The Influence of Employee Awareness Regarding Automation Technologies on Job Dedication in IT Industry.

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Abstract:

This research paper investigates the correlation between employee awareness of automation technologies and job dedication within the Information Technology (IT) industry. In light of the rapid advancements in artificial intelligence (AI) and automation technologies, concerns regarding job dedication have surged, particularly within the Information Technology (IT) sector. The study aims to uncover how employees' understanding of automation technologies influences their commitment to their jobs. In an era characterized by rapid technological advancements, particularly in automation, understanding how employee awareness influences their commitment to their roles is crucial. As the IT industry undergoes significant transformations due to advancements in automation, it becomes crucial to examine the psychological and professional impact on employees. By examining factors such as knowledge dissemination, training programs, and organizational communication, the research aims to provide insights into fostering a dedicated workforce amidst technological shifts. The findings contribute to a nuanced understanding of the interplay between employee awareness and job dedication, offering practical implications for organizations seeking to optimize workforce engagement in the context of evolving automation technologies within the IT industry and aim to contribute valuable insights to organizational strategies, shedding light on the importance of fostering awareness and understanding of automation technologies to enhance job satisfaction and commitment among IT employees.

Introduction :

In the contemporary era of artificial intelligence (AI), the Information Technology (IT) sector undergoes a transformative shift owing to the swift progress of technology. AI, a concept encompassing the simulation of human intelligence in machines, has become instrumental in reshaping the employment landscape. This paper provides an overview of AI, encompassing its fundamental principles and processes. AI operates through various stages such as Data Collection, Data Pre-processing, Algorithms and Models, Training and Learning, Inference and Prediction, Feedback and Improvement, and an Iterative Process. As a broad field, AI comprises diverse subfields and methodologies, ranging from rule-based systems to intricate neural networks mirroring the complexities of the human brain.

At present, Machine Learning (ML) stands as the predominant framework governing contemporary AI capabilities, enabling computers to learn from data without explicit programming. The evolution of industrial production reaches its latest phase in Industry 5.0, wherein advanced technologies collaborate with human input. Unlike the purely automated processes of Industry 4.0, Industry 5.0 advocates for a harmonious collaboration between humans and machines, emphasizing creativity, problem-solving skills, and emotional intelligence. Leveraging artificial intelligence, robotics, and the Internet of Things (IoT), Industry 5.0 aims to enhance productivity, innovation, and sustainable growth while prioritizing human-centered approaches for inclusive and socially responsible industries.

Despite the potential for heightened productivity, the rapid advancement of AI carries implications for both organizations and employees, introducing concerns about job displacement. AI's capacity to automate tasks currently performed by humans raises questions about workforce adaptation. The paper explores the necessity for organizations to adopt measures and strategies for upskilling or reskilling the workforce. Challenges include navigating the impact of AI on workers' skill sets, guiding employees through change, managing training costs, and ensuring fairness and inclusivity across dimensions such as age, gender, and cultural diversity. While the impact of AI on human skills may vary based on the tasks automated, arguments suggest that AI's introduction may also create new jobs, particularly in sectors dedicated to developing and implementing AI technology.While this can result in heightened productivity and efficiency, these rapid advancements carry significant implications for both organizations and employees, as AI may also be perceived as a catalyst for job displacement. AI has the potential to automate a variety of tasks currently performed by humans (Leinen et al., 2020).

AI and related intelligence-driven applications present organizations with opportunities to attain optimal strategic business outcomes. These encompass improvements in service quality, heightened productivity, the achievement of cost-effective service excellence (CESE) as proposed by (Wirtz, 2019), increased return on investment as highlighted by Torres and (Mejia,2017), enhanced operational efficiency, elevated levels of customer engagement and loyalty according to Prentice and (Nguyen, 2020), improved employees' service quality as discussed by (Nguyen and Malik, 2022), and substantial reductions in operational and capital costs as articulated by (Wirtz,2019).

