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Article

Tackling techno-stress: Supervisor support and job clarity as catalysts for employee satisfaction

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Abstract: Purpose: This research aims to investigate the impact of technological challenges, including techno-overload, techno-complexity, and techno-insecurity, on employee job satisfaction within the banking sector of Saudi Arabia. Additionally, the study examines the mediating roles of supervisor support and job clarity in buffering the effects of technological challenges on job satisfaction. **Method:** The study employs a quantitative research design, utilizing an online questionnaire to collect data from banking employees in Saudi Arabia. The sample size of 135 participants was determined using the rule of thumb technique. Random sampling was utilized to ensure representativeness. Data analysis was conducted using Statistical Package for Social Sciences (SPSS) to explore the relationships between technological challenges, supervisor support, job clarity, and employee job satisfaction. **Findings:** The findings of the study reveal a significant negative impact of techno-overload, techno-complexity, and techno-insecurity on employee job satisfaction within the banking sector of Saudi Arabia. Moreover, supervisor support and job clarity were found to mediate these relationships, highlighting their importance in mitigating the adverse effects of technological challenges on job satisfaction. **Originality/Significance:** This research contributes to the existing body of knowledge by providing empirical evidence on the relationships between technological challenges, supervisor support, job clarity, and employee job satisfaction within the specific context of Saudi Arabian banks. The findings have significant implications for organizational leaders and managers in developing evidence-based strategies to manage technological challenges and promote employee well-being in the banking sector of Saudi Arabia.

Keywords: techno-stressor; job satisfaction; job clarity; supervisor support

1. Introduction

Technology has transformed Saudi Arabia's banking sector and digitization has changed banking processes (Kitsios et al., 2021). Modern technology has revolutionized consumer experiences and business processes. Saudi Arabian banks use technology to improve efficiency, productivity, and worldwide competitiveness which includes mobile banking and AI-powered services (Khlaif et al., 2023). These advances pose certain issues for the workforce, including job satisfaction. Job satisfaction impacts human well-being, organizational performance, and client experiences in the banking industry (Bhardwaj et al., 2021). A firm's success depends on efficient human resource management, especially with technology advances. Porcu et al. (2019) observed that worker satisfaction affects service quality and company performance. This is because personnel provide financial services and engage with customers (Kitsios et al., 2021). To enhance worker performance and stay competitive, organizational leaders and managers must assess how technological advances affect

employee job satisfaction. Technology has many benefits, but technical overload, complexity, and vulnerability can cause problems for employees (Li and Wang, 2020). According to La Torre et al. (2020), "techno-overload" means being overwhelmed by technology demands and information, which increases stress and decreases job satisfaction. Techno-complexity refers to technological systems that are difficult for staff to navigate (Abbas et al., 2020). Murray et al. (2022) discovered that technological vulnerabilities including data breaches and privacy issues make employees anxious. Since these difficulties hinder job satisfaction and corporate success, it's crucial to understand how they affect personnel.

Technological concerns and employee job satisfaction have been widely investigated in numerous industries (Califf et al., 2020; Velez and Neves, 2017). Technology overburdens employees, causing stress and lower job satisfaction (Li and Wang, 2020). Complex technical procedures and systems deter employees from comprehending them, lowering job satisfaction (Khlaif et al., 2023). Techno-insecurity can impair employee faith in technology, lading to decreased job satisfaction and engagement (Kalinić et al., 2021). Supervisor support and job clarity can help reduce the detrimental effects of technology concerns on employee job satisfaction (Sargent et al., 2022; Tu et al., 2022). Research shows that guidance, feedback, and emotional support can mitigate the detrimental effects of technological excess and complexity on job satisfaction (Califf et al., 2020). Despite technological limits, job clarity and employee pleasure require simply communication and role description (Velez and Neves, 2017). Despite studies, little is known about how technology issues affect Saudi Arabia's banking industry employee job satisfaction. Industry trends rather than Saudi Arabia's financial sector organizational and cultural differences have been studied (Shen and Kuang, 2022). Supervisor support and job clarity influence the relationship between technical hurdles and job satisfaction (Tu et al., 2022), but earlier study ignored these. Supