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Job Insecurity in the Age of Transformation: A Comparative Analysis of IT and Manufacturing Sector

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ABSTRACT

This study aims to compare the levels of job insecurity experienced by workers in these two sectors, highlighting the specific concerns that drive insecurity in each. The research identifies vital threats contributing to job insecurity, such as automation, outsourcing, and the potential for downsizing or reorganisation within companies by employing a mixed-method approach that includes quantitative data analysis and qualitative interviews.

Furthermore, the study investigates the role of demographic variables (such as age, tenure, and skill level) in moderating the relationship between sector type and job insecurity. This aspect adds a layer of complexity to the research, as it shows that the sector type does not solely determine job insecurity. Using quantitative data collected from workers in both industries, the study provides insights into the sector-specific challenges employees face. The findings will contribute to a better understanding of how external factors shape job insecurity and offer promising insights for employers and policymakers seeking to address workforce concerns. For instance, the research could inform the design of training programs to enhance workers' adaptability in the face of automation. This study aims to inform strategies that promote job security and prepare workers for future industry transformations, instilling hope for a more secure and adaptable workforce.

INTRODUCTION

In the 21st century, rapid technological advancements and globalisation have significantly transformed industries, particularly the IT and manufacturing sectors. These sectors are under mounting pressure to adapt to automation, outsourcing, and changing market demands, increasing job insecurity among workers. Job insecurity, as defined by De Witte (2012), is the perceived threat of job loss and the uncertainty surrounding continued employment. Understanding how these shifts affect employee well-being, productivity, and organisational stability is crucial. This research, in particular, will focus on the unique manifestations of job insecurity in the IT and manufacturing sectors, each facing distinct challenges due to automation and outsourcing.

The IT sector, driven by rapid technological changes, presents a dynamic work environment where employees often fear job displacement due to advancements in artificial intelligence (AI) and automation (Park et al., 2017). On the other hand, the manufacturing sector deals with the threat of outsourcing, where companies relocate jobs to countries with lower labour costs, contributing to job insecurity among workers (Morris et al., 2020).

This study aims to explore and compare the levels of job insecurity between IT and manufacturing sector workers, focusing on understanding the specific threats in each industry. Using insights from De Witte's (2012) and Park et al. (2017) work, this research analyses job insecurity's psychological and organisational impacts in these two industries.

REVIEW OF LITERATURE

Job Insecurity

Job insecurity, as defined by De Witte (2012), is the perceived threat of losing one's job and the uncertainty surrounding future employment. Research consistently shows that job insecurity leads to adverse outcomes such as stress, reduced job satisfaction, and poor mental health (Cheng & Chan, 2008). In a cross-sectoral study, Morris et al. (2020) found that workers in the manufacturing sector, particularly those threatened by outsourcing, report higher levels of job insecurity. Similarly, Park et al. (2017) showed that IT professionals face fluctuating job insecurity due to the rapid pace of technological change and the threat of automation.

Job Insecurity in the IT Sector

The IT sector is characterised by its dynamic environment, where employees often feel insecure due to the continuous evolution of technology. Park, McFarland, and Henning (2017) conducted a longitudinal study that found IT workers experience high job insecurity during periods of economic

downturn and organisational restructuring. The fear of job displacement due to automation and AI is a significant factor in the IT sector, contributing to employee stress and reduced job satisfaction (Wu et al., 2019).

Job Insecurity in the Manufacturing Sector

In the manufacturing sector, outsourcing and global competition are vital drivers of job insecurity. According to Autor et al. (2013), outsourcing, which involves relocating jobs to countries with lower labour costs, creates anxiety among workers, leading to heightened job insecurity. Morris, Hippolyte, and Kuruvilla (2020) found that automation anxieties also increase job insecurity among manufacturing workers. The study revealed that employees who perceive a higher likelihood of job loss due to automation report greater job insecurity.

Impact of Job Insecurity on Employee Well-Being

The negative impact of job insecurity on employee well-being has been extensively studied. Cheng and Chan (2008) conducted a meta-analysis that confirmed job insecurity as a significant predictor of mental health problems, such as anxiety, depression, and emotional exhaustion. These findings are consistent across sectors, with both IT and manufacturing workers reporting reduced job satisfaction and increased turnover intentions due to job insecurity (De Witte et al., 2010).