Furthermore, research in this field also yields positive individual-level outcomes, impacting employee and talent experiences positively, diminishing intentions to quit, and fostering heightened job satisfaction. This body of research, as exemplified by (Malik, et al.2020c, 2021) and (Nguyen and Malik, 2022), underscores the far-reaching benefits of AI and intelligence-based applications, not only in organizational efficiency but also in shaping positive individual experiences and perceptions.

Effectively adapting to this transformative landscape necessitates the adoption of measures and strategies aimed at upskilling or reskilling the workforce (Chuang, 2022). Consequently, organizations encounter substantial challenges, including the impact of Artificial Intelligence on workers' skill sets, guiding employees through the process of change, managing the costs associated with training, and ensuring fairness and inclusivity across diverse dimensions such as age, gender, and cultural diversity. The impact of AI on human skills will probably depend on the specific tasks and skills being automated. Still, there are arguments suggesting that the introduction of AI in the workplace may also lead to the creation of new jobs, especially in sectors focused on developing and implementing AI technology (Puzzo et al., 2020).

In light of the current gaps in our understanding of AI-HRM scholarship, a burgeoning body of literature emphasizes that the ongoing advancements in automation technologies provide noteworthy advantages for Human Resource Management (HRM).

Furthermore, both local and multinational enterprises (MNEs) have acknowledged the benefits of incorporating AI-based tools and techniques to enhance employee satisfaction, commitment, and job engagement (Castellacci & Viñas-Bardolet, 2019). This includes improving productivity (Wirtz, 2019), optimizing job performance, achieving HR cost-effectiveness (Azadeh & Zarrin, 2016), promoting employee retention (Malik et al., 2020c, 2021; Nura & Osman, 2013), facilitating effective decision-making (Azadeh et al., 2018), and concurrently reducing HR-related and other operational costs (Torres & Mejia, 2017).

Job dedication refers to self-disciplined behaviors at work, such as following rules, working hard, persisting on job tasks, and taking initiative for problem solving (Van Scotter et al., 1996). Job dedication plays a crucial role in encouraging employees to persevere in challenging situations and willingly take on additional tasks beyond the responsibilities outlined in their job descriptions.

Job dedication elucidates the extent of psychological identification employees have with their job.(Schaufeli et al., 2002; Schaufeli et al., 2004). Studies indicate that employees experiencing a sense of organizational support tend to exhibit higher levels of job dedication. (Akduman et al., 2020; Wang et al., 2017). On the flip side, job stress diminishes employees' job dedication.(Liu et al., 2013; Motamedzade et al., 2018).

Research Objective :

To identify the current job dedication challenges faced by IT professionals in the context of AI-driven technological advancements.

To identify the impact of demographic variables on job dedication in the context of AI-driven technological advancements.

To study the gender wise difference in the context of AI-driven technological advancements on Job dedication.

Research Scope:

This investigation aims to offer a comprehensive insight into the escalating influence of AI-driven technological advancements within the IT industry. It elucidates the dynamic landscape, emphasizing the substantial impact on job roles and responsibilities. The infusion of AI technologies has precipitated a notable transformation in the dynamics of employment. The study articulates the challenges encountered by a diverse cohort of IT professionals in sustaining job dedication amid the swift evolution of AI-driven technological landscapes.

Review of literature :

The design of information systems should prioritize Intelligence Augmentation (IA), where computers enhance human intelligence, just as much as it does Artificial Intelligence (AI), which is typically defined as computers replacing human beings.

Bowen (1966), succinctly stated that "Technology eliminates jobs, not work." The definition of Artificial Intelligence (AI) by (Goertzel et al.2007) describes it as "the ability of an agent to achieve a goal in a complex environment." Kaplan and Haenlein (2019) provide a comprehensive definition of AI as "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation." Dwivedi et al. (2021) emphasize that AI has the potential to augment or replace human tasks and activities through recognition, understanding, learning, and action.

