Journal of Information Systems Engineering and Management
2025, 10(32s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Psychological Study of Job Stress, Job Satisfaction, and Well-Being of IT Employees: The Role of Information Systems

Mrs. K.Sangeetha [a*] and Dr.Vanathi Vembar [b]
[a]Research Scholar, Department of Business Administration, Affiliated to Annamalai University, Chidambaram, Tamil Nadu, India;
[b]Professor, Department of Business Administration, Affiliated to Annamalai University, Chidambaram, Tamil Nadu, India
*Corresponding Author: Mrs.K.Sangeetha
Email: sangeethakrish.mba@gmail.com, Phone: +91 9791194547, ORCID ID: 0009-0000-9793-5256

ARTICLE INFO

Received: 31 Dec 2024
Revised: 20 Feb 2025
Accepted: 28 Feb 2025

ABSTRACT

The Information Technology (IT) sector is a rapidly evolving industry characterized by high-performance expectations, tight deadlines, and continuous skill enhancement, all of which contribute to substantial workplace stress. This study examines the psychological impact of job stress on IT employees, focusing on its effects on job satisfaction and overall well-being. A key aspect of this research is the role of Information Systems (IS) in either mitigating or exacerbating these stressors. Factors such as excessive workload, rapid technological advancements, global collaboration, and organizational changes are analyzed to understand their influence on employee well-being. This study applies established theoretical models to assess the relationship between job stress, job satisfaction, and burnout, emphasizing how Information Systems—through automation, communication tools, and workflow management—affect employee experiences. Additionally, the research explores coping mechanisms and organizational support strategies, including stress management programs, flexible work arrangements, and digital well-being interventions. The findings provide valuable insights for IT organizations, offering recommendations on optimizing Information Systems to reduce stress and enhance job satisfaction. By implementing tailored workplace support systems and technology-driven solutions, businesses can promote a healthier, more productive work environment while sustaining high employee engagement in the dynamic IT sector.

Keywords: Job Stress, Job Satisfaction, Well-Being, Information Systems, IT Employees, Workplace Stress, Burnout, Productivity.

INTRODUCTION

The IT industry has become a cornerstone of global economic growth, driving advancements that have reshaped business operations, communication, and service delivery. The widespread adoption of artificial intelligence, cloud computing, and big data analytics has enabled organizations to optimize workflows, enhance decision-making, and automate complex processes (O'Toole et al., 2020). These innovations have led to significant improvements in efficiency and productivity, making IT indispensable across industries such as healthcare, finance, education, and manufacturing. However, alongside these technological advancements, the IT sector presents a demanding work environment that places immense pressure on employees (Maslach & Leiter, 2022).

The nature of IT work is inherently fast-paced and highly competitive, requiring professionals to continuously upgrade their skills to keep up with evolving technologies (Bakker & Demerouti, 2017). Long working hours, strict project deadlines, and the need to troubleshoot technical issues in real-time create a high-pressure atmosphere. Many IT employees experience work overload due to the growing complexity of software development, cybersecurity threats, and the increasing reliance on IT infrastructure in all aspects of business operations (Deshpande & Chakraborty, 2023). Performance expectations are consistently high, as IT professionals are often responsible for mission-critical systems that require minimal downtime and rapid problem resolution. The fear of falling behind in this ever-changing landscape contributes to job insecurity, as employees worry about skill obsolescence and the potential for automation replacing certain roles (Moore, 2000).

A major contributor to stress in the IT sector is technostress, a psychological strain resulting from excessive interaction with technology (Ayyagari, Grover, & Purvis, 2011). Constant connectivity through emails, instant messaging platforms, and video conferencing tools blurs the boundaries between work and personal life, making it difficult for employees to disengage (Tarafdar, Pullins, & Ragu-Nathan, 2014). Additionally, information overload from handling multiple projects, software updates, and continuous learning requirements leads to cognitive

exhaustion. This overwhelming exposure to digital tools can cause mental fatigue, decreased concentration, and reduced job satisfaction, ultimately leading to burnout (Moore, 2000). IT professionals frequently experience emotional exhaustion, which manifests as a lack of motivation, irritability, and difficulty maintaining focus on tasks (Maslach & Leiter, 2022).

The Role of Information Systems in Managing Job Stress

The integration of information systems (IS) in the workplace has significantly transformed how IT professionals manage workloads, collaborate with teams, and balance work-life responsibilities. Enterprise resource planning (ERP) systems, automated task management software, and cloud-based collaboration platforms streamline operations, reducing the cognitive burden on employees (Davenport & Harris, 2020). These technologies help distribute workloads effectively, minimize repetitive tasks, and improve overall efficiency. However, improper implementation of IS solutions can also contribute to stress, particularly when employees are required to adapt to new systems without adequate training (Tarafdar et al., 2019).

Another pressing challenge faced by IT employees is global collaboration, particularly in multinational organizations where teams operate across multiple time zones. Many IT professionals are required to adjust their work schedules to accommodate international colleagues, often extending their working hours into late nights or early mornings (Blanding, 2024). This disrupted work-life balance results in sleep deprivation, chronic fatigue, and increased stress levels (Jo & Lee, 2021). Employees who frequently work outside conventional hours struggle to maintain personal commitments, leading to strained relationships and diminished overall well-being (Trivedi et al., 2024). Over time, these factors contribute to reduced productivity, heightened frustration, and job dissatisfaction, increasing the likelihood of employee turnover (Diener, 2000).