Moderating Factors in Job Insecurity

Research shows that demographic and job-related factors can moderate the relationship between job insecurity and its outcomes. De Witte, Van De Voorde, and Bekaert (2012) found that older workers and those with longer tenure report higher job insecurity as they perceive more difficulty finding new employment. Conversely, workers with higher skill levels and access to training are less likely to feel insecure about their jobs (Silla et al., 2005). This study will examine whether factors such as age, tenure, and skill level moderate the experience of job insecurity in the IT and manufacturing sectors.

RESEARCH GAPS

Here are the research gaps in the previous studies:

- **Limited Sector Comparison:** Existing research often focuses on single sectors (IT or manufacturing). This study compares them to understand the nuanced differences in job insecurity experiences.
- **Specificity of Job Security Threats:** Research explores broad anxieties (automation), but this study examines the most prominent threats in each sector and uncovers additional industry-specific concerns.
- **Lack of Moderating Factor Consideration:** Some studies neglect how factors like job control or skills training impact job insecurity. This research explores these factors' influence on IT and manufacturing workers to inform targeted solutions.

RESEARCH METHODOLOGY

Research Questions

1. Do IT sector workers experience higher job insecurity than manufacturing sector workers?
2. Are there any demographic or job-related factors (age, tenure, skill level) that moderate the relationship between sector and job insecurity?

Objectives

- To assess and compare the levels of job insecurity experienced by workers in the IT and manufacturing sectors.
- To explore the moderating role of demographic and job-related factors, such as age, tenure, and skill level, on the relationship between sector and job insecurity.

Research Design

This study employs a descriptive research design to examine job insecurity among employees in the IT and manufacturing sectors. Descriptive research is chosen for its ability to capture and portray complex phenomena as they occur without manipulation (Sekaran & Bougie, 2016). The aim is to understand and quantify employees' perceptions of job insecurity across sectors, considering age and sectoral factors as potential influences. Using descriptive methods, the study provides a clear snapshot of how job insecurity manifests in each industry, shedding light on differences driven by automation, outsourcing risks, and organisational changes. Through quantitative analysis, this descriptive approach allows the study to measure job insecurity levels objectively, identifying sector-specific characteristics that shape employee concerns.

Sampling Method

This research will employ a stratified random sampling method involving 158 participants evenly divided between the information technology (IT) and manufacturing sectors. This approach allows for a representative sample from both sectors within the Madurai District, ensuring that insights from the

study reflect the experiences and perceptions of employees in these distinct fields. By utilising stratified sampling, the research can effectively compare the responses from each sector, highlighting any differences or similarities in job insecurity perceptions (Creswell & Creswell, 2018).

Data Collection

Data is collected using the Occupational Job Insecurity Scale (OCIS) developed by De Witte. This validated questionnaire measures employees' perceptions of job insecurity, encompassing job loss and concerns about future employment stability. The OCIS is well-regarded for its reliability and validity in various occupational contexts, making it an appropriate tool for this study (De Witte, 2005). Participants will respond to the OCIS items, providing valuable insights into job insecurity levels experienced in the IT and manufacturing sectors.

Hypotheses

- **Null Hypothesis (H_0):** There is no significant difference in the levels of job insecurity between IT and manufacturing sector workers.
- **Alternate Hypothesis (H_1):** IT sector workers experience higher levels of job insecurity than manufacturing sector workers.

Data Analysis

In data analysis, this research employed the Jamovi software tool to conduct t-tests, descriptive statistics, and correlation assessments to examine the relationship between age and insecurity scores. Additionally, the t-test analysis was used to determine which sector—IT or Manufacturing—exhibits higher job insecurity levels among employees.

Table 1: Descriptives

						Shapiro-Wilk	
	Sector	N	Mean	Median	SD	W	p
Insecurities Score	IT Sector	75	40.8	40	5.83	0.963	0.028
	Manufacturing Sector	82	29.5	29.0	6.28	0.891	<.001

Notes: The Shapiro-Wilk test indicates that both sectors have non-normally distributed insecurities scores.