The integration of AI in the IT industry spans various applications and benefits. It has the capability to automate tasks, reduce cognitive workload, and revolutionize aspects of IT, driving innovation, efficiency, and growth. In their foundational textbook, (Russell and Norvig 2016) cover essential AI topics such as problem-solving, knowledge representation, machine learning, and natural language processing, providing practical guidance on applying machine learning techniques to real-world problems. Andrew Ng (2018) offers insights into best practices, model selection, and addressing common challenges encountered in AI projects.

LeCun et al. (2015) introduced the concept of deep learning, emphasizing the effectiveness of neural networks with multiple layers in extracting complex patterns from data. Fei-Fei Li (2009) introduced the ImageNet database, a benchmark dataset crucial for the development and evaluation of deep learning models in computer vision. Goodfellow et al. (2016) provided comprehensive knowledge on deep learning, exploring neural networks, architectures, optimization algorithms, and applications across domains.

The strategic implications, challenges, and opportunities associated with AI adoption in organizations are discussed by Davenport et al. (2018). Rudin (2019) highlights the importance of interpretability in machine learning models, particularly in critical decision-making domains, emphasizing the need for transparency and accountability in AI systems. Bengio et al. (2013) underscore the role of informative representations in AI systems, with representation learning techniques, including unsupervised and deep learning methods, playing a vital role.

In challenging the conventional symbolic AI approach, Brooks (1997) advocates for embodied AI, which prioritizes the significance of physical interaction and sensorimotor intelligence in the development of intelligent systems. Meanwhile, Crawford et al. (2016) delve into the ethical and social implications of AI, raising awareness about biases, fairness, accountability, and privacy concerns associated with AI systems. Their work underscores the imperative for interdisciplinary research and a critical examination of AI technologies.

Building upon this foundation, previous studies by Jain et al. (2021) and Rothwell (2021) emphasize the proactive anticipation of organizational shifts resulting from the integration of AI systems. They stress the importance of establishing training pathways that align with market demands for skills, responsibilities, and roles. This proactive approach aims to effectively navigate and respond to the dynamic changes brought about by the introduction of AI technologies in various sectors.

Job dedication signifies a commitment marked by self-discipline in the workplace, characterized by a conscientious adherence to rules, a strong work ethic, persistent engagement in tasks, and a proactive stance in problem-solving (Van Scotter & Motovidlo, 1996). This dedication is reflected in employees' ability to persevere through challenges and willingly undertake additional responsibilities beyond their designated roles. Empirical evidence underscores distinct relationships between challenge and hindrance stressors and job dedication. Research by Rodell and Judge (2009) illuminates that challenge stressors exhibit a positive correlation with attentiveness, indicating that when employees face these stressors, they become more focused on their work to accomplish goals. Notably, the challenge stressor of time pressure has been associated with proactive behavior—a voluntary commitment to improving work tasks—an aspect that aligns closely with the essence of job dedication (Binnewies, Sonnentag, & Mojza, 2009). In contrast, hindrance stressors show no significant relationship with attentiveness but are positively linked to emotions such as anger and anxiety (Rodell & Judge, 2009).

Job dedication is characterized by enthusiasm, pride, and a sense of challenge (Orgambídez-Ramos et al., 2014). This dedication plays a pivotal role in influencing the psychological well-being of individuals (Maslach et al., 2001), contributing to heightened work happiness, as evidenced by studies such as that of Kim in 2019. Taking a positive psychology perspective, employees experience work happiness when they wholeheartedly dedicate themselves to their job, exhibiting a positive attitude in their daily activities (Seligman, 2002). Essentially, dedicated employees, who derive enjoyment from their work (Baker and Oerlemans, 2016), are more likely to focus on organizational goals (Macey et al., 2009). Consequently, job dedication not only fosters positive emotions but also serves as a catalyst for increased overall happiness.