The long-term consequences of prolonged job stress extend beyond workplace performance and impact mental health, contributing to anxiety, depression, and physical health issues (Sonnentag & Fritz, 2015). Research indicates that individuals experiencing chronic workplace stress are more likely to develop unhealthy coping mechanisms, such as social withdrawal, decreased physical activity, and reliance on stimulants or other substances to manage workload pressures (Folkman & Lazarus, 2013). The stressor-detachment model suggests that employees who struggle to disengage from work are at a heightened risk of emotional exhaustion and burnout (Sonnentag & Fritz, 2015).

Mitigating Job Stress Through Information Systems

Understanding the relationship between job stress, job satisfaction, and well-being is crucial for developing effective workplace policies and stress management strategies (Kim & Wright, 2007). Organizations that leverage information systems for stress management—such as employee well-being apps, AI-driven workload balancing tools, and virtual reality relaxation programs—can significantly reduce workplace stress and enhance job performance (Deshpande & Chakraborty, 2023). Additionally, the implementation of leadership support initiatives, mentorship programs, and skill development opportunities through digital learning platforms can improve employee engagement and job satisfaction (Rathore & Gupta, 2024).

This study adopts a mixed-method approach to examine the psychological impact of job stress on IT employees, with a specific focus on the role of information systems. The key objectives of the study are:

1. Identify the primary causes of job stress among IT professionals.
2. Analyze the relationship between job stress and job satisfaction, considering factors like workload, burnout, and performance.
3. Evaluate the impact of job stress on employee well-being, particularly in terms of mental health and work-life balance.
4. Examine the role of information systems in mitigating job stress and enhancing job satisfaction.
5. Explore coping mechanisms and organizational strategies that leverage technology to reduce stress and improve employee well-being.

By providing evidence-based insights, this research aims to support organizations in developing sustainable work environments that prioritize employee well-being while maintaining high productivity through effective use of information systems.

LITERATURE REVIEW

The rapid technological advancements and high-performance expectations in the IT industry create a high-stress working environment for professionals. Understanding how job stress relates to job satisfaction and overall well-being is crucial for both theoretical insights and practical interventions in information systems engineering and management.

Job Stress in the IT Sector

The Information Technology (IT) sector is characterized by constant innovation, evolving technologies, and the need for continuous upskilling, all of which contribute to workplace stress. The industry demands long working hours, tight deadlines, and high adaptability, leading to occupational stress and job burnout (Et al., 2021). Studies indicate that IT professionals frequently experience role overload, requiring them to manage multiple tasks while staying updated with technological advancements (Bakker & Demerouti, 2017).

The Technostress Model (Ayyagari et al., 2011) highlights how excessive reliance on technology leads to cognitive overload, job insecurity, and emotional exhaustion, adversely affecting employee well-being. IT professionals often encounter **technostress** through continuous digital interruptions, an expectation of 24/7 availability, and overwhelming information-processing demands (Tarafdar, Pullins, & Ragu-Nathan, 2014). Furthermore, remote work and virtual collaboration tools blur the boundaries between work and personal life, increasing stress and mental fatigue (Jo & Lee, 2021).

Apart from workload and technology-induced stressors, organizational restructuring and rapid digital transformations also heighten stress levels. Studies suggest that mergers, acquisitions, and fast-paced technological adoption create job uncertainty, affecting employee engagement and confidence (Day et al., 2017). Without proper change management strategies and adequate managerial support, employees are more prone to burnout and decreased job performance.

Impact of Job Stress on Job Satisfaction

Job satisfaction is a key determinant of employee retention, engagement, and overall productivity in IT organizations. Research suggests that excessive job stress negatively affects job satisfaction, particularly in work environments with unrealistic workloads, role ambiguity, and inadequate managerial support (Judge et al., 2001; Kim & Wright, 2007). IT professionals often report dissatisfaction due to excessive work pressure, lack of autonomy, and an expectation of continuous availability, leading to high attrition rates (Moore, 2000).

According to Herzberg's Two-Factor Theory (1968), job satisfaction is influenced by both hygiene factors (e.g., work overload, job insecurity, inadequate compensation) and motivational factors (e.g., career growth, recognition, and skill development). In the IT industry, monotonous work, lack of career progression, and limited recognition contribute to job dissatisfaction, ultimately increasing employee turnover (Deshpande & Chakraborty, 2023).

Additionally, the Work-Stress Model suggests that employees experiencing high stress with minimal support exhibit reduced motivation and lower engagement levels (González-Morales & Neves, 2015). Employees with excessive workloads and little managerial recognition tend to disengage emotionally, leading to lower commitment to organizational objectives.

Well-Being and Mental Health in IT Professionals

Chronic exposure to occupational stressors in IT has severe consequences for mental and physical health. Prolonged job stress is linked to burnout, anxiety, depression, and even cardiovascular diseases, significantly impacting employee well-being (Maslach & Leiter, 2022; Trivedi et al., 2024). IT professionals facing continuous work-related stress, demanding job roles, and inadequate recovery time often experience emotional exhaustion and reduced performance.