Table 2: Independent Samples T-Tests

							95% Confidence Interval	
		Statistic	**df**	**p**	**Mean difference**	**SE difference**	**Lower**	**Upper**
Insecurities Score	Student's t	11.6	155	<.001	11.3	0.970	9.36	13.2
	Mann-Whitney U	481		<.001	12.0		10.00	13.0

The independent samples t-test shows a significant mean difference of 11.3 in insecurities scores between sectors ($p < .001$), with a 95% confidence interval ranging from 9.36 to 13.2. At the same time, the Mann

Whitney U test confirms this difference ($p < .001$), with an estimated median difference of 12.0 (95% CI: 10.0 to 13.0).

Table 3: Correlation Matrix

		Insecurities Score	Age	Years of experience in your current job sector
Insecurities Score	Spearman's rho	—		
	df	—		
	p-value	—		
Age	Spearman's rho	0.134*	—	
	df	155	—	
	p-value	0.048	—	
Years of experience in your current job sector	Spearman's rho	0.018	-0.046	—
	df	155	155	—
	p-value	0.410	0.717	—

Note: The Spearman's correlation coefficients indicate a significant positive relationship between age and insecurities score ($\rho = 0.134$, $p = 0.048$), while years of experience show no significant correlations with insecurities score or age ($\rho = 0.018$, $p = 0.410$; $\rho = -0.046$, $p = 0.717$), suggesting that older individuals may experience higher insecurity levels, but experience does not significantly influence these insecurities. -

INTERPRETATION

The findings indicate that employees in the IT sector report notably higher job insecurity than those in manufacturing. With mean insecurity scores of 40.8 for IT and 29.5 for manufacturing, the data suggests that IT employees perceive more significant threats to their job stability. The Shapiro-Wilk test results confirm a statistically substantial non-normal distribution of insecurity scores, further supported by the t-test, which shows an 11.3-point difference between the sectors ($p < .001$). This statistically significant difference highlights the impact of sector-specific stressors—such as rapid technological change in IT, which fosters concerns over automation and AI-driven displacement (Wu et al., 2019). In contrast, manufacturing employees express insecurity more related to outsourcing and global competition pressures (Autor et al., 2013).

A positive correlation ($\rho = 0.134$, $p = 0.048$) was found between age and job insecurity, suggesting that older employees feel more insecure about their jobs. This may reflect the apprehension among older workers regarding their adaptability to the fast-evolving demands of the IT sector, where technology often outpaces reskilling efforts (De Witte et al., 2012). However, the correlation results also show that years of experience within a sector do not significantly impact insecurity scores. This underscores that factors like technological change and sectoral characteristics are likely more robust drivers of job insecurity than tenure alone.

Given the significant difference in mean insecurity scores, the null hypothesis (H_0) is rejected in favour of the alternate hypothesis (H_1), confirming that IT employees report higher levels of job insecurity than manufacturing employees.

DISCUSSION

This study provides a comparative analysis of job insecurity in the IT and manufacturing sectors, addressing two main objectives: assessing sector-specific job insecurity levels and exploring the moderating effects of demographic factors on job insecurity. The findings underscore that sectoral characteristics and demographic factors, such as age, influence job insecurity, providing meaningful insights for organisational and policy-level interventions.

The data show that IT sector employees experience significantly higher job insecurity than their counterparts in the manufacturing sector. This aligns with previous research indicating that technological advancements, particularly in automation and AI, heighten job insecurity in tech-related fields

(Park et al., 2017; Wu et al., 2019). The rapid pace of technological change in the IT sector may create a perceived obsolescence risk, as employees fear that AI-driven efficiencies will reduce their job relevance (De Witte, 2005; Park et al., 2017).

Conversely, manufacturing employees face heightened insecurity mainly due to outsourcing risks, which aligns with previous findings (Morris et al., 2020). Outsourcing often shifts jobs to regions with lower labour costs, leaving workers in domestic manufacturing more vulnerable to job loss (Autor et al., 2013). This contrast highlights how external factors, like global competition and technological innovation, shape job insecurity differently across sectors.