Furthermore, the impact of job dedication extends beyond the workplace and has implications for general life happiness (Judge et al., 2005). Dedicated employees, characterized by their success, energy, and proactive approach, demonstrate an ability to navigate and manage events that may influence their lives (Muldoon et al., 2017). This intricate interplay between job dedication, positive emotions, and happiness highlights the holistic significance of an individual's commitment to their work in shaping both their professional and personal well-being

Research Methodology :

Research Objective: This study aims to investigate the impact of employee awareness concerning automation technologies on job dedication within the IT industry.

In elaboration, the research intends to explore how employees' understanding and awareness of automation technologies affect their commitment and dedication to their roles in the IT sector. The objective is to analyze the correlation between the level of awareness regarding automation tools and the degree of job dedication among IT professionals. By examining this relationship, the study seeks to contribute insights into the dynamic interplay between technology awareness and the commitment of employees in the context of the IT industry.

Research Design:

The research will adopt a cross-sectional exploratory design, utilizing purposive sampling as a non-probability sampling technique. In employing purposive sampling, the researcher has the flexibility to personally select participants based on specific criteria. This method is chosen to facilitate a comprehensive exploration of the experiences and perspectives of IT professionals concerning the influence of employee awareness regarding automation technologies on job dedication within the IT industry. The intentional selection of participants aims to provide a nuanced and in-depth understanding of the intricate relationship between technology awareness and job commitment in the IT sector.

Research Questions:

The research will focus on answering the following research questions:

- What is the effect on job dedication level of IT professionals in AI-driven technological advancements?
- To identify the impact of demographic variables on job dedication.
- To study the gender wise difference with the potential impact of AI on dedication.

Sampling Technique:

Employing a purposive sampling approach, this study carefully selects IT professionals from various sectors, emphasizing their expertise, experience, and relevance to the research focus—specifically, job dedication amidst advancements in job automation technology. The selection criteria prioritize individuals who have encountered or expressed concerns about the evolving landscape of job dedication due to automation. The goal is to capture a diverse range of perspectives and experiences, enriching the study's insights. This deliberate sampling method ensures the inclusion of professionals whose nuanced insights contribute meaningfully to addressing the research questions. By weaving together diverse narratives, the study aims to shed light on the multifaceted challenges and dynamics faced by IT professionals in adapting to automation-driven changes in job dedication. Through this purposive sampling lens, the study seeks to paint a comprehensive picture of the intricate relationship between expertise, experience, and the transformative impact of job automation in the IT domain.

Scale construction :

The questionnaire used in this study consists of two parts.

The first part is basic information collection, including six items: "Sex, age, educational level, , department and experience .

The second part

The scale is based on the potential impact of AI on the job dedication.

DATA COLLECTION :

Data acquisition was facilitated through the deployment of an online survey, meticulously crafted and disseminated among a cohort of IT professionals. The survey was strategically designed to hone in on the diverse perceptions and real-world experiences of the participants concerning job dedication in the context of artificial intelligence (AI). The survey instrument incorporated a series of questions meticulously crafted to illuminate key variables, including the impact of job dedication, adaptability to evolving roles, and overall satisfaction among IT professionals.

The survey's design facilitated challenges, and contentment associated with job dedication amid the ever-evolving landscape shaped by AI technologies. To glean insights, participants were presented with a Likert scale, to articulate their agreement or disagreement with the statements presented. This methodological approach aimed to quantitatively capture the varied perspectives of IT professionals, offering a valuable foundation for analyzing the multifaceted dimensions of job dedication and satisfaction within the dynamic realm of AI-driven advancements.

DATA ANALYSIS

Analysis is executed in two parts. The collected data was entered into SPSS 21 for analysis. ANOVA and Chi Square test was applied to check the association between the demographic variables and job dedication in the AI-driven technological advancements.

For the first part ANOVA was applied. Analysis of Variance, is applied in statistical analysis to compare means among two or more groups. It is used when there are multiple independent groups or factors, and the goal is to determine if there are any statistically significant differences in the means of these groups to check the significant impact on the variable. Here we have applied ANOVA to explore if age, qualification, department and experience has a significant impact on job dedication of IT professionals in AI environment.