The Stressor-Detachment Model (Sonnentag & Fritz, 2015) explains that employees who fail to disengage from work-related stress experience chronic exhaustion, lower job satisfaction, and deteriorating well-being. IT professionals involved in on-call support, shift-based roles, or high-pressure technical jobs are particularly vulnerable to burnout due to persistent exposure to work stressors (Diener, 2000).

Research also suggests that mental health concerns in IT workplaces are often overlooked, resulting in low morale, absenteeism, and disengagement (Rathore & Gupta, 2024). Organizations that do not prioritize employee well-being or provide mental health support programs tend to experience higher attrition and declining job satisfaction rates.

Coping Mechanisms and Organizational Support

Effectively managing workplace stress is crucial for enhancing job satisfaction and overall well-being. Individual coping strategies such as time management, social support, and mindfulness practices have been shown to mitigate workplace stress (Folkman & Lazarus, 2013). IT professionals who engage in regular physical exercise, relaxation techniques, and structured work schedules report lower stress levels and improved mental resilience (Kumar, 2023).

At an organizational level, interventions like flexible work schedules, hybrid work models, and employee well-being programs play a critical role in reducing stress and improving job satisfaction (Mohana et al., 2023). Leadership support is particularly important in helping employees navigate workplace stress—managers who provide clear expectations, constructive feedback, and employee recognition contribute to better work engagement and lower burnout rates (Deshpande & Chakraborty, 2023).

Organizations that invest in continuous learning opportunities, mentorship programs, and employee engagement activities experience better employee retention and increased job satisfaction. Employees who feel valued, empowered, and provided with career growth opportunities are more likely to stay motivated and committed to their roles (Ogresta, Rusac, & Zorec, 2008).

The Role of Technostress in IT Workplaces

Technostress, a form of workplace stress caused by excessive use of digital technologies, is particularly relevant in the IT sector. Factors such as information overload, the pressure of continuous learning, and the expectation of constant connectivity contribute significantly to technostress (Tarafdar et al., 2023). Recent studies confirm that technostress reduces job satisfaction and well-being, underscoring the need for strategic interventions to manage its effects (Ragu-Nathan et al., 2023).

Gaps in the Literature and Need for Further Research

While extensive research has explored job stress, job satisfaction, and well-being across various industries, dedicated studies focusing exclusively on IT professionals remain limited. Most existing literature either examines occupational stress in general work environments or lacks an integrated perspective incorporating both psychological and technological stressors in IT workplaces.

Further research is needed to adopt holistic approaches, combining both quantitative and qualitative methodologies to capture the nuanced experiences of IT employees. Additionally, there is a need to assess the effectiveness of workplace interventions in mitigating technostress and improving job satisfaction within the IT sector.

Understanding the psychological impact of job stress on IT professionals' job satisfaction and well-being is crucial for developing effective workplace policies and employee support mechanisms. This literature review identifies key concerns and research gaps in the field, emphasizing the necessity for evidence-based strategies to improve job satisfaction and reduce stress among IT employees.

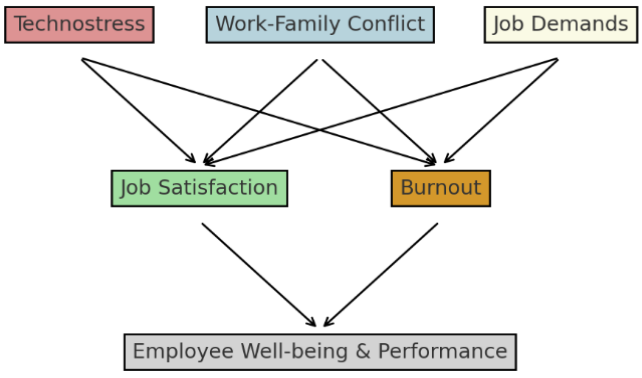
CONCEPTUAL FRAMEWORK

This research framework explores the relationship between job stress, job satisfaction, and employee well-being in the IT sector, emphasizing the influence of information systems. It integrates key theoretical models, including the Technostress Model (Tarafdar et al., 2023), the Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2021), and the Work-Family Conflict Model (Michel et al., 2022) to explain how various technology-related stressors impact employee performance and well-being.

- The Technostress Model explains how excessive exposure to digital tools, continuous system updates, and the need for rapid adaptation contribute to workplace stress, affecting job satisfaction and well-being.
- The JD-R Model provides a framework for understanding how high job demands, such as workload and task complexity, lead to burnout, while available resources (e.g., supportive management and training) act as buffers against stress.
- The Work-Family Conflict Model examines the role of technology in blurring the boundaries between work and personal life, leading to increased stress and lower job satisfaction.

Conceptual Framework Model

Figure 1: Conceptual Framework



Independent Variables:

- **Technostress** – The constant evolution of workplace technology, frequent system changes, and the need for continuous upskilling can cause cognitive overload, role ambiguity, and emotional exhaustion, negatively impacting job satisfaction and well-being (Tarafdar et al., 2019).
- **Work-Family Conflict** – The increasing expectation for IT employees to remain connected beyond working hours (e.g., through emails, virtual meetings, and on-call duties) creates difficulty in maintaining a work-life balance, leading to increased stress and reduced overall well-being (Michel et al., 2011).
- **Job Demands** – The IT industry is known for its fast-paced environment, strict deadlines, and high cognitive load. These factors contribute to psychological strain, increased burnout, and decreased job performance (Bakker & Demerouti, 2017).