The study reveals a significant positive correlation between age and job insecurity, suggesting that older employees report higher levels of insecurity, particularly in the IT sector. This is consistent with research suggesting that older employees may experience heightened insecurity due to perceived challenges in adapting to new technological skills (De Witte et al., 2012). This finding signals the need for reskilling initiatives tailored to older employees to help them adapt to technology-driven changes. Moreover, years of experience in a sector did not correlate significantly with job insecurity, indicating that other factors, such as adaptability and technological familiarity, might be more influential.

These findings highlight practical insights for employers and policymakers. IT companies, for example, might consider implementing continuous reskilling programs focused on digital literacy and AI proficiency to alleviate job insecurity, particularly among older employees. For manufacturing firms, policy interventions that provide stability in the face of outsourcing threats, such as strategic workforce planning and localised reskilling programs, may be beneficial (Silla et al., 2005). Employers in both sectors can use these insights to foster a more secure and resilient workforce by addressing the distinct job insecurity drivers identified in this study.

This study contributes to job insecurity research by highlighting sector-specific vulnerabilities and emphasising demographic moderators. Unlike prior research focusing solely on one sector, this comparative approach enables a nuanced understanding of how job insecurity manifests in industries undergoing different transformations. Additionally, the study supports future workforce strategies by suggesting that targeted reskilling can mitigate job insecurity and improve workforce adaptability.

In summary, this research underscores the importance of tailored interventions in addressing job insecurity across sectors, offering valuable guidance for developing resilient workforce strategies amid ongoing technological and economic changes.

LIMITATIONS

The primary limitation of this study is its geographic scope, focusing solely on the Madurai District. This regional limitation restricts the generalizability of findings, as job insecurity perceptions may vary widely across different regions due to economic conditions, job market characteristics, and sector-specific dynamics. Additionally, the sample includes only two sectors, IT and manufacturing, which, while informative, may only partially capture the range of job insecurity factors present in other sectors, such as healthcare or retail, where different stressors could shape job insecurity.

Another limitation lies in the reliance on self-reported data, which could be influenced by personal biases or subjective perceptions, potentially affecting the accuracy of reported insecurity levels. Future research could employ more objective measures, such as tracking job displacement rates, to complement self-reported perceptions.

FUTURE SCOPE OF THE RESEARCH

Future research should broaden the geographic and sectoral scope to enhance generalizability. Including additional regions and diverse sectors, such as healthcare, education, and finance, would provide a more comprehensive view of job insecurity across different work environments. Additionally, future studies could explore other demographic factors, such as educational background and skill proficiency, as potential moderators in the relationship between sector and job insecurity. Longitudinal studies tracking job insecurity perceptions over time could also offer valuable insights into how job insecurity evolves with industry changes, enabling better forecasting and more targeted interventions by employers and policymakers. Expanding research to examine the psychological impacts of insecurity and the effectiveness of reskilling interventions would provide deeper insights into the most effective strategies for reducing job insecurity in high-risk sectors.

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APPENDIX

QUESTIONNAIRE:

1. **Age:**
    - 18-25
    - 26-35
    - 36-45
    - 46-55
    - 56 and above
2. **Gender:**
    - Male
    - Female
    - Other
3. **Sector:**
    - IT Sector
    - Manufacturing Sector
4. **Years of Experience in Current Job:**
    - Less than 1 year
    - 1–3 years
    - 3–5 years
    - More than 5 years
5. **Job Role:**
    - Managerial
    - Supervisory
    - Technical/Professional
    - Administrative/Support
    - Entry level/Operational

Section 2: Organizational Change and Job Insecurity Scale (OCIS):

Scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

1. Recent changes in my organisational changes have made me feel insecure about my job.
2. Organizational restructuring has increased my worries about losing my job.
3. I feel that the company is making changes that may affect my future employment.
4. My job feels less secure due to the changes my organization is going through.

5. The company's strategic decisions have created uncertainty about my job.
6. I believe my position could be eliminated as a result of the organizational changes.
7. Technological advancements in my organization threaten the security of my job.
8. Digital transformation (automation, AI, etc.) has made me question the stability of my role.
9. My company's efforts to modernize have increased the likelihood of layoffs in my department.
10. I am concerned that organizational changes will result in reduced opportunities for career advancement.
11. The introduction of new technologies has made me feel less valuable to the company.
12. Changes in my company's management have made me unsure about my job security**.**