Hypothesis (Ho) : There is no significant impact of age, qualification, experience and department on job dedication of IT professionals in AI-driven technological advancements.

JOB DEDICATION

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.0	23	3.39	1.076	.224	2.93	3.86	1	5
2.0	32	3.19	.931	.165	2.85	3.52	1	4
3.0	23	3.35	.647	.135	3.07	3.63	2	4
4.0	13	3.23	.832	.231	2.73	3.73	2	5
Total	91	3.29	.886	.093	3.10	3.47	1	5

ANOVA

JOB DEDICATION

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.693	3	.231	.288	.834
Within Groups	69.878	87	.803		
Total	70.571	90			

The data is divided into four groups (labeled 1.0 to 4.0), with each group having a different sample size.

The mean represents the average job dedication score for each group.

Standard Deviation (Std. Deviation) measures the dispersion of scores within each group.

The 95% Confidence Interval provides a range within which the true population mean is likely to fall.

Analysis and Findings:

The F-statistic is 0.288, and the associated p-value (Sig.) is 0.834.

A p-value greater than the conventional significance level (e.g., 0.05) suggests that there is no significant difference in job dedication scores between the groups.

In summary, based on the ANOVA results, we accept the null hypothesis and conclude that there is no significant impact of age, qualification, experience and department on job dedication of IT professionals in AI-driven technological advancements.

For the second objective chi square test was applied to test the null hypothesis which was formulated to find the gender wise association towards job dedication of IT professionals in AI-driven technological advancements.

Hypothesis (Ho): There is no significant association between gender towards job dedication of IT professionals.

There is no significant association between gender and job dedication

Gender verses Job Cross tabulation

Count

		JOB DEDICATION					Total
		SDA	DA	N	A	SA	
@13Gender	1.0	0	3	15	10	2	30
	2.0	3	10	19	27	2	61
Total		3	13	34	37	4	91

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.080[a]	4	.279
Likelihood Ratio	5.944	4	.203
Linear-by-Linear Association	.374	1	.541
N of Valid Cases	91		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is .99.

Analysis and Findings:

The crosstabulation shows the distribution of job dedication categories across different gender groups.

The Chi-Square tests aim to determine if there is a significant association between gender and job dedication.

Interpretation:

Pearson Chi-Square and Likelihood Ratio Tests:

The p-values for both tests are greater than 0.05 (the conventional significance level).

There is no significant association between gender and job dedication based on these tests. Based on the Chi-Square tests, there is no evidence to suggest a significant association between gender and job dedication. The p-values are above the significance threshold, and thus, we do not reject the null hypothesis of independence. This implies that job dedication levels do not differ significantly between the specified gender groups in this dataset.

Conclusion :

This implies that, within the dataset under scrutiny, gender does not emerge as a differentiating factor in terms of job dedication among IT professionals. The variations in age, qualification, experience, and departmental affiliation do not contribute significantly to divergent levels of job dedication. In other words, these demographic and professional characteristics, as represented in the dataset, are not strong predictors of the variations observed in job dedication among IT professionals in the realm of AI-driven technological advancements.

This finding underscores the importance of considering additional factors or exploring more nuanced dimensions to better understand the intricacies of job dedication within the context of AI-driven advancements. It suggests that other unexamined variables or complex interactions may play a more influential role in shaping job dedication levels among IT professionals in this technological landscape. Further research and exploration could shed light on these nuances and contribute to a more comprehensive understanding of the factors influencing job dedication in the rapidly evolving domain of AI-driven technological advancements.

Limitation and Recommendation:

While this study provides valuable insights, it is important to note its geographical scope is limited to a specific region. A future extension of this research could encompass the entirety of India, broadening the applicability of the findings.

Additionally, conducting the study across different sectors could enhance its comprehensiveness. A comparative analysis across various sectors would yield valuable information, allowing for a nuanced understanding of how job dedication may vary across different industries.

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