Mediating Variables:

- **Job Satisfaction** – A key mediator in the relationship between stress and employee performance. Higher job satisfaction can buffer the negative effects of stress, improving employee engagement, commitment, and well-being (Judge et al., 2017).
- **Burnout** – Prolonged exposure to stressors such as information overload, continuous system troubleshooting, and high job expectations can lead to emotional exhaustion, depersonalization, and decreased job performance (Maslach et al., 2016).

Dependent Variable:

- **Employee Well-being and Performance** – Psychological, social, and physical well-being are critical in determining an employee's productivity, job commitment, and overall efficiency. Employees experiencing chronic stress and burnout often show lower engagement and reduced job performance (Diener et al., 2018).

This framework suggests that psychological stressors related to information systems such as technostress, work-family conflict, and job demands have a direct influence on job satisfaction and burnout, which in turn impact employee well-being and performance. A supportive organizational environment that includes stress-management interventions, flexible work policies, and continuous learning opportunities can mitigate these stressors and enhance job satisfaction, leading to improved employee well-being and productivity.

METHODOLOGY

This cross-sectional study focuses on IT professionals across various sectors of the IT industry, aiming to examine the relationship between job stress, job satisfaction, and employee well-being. Given the dynamic nature of the IT sector, the study also considers the role of information systems in shaping workplace stressors and job outcomes. The sample size was determined based on previous research on occupational stress among IT employees. Using the MedCalc software (MedCalc program bvba, Ostend, Belgium), a sample size of 200 IT professionals was calculated, ensuring a statistical power of 80% (β) and a significance level of 5% (α). Participants were selected randomly from IT professionals listed in various organizations and professional networks to ensure a representative sample.

Data collection was carried out using an anonymous self-administered questionnaire designed to capture essential aspects of job stress, job satisfaction, and employee well-being. The questionnaire consisted of four sections. The first section collected demographic information, including age, height, weight, marital status, work experience, daily working hours, gender, and employment type. These variables provided a comprehensive overview of the participants' backgrounds and work environments.

The second section focused on assessing job stress using the Osipow Occupational Stress Inventory, which has been widely used in stress research. This instrument, validated in Persian, comprises six subscales: role overload, role insufficiency, role ambiguity, role boundary, responsibility, and physical environment. Each subscale contains ten items, making a total of 60 items scored on a 5-point Likert scale (1 = never to 5 = most of the time). Higher scores indicate greater job stress. Overall, job stress scores are categorized as low (60–120), moderate (121–180), or high (181–300). The validity and reliability of the inventory were confirmed by Sharifian et al., with a Cronbach's alpha coefficient of 0.83.

The third section measured job satisfaction using the Job Descriptive Index (JDI), a well-established instrument consisting of 42 items divided into five subscales: work (10 items), compensation (8 items), promotion (5 items), supervision (9 items), and co-workers (10 items). Responses were collected on a 5-point Likert scale, ranging from 1 (never) to 5 (most of the time). The total JDI score, ranging from 42 to 210, indicates levels of job satisfaction, where a lower score reflects lower satisfaction, and a higher score indicates greater job satisfaction. The questionnaire's validity and reliability were confirmed by Norbakhsh and Mirnaderi, with a Cronbach's alpha coefficient of 0.88.

The fourth section assessed employee well-being using the WHO-5 Well-Being Index, a widely used measure of mental health. This index includes five items related to general interest, vitality, and positive attitude, rated on a 6-point Likert scale (0 = at no time to 5 = all of the time). Higher scores indicate better psychological well-being. Previous studies have established the WHO-5 Index as a valid and reliable measure of mental health and well-being among employees.

Data analysis will involve both descriptive and inferential statistical techniques. Descriptive statistics will summarize demographic variables and key study measures, while inferential statistics, including three-way ANOVA, will be used to analyse the main and interaction effects of factors such as location, gender, and age group on job satisfaction, job stress, and well-being. The significance level for hypothesis testing is set at 0.05.

Ethical considerations include ensuring data confidentiality, obtaining informed consent from all participants, and securely storing research data. Ethical approval will be sought from the appropriate Institutional Review Board (IRB) or Ethics Committee to ensure compliance with ethical research standards.

While this study provides valuable insights into workplace stress, job satisfaction, and well-being among IT employees, it acknowledges certain limitations. The use of self-report measures may introduce bias, and the cross-sectional design does not establish causation. However, the study offers a robust foundation for understanding the psychological impact of workplace stress in the IT sector, highlighting the need for organizational interventions and employee support systems.

DATA ANALYSIS

Field survey and data collection were conducted, and the data was evaluated for statistical analysis. SPSS version 19 was used for the analysis. Pearson correlation analysis was used in the study to examine the correlations between quantitative variables, such as well-being scores, job stress, and job satisfaction. Linear regression analysis was used to determine the variables that influence happiness and job satisfaction. Each test was conducted at a significant level of 0.05.

