.10.1145/ 3347863.
17. van Deursen, A., & van Dijk, J. (2008). Using online public services: A measurement of citizens' operational, formal, information and strategic skills. *Electronic government. EGOV 2008. Lecture notes in computer science* , Vol. 5184.
18. van Laar, E. V. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577–588.
19. World Economic Forum. (2018). The Future of Jobs Agenda. Centre for the New and Society, World Economic Forum. [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs\\_2018.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf)
20. World Economic Forum. (2020). Workforce and employment: Jobs will be very different in 10 years. Here's How to Prepare. <https://www.weforum.org/agenda/2020/01/future-of-work/>