RESULTS

The analysis of collected data provides valuable insights into the relationship between job stress, job satisfaction, and employee productivity among IT professionals.

Demographic and Descriptive Statistics

Table 1 compiles the personal data of the workers who took part in the study. The study included 125 participants, with ages ranging from 22 to 45 years (M = 33.5, SD = 6.64). Work experience varied from 1 to 12 years (M = 6.5, SD = 3.17). A significant proportion of participants (60.8%) held undergraduate degrees, while 39.2% had postgraduate qualifications. Regarding work schedules, 57.6% of participants worked shifts, and 42.4% worked fixed daytime schedules.

Table 1: Demographic Characteristics

Demographic Characteristics of the employees studied (N=125)		
	Min - Max	**Mean ± SD**
Age (y)	22 - 45	33.5 ± 6.64
Weight (kg)	54 - 89	71.5 ± 10.10
Height (cm)	154 - 188	171 ± 6.18
BMI (kg/m2)	18.42 – 35.17	26.79 ± 4.84
Work experience (y)	1 - 12	6.5 ± 3.17
Working hours/day (h)	8 - 15	10.65 ± 1.48
	Category	**n (%)**
Sex	Male	84 (67.2)

Demographic Characteristics of the employees studied (N=125)		
	Min - Max	**Mean ± SD**
Marital Status	Female	41 (32.8)
	Single	48 (38.4)
	Married	77 (61.6)
Education	Undergraduate	76 (60.8)
	Postgraduate	49 (39.2)
Working Schedule	Shift Working	72 (57.6)
	Day Working	53 (42.4)

Data are presented as n (%)

Job Stress and Productivity

As shown in Table 2, the mean occupational stress score was 183.18 (SD = 22.53), indicating a moderate-high level of job stress. Statistical tests (ANOVA and independent t-tests) showed no significant correlation between demographic factors and job stress scores ($p > 0.05$). However, job stress was found to have a significant negative correlation with productivity ($r = -0.41$, $p < 0.05$). This aligns with the Job Demands-Resources (JD-R) theory, which posits that increased job demands contribute to emotional exhaustion, reducing work engagement and output.

Table 2: Statistical Assessment of Performance Metrics (N=125)

Variables	***Min - Max***	***Job Stress Mean ± SD 183.18 ± 22.53***	***P***	***Job Satisfaction Mean ± SD***	***p***	***Productivity Mean ± SD***	***p***
Age groups (y)†	22 – 30	177.54 ± 21.57	0.07	137.32 ± 19.26	0.026	67.36 ± 11.26	0.33
	31 – 37	173.74 ± 29.98		127.19 ± 15.82		70.23 ± 14.17	
	38 – 45	163.69 ± 22.62		139.21 ± 16.19		66.43 ± 6.19	
Marital Status*	Single	176.82 ± 23.16	0.41	121.18 ± 16.35	0.018	76.91 ± 11.25	0.36
	Married	173.26 ± 21.78		136.74 ± 17.76		67.86 ± 13.10	
Educational Level†	Under Graduate	172.12 ± 27.13	0.301	131.28 ± 17.24	0.081	71.58 ± 12.15	0.57
	Post Graduate	161.72 ± 23.18		131.27 ± 17.27		69.72 ± 11.99	
Working schedule*	Shifts Working	175.27 ± 28.92	0.61	127.10 ± 20.50	0.6	70.60 ± 12.26	0.028
	Day Working	171.73 ± 20.37		137.13 ± 18.71		71.65 ± 12.11	
Daily working time (h)*	1 – 8	156.77 ± 15.32	0.34	136.12 ± 15.63	0.87	85.12 ± 13.02	0.084
	9 - 16	169.41 ± 22.10		123.23 ± 17.4		71.09 ± 12.16	
Stress Dimensions							
Role overload†	Low	-		-		70.06 ± 8.21	0.91
	Low-moderate					71.34 ± 11.65	
	Moderate-high					70.67 ± 11.31	
	High					73.07 ± 8.9	
	Low	-		-		70.39 ± 5.12	0.06

Table 2: Statistical Assessment of Performance Metrics (N=125)

Variables	*Min - Max*	*Job Stress Mean ± SD 183.18 ± 22.53*	*P*	*Job Satisfaction Mean ± SD*	*p*	*Productivity Mean ± SD*	*p*
Role insufficiency†	Low-moderate					71.45 ± 9.37	
	Moderate-high					70.02 ± 12.67	
	High					64.52 ± 0.59	
Role ambiguity†	Low	-		-		74.73 ± 10.72	0.0002
	Low-moderate					71.84 ± 9.95	
	Moderate-high					69.19 ± 12.71	
	High					52.51 ± 20.68	
Role boundary†	Low	-		-		69.00 ± 6.68	0.58
	Low-moderate					71.51 ± 9.86	
	Moderate-high					71.48 ± 10.80	
	High					64.50 ± 19.46	
Responsibility†	Low	-		-		69.33 ± 4.72	0.295
	Low-moderate					72.06 ± 11.06	
	Moderate-high					68.82 ± 12.92	
	High					66.90 ± 11.1	
Physical environment†	Low	-		-		75.93 ± 11.75	0.196
	Low-moderate					72.83 ± 9.96	
	Moderate-high					70.98 ± 10.82	
	High					51.33 ± 20.41	
Satisfaction Dimensions							
	Work‡	-		-		0.031	
	Supervision‡	-		-		0.002	
	Co-workers‡	-		-		0.006	
	Promotion‡	-		-		0.06	
	Payment‡	-		-		0.821	

* Independent sample t test

†One-way ANOVA test

‡Pearson correlation coefficient

Shift Work and Productivity

An independent t-test revealed that shift workers had significantly lower productivity scores than fixed-schedule employees ($p = 0.028$). This finding supports the Technostress Model (Tarafdar et al., 2019), suggesting that increased cognitive load, disrupted sleep cycles, and work-life balance challenges among shift workers negatively impact performance. The results indicate that circadian rhythm misalignment and work-related fatigue are key factors reducing efficiency in shift-based roles.

Age and Job Satisfaction

A U-shaped correlation between age and job satisfaction was identified (p = 0.026), with IT professionals aged 31–38 years reporting significantly lower job satisfaction compared to the 22–30 and 39–45 age groups. This aligns with Herzberg's "modified expectation" theory, which suggests that job satisfaction declines during mid-career due to limited growth opportunities, repetitive tasks, and career stagnation, before improving as employees develop realistic expectations and greater role stability.

Marital Status and Job Satisfaction

Married IT professionals exhibited higher job satisfaction scores than their single counterparts (p = 0.018), supporting work-family enrichment theory (Greenhaus & Powell, 2006). The role accumulation hypothesis suggests that married employees benefit from greater emotional support, reducing work-related stress and increasing satisfaction. However, the findings also suggest that individual job satisfaction varies based on personal and organizational circumstances.

Role Insufficiency and Productivity

A significant inverse correlation between role insufficiency and productivity was observed (p = 0.038). Employees who struggled to understand or fulfill their job responsibilities demonstrated lower efficiency and engagement. These findings align with Role Theory (Meleis, 2010), which states that inadequate role clarity can lead to higher stress, burnout, and job dissatisfaction, further diminishing productivity.

Role Ambiguity and Job Performance

The study identified a strong negative correlation between role ambiguity and productivity (p = 0.0002). Employees experiencing unclear job expectations exhibited higher stress levels, reluctance to take initiative, and increased absenteeism. This supports the Role Stress Model (Kahn et al., 1964), which emphasizes that uncertainty in job roles increases anxiety, lowers engagement, and ultimately reduces organizational efficiency.

Supervision and Employee Performance

As shown in Table 3, Regression analysis confirmed that supervision plays a crucial role in enhancing productivity (p = 0.038). Employees who reported higher levels of supervisor support demonstrated greater job satisfaction and higher productivity levels. This finding supports Leadership-Support Theory (Frimpong et al., 2019), which highlights how effective leadership mitigates stress, fosters engagement, and enhances overall performance.

Table 3: Regression model that shows the variables affecting workers' productivity

Variable	β	Standard error	t	p	R2†
Shift working∗	4.075	2	2.032	0.045	
Supervision	0.565	0.269	2.09	0.038	
Role insufficiency‡	−5.43	2.59	2.09	0.038	0.223
Role ambiguity§	−17.64	6.71	−2.62	0.01	

∗ Employees working shifts were regarded as the reference group.

† R square adjusted (R2)

‡ Inadequate match among the participants' occupation and skill set.

§ Participants are not clear about what is expected of them.

Multiple regression analysis identified the following key predictors of productivity:

- Shift work negatively impacts productivity (β = -4.075, p = 0.045)
- Supervision positively influences productivity (β = 0.565, p = 0.038)
- Role insufficiency negatively affects productivity (β = -5.43, p = 0.038)
- Role ambiguity has a strong negative effect on productivity (β = -17.64, p = 0.01)

The model accounted for 22.3% of the variance in productivity scores (R^2 = 0.223), suggesting that workplace stressors and supervisory support significantly influence performance outcomes.

SUMMARY OF KEY FINDINGS

- Shift workers exhibited lower productivity due to technostress, sleep deprivation, and work-life balance challenges.
- Age and job satisfaction follow a U-shaped pattern, with mid-career employees reporting the lowest satisfaction.
- Married employees showed higher job satisfaction, supporting work-family enrichment theories.
- Role insufficiency and role ambiguity were major stressors, significantly reducing productivity.
- Supervisory support played a critical role in mitigating stress and improving job performance.

DISCUSSION

Consistent with previous research, the findings indicate that IT professionals working in shift-based schedules exhibit significantly lower productivity than those with fixed daytime schedules. The role of information systems (IS) in managing workload distribution, monitoring employee well-being, and automating routine tasks could help mitigate these productivity losses. However, factors such as sleep disorders, health issues, disrupted social life, and circadian rhythm misalignments remain significant contributors to decreased performance. Since shift work often disrupts the body's biological clock, integrating smart scheduling algorithms and predictive fatigue management systems within IT organizations could help optimize workforce efficiency and minimize adverse effects.

The data also revealed a U-shaped correlation between age and job satisfaction, where IT professionals aged 31–38 reported significantly lower satisfaction compared to those in the 22–30 and 39–45 age groups. This aligns with the modified expectation theory, which suggests that job satisfaction initially declines due to job repetitiveness and constraints but later rises as employees develop more realistic career expectations. The role of enterprise resource planning (ERP) systems and AI-driven career development tools in helping employees upskill, reskill, and manage their career growth could prove beneficial in addressing mid-career dissatisfaction. However, alternative studies suggest a linear relationship between age and job satisfaction, emphasizing the need for personalized employee engagement solutions.

The study also found that married IT professionals reported higher job satisfaction than their single counterparts. This could be attributed to greater work-life stability, financial security, and social support systems. However, virtual collaboration tools and remote work platforms may help mitigate job dissatisfaction for single employees by enhancing work-life balance, reducing stress, and providing flexible work arrangements. Given the evolving nature of IT jobs, organizations should leverage digital well-being initiatives and hybrid work models to improve job satisfaction across all demographic groups.

Furthermore, the results confirmed a negative relationship between role insufficiency and productivity. Role insufficiency occurs when employees struggle to understand or meet job expectations, leading to increased stress and disengagement. The use of knowledge management systems, AI-driven task automation, and real-time performance tracking dashboards can help reduce role insufficiency by providing employees with clearer job responsibilities, instant feedback, and structured workflows. Similarly, role ambiguity was found to negatively impact productivity. Employees who experience uncertainty about job expectations tend to exhibit higher anxiety levels, reluctance to take initiative, and increased absenteeism. The implementation of HR analytics and digital onboarding systems can provide clearer job role definitions and structured career pathways, reducing ambiguity and enhancing productivity.

Finally, regression analysis confirmed that effective supervision plays a critical role in enhancing productivity, aligning with previous findings. Supportive leadership, transparent communication, and structured performance management systems significantly reduce job stress, dissatisfaction, and burnout. Information systems can facilitate AI-powered coaching platforms, automated feedback loops, and real-time employee sentiment analysis to strengthen managerial support and foster a positive work environment.

CONCLUSION

This study concludes that shift-based IT professionals face lower productivity due to circadian misalignments, health issues, and social disruptions. The integration of intelligent scheduling systems and predictive fatigue monitoring can help mitigate these effects. The U-shaped relationship between age and job satisfaction suggests that mid-career employees (31–38 years) experience greater dissatisfaction, which can be addressed through career development tools, AI-driven learning platforms, and digital mentorship programs.

Married IT professionals reported higher job satisfaction, likely due to greater stability and support systems. However, organizations can enhance job satisfaction for all employees by leveraging remote work solutions, mental health applications, and work-life balance initiatives.

The study highlights that role insufficiency and role ambiguity significantly reduce productivity, but HR analytics, structured onboarding, and knowledge management systems can help address these challenges. Additionally, supervision quality plays a crucial role in productivity, and companies can strengthen leadership effectiveness through AI-driven coaching, automated feedback mechanisms, and real-time engagement tracking.

To improve job satisfaction and productivity in the IT sector, organizations should focus on leveraging digital solutions to enhance job clarity, work-life balance, and managerial support, ensuring that employees remain engaged, motivated, and productive in a rapidly evolving digital landscape.

REFERENCES

[1] Afaf Ibrahim Meleis. *Transitions Theory : Middle-Range and Situation-Specific Theories in Nursing Research and Practice*. New York, Springer Pub, 2010.

[2] Ayyagari, Ramakrishna, et al. "Technostress: Technological Antecedents and Implications." *MIS Quarterly*, vol. 35, no. 4, 2011, pp. 831–858, https://doi.org/10.2307/41409963.

[3] Bakker, Arnold B, and Michael P Leiter. *Work Engagement : A Handbook of Essential Theory and Research*. Vol. 218, 5 Apr. 2010, pp. 39–53. Accessed 31 Mar. 2025.

[4] Bakker, Arnold B., and Evangelia Demerouti. "Job Demands–Resources Theory: Taking Stock and Looking Forward." *Journal of Occupational Health Psychology*, vol. 22, no. 3, July 2017, pp. 273–285, https://doi.org/10.1037/ocp0000056.

[5] Barney, Jay. "Firm Resources and Sustained Competitive Advantage." *Journal of Management*, vol. 17, no. 1, Mar. 1991, pp. 99–120, journals.sagepub.com/doi/10.1177/014920639101700108, https://doi.org/10.1177/014920639101700108.

[6] Bélanger, France, and Robert E. Crossler. "Privacy in the Digital Age: A Review of Information Privacy Research in Information Systems." *MIS Quarterly*, vol. 35, no. 4, 2011, pp. 1017–1041, www.jstor.org/stable/41409971, https://doi.org/10.2307/41409971.

[7] Benlian, Alexander. "A Daily Field Investigation of Technology-Driven Stress Spillovers from Work to Home." *Publications of Darmstadt Technical University, Institute for Business Studies (BWL)*, 1 Jan. 2020. Accessed 31 Mar. 2025.

[8] Cao, Xiongfei, and Lingling Yu. "Exploring the Influence of Excessive Social Media Use at Work: A Three-Dimension Usage Perspective." *International Journal of Information Management*, vol. 46, June 2019, pp. 83–92, https://doi.org/10.1016/j.ijinfomgt.2018.11.019. Accessed 18 Apr. 2019.

[9] Colbert, Amy, et al. "The Digital Workforce and the Workplace of the Future." *Academy of Management Journal*, vol. 59, no. 3, June 2016, pp. 731–739.

[10] Cooper, Cary L, et al. *International Handbook of Work and Health Psychology*. John Wiley & Sons, 27 Apr. 2015.

[11] Diener, Ed, et al. "Rising Income and the Subjective Well-Being of Nations." *Journal of Personality and Social Psychology*, vol. 104, no. 2, 2013, pp. 267–276, https://doi.org/10.1037/a0030487. Accessed 6 Mar. 2019.

[12] Greenhaus, Jeffrey H., and Gary N. Powell. "When Work and Family Are Allies: A Theory of Work-Family Enrichment." *Academy of Management Review*, vol. 31, no. 1, Jan. 2006, pp. 72–92, https://doi.org/10.5465/amr.2006.19379625.

[13] Herzberg, Frederick. *Work and the Nature of Man*. London, Crosby Lockwood Staples, 1968.

[14] Judge, Timothy A., et al. "Job Attitudes, Job Satisfaction, and Job Affect: A Century of Continuity and of Change." *Journal of Applied Psychology*, vol. 102, no. 3, 2017, pp. 356–374, https://doi.org/10.1037/apl0000181.

[15] KHATTAK, Muhammad Arif, et al. "Impact of Role Ambiguity on Job Satisfaction, Mediating Role of Job Stress." *International Journal of Academic Research in Accounting, Finance and Management Sciences*, vol. 3, no. 3, 26 June 2013, https://doi.org/10.6007/ijarafms/v3-i3/33. Accessed 5 July 2019.

[16] Kim, Hee-Woong, et al. "Value-Based Adoption of Mobile Internet: An Empirical Investigation." *Decision Support Systems*, vol. 43, no. 1, Feb. 2007, pp. 111–126.

[17] Lazarus, Richard S, and Susan Folkman. *Stress, Appraisal, and Coping*. 1st ed., New York, Springer Publishing Company, 15 Mar. 1984.

[18] Maier, Christian, et al. "Giving Too Much Social Support: Social Overload on Social Networking Sites." *European Journal of Information Systems*, vol. 24, no. 5, Sept. 2015, pp. 447–464, link.springer.com/article/10.1057%2Fejis.2014.3, https://doi.org/10.1057/ejis.2014.3.

[19] Maslach, Christina, et al. “Job Burnout.” *Annual Review of Psychology*, vol. 52, no. 1, Feb. 2001, pp. 397–422, https://doi.org/10.1146/annurev.psych.52.1.397.

[20] Michel, Jesse S., et al. “Antecedents of Work-Family Conflict: A Meta-Analytic Review.” *Journal of Organizational Behavior*, vol. 32, no. 5, 29 June 2011, pp. 689–725, https://doi.org/10.1002/job.695.

[21] Moen, Phyllis, et al. “Healthy Work Revisited: Do Changes in Time Strain Predict Well-Being?” *Journal of Occupational Health Psychology*, vol. 18, no. 2, 2013, pp. 157–172, https://doi.org/10.1037/a0031804.

[22] Podsakoff, Philip M., et al. “Sources of Method Bias in Social Science Research and Recommendations on How to Control It.” *Annual Review of Psychology*, vol. 63, no. 1, 10 Jan. 2012, pp. 539–569, https://doi.org/10.1146/annurev-psych-120710-100452.

[23] Ragu-Nathan, T. S., et al. “The Consequences of Technostress for End Users in Organizations: Conceptual Development and Empirical Validation.” *Information Systems Research*, vol. 19, no. 4, Dec. 2008, pp. 417–433, https://doi.org/10.1287/isre.1070.0165.

[24] Spector, Paul. “Job Satisfaction: Application, Assessment, Causes, and Consequences.” *Job Satisfaction: Application, Assessment, Causes, and Consequences*, vol. 3, 1997, https://doi.org/10.4135/9781452231549.

[25] Tarafdar, Monideepa, et al. “Technostress: Negative Effect on Performance and Possible Mitigations.” *Information Systems Journal*, vol. 25, no. 2, 24 July 2014, pp. 103–132, onlinelibrary.wiley.com/doi/abs/10.1111/isj.12042, https://doi.org/10.1111/isj.12042.

[26] ---. “The Technostress Trifecta - Techno Eustress, Techno Distress and Design: Theoretical Directions and an Agenda for Research.” *Information Systems Journal*, vol. 29, no. 1, 21 Nov. 2019, pp. 6–42, https://doi.org/10.1111/isj.12169.

[27] Venkatesh, Viswanath, et al. “Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology.” *MIS Quarterly*, vol. 36, no. 1, 2012, pp. 157–178, https://doi.org/10.2307/41410412.

[28] Yusiana, M. A., Sulistyarini, T., & Wisnuwardhana. I. A. (2024). The Role of Supervision in Improving Employee Performance: A Literature Review.JEMARI: Journal of Health and Medical Record Indonesia, Vol. 1, No.2, pp.42-52

[29] Zedeck, Sheldon. *Work, Families, and Organizations*. San Francisco, Jossey-Bass, 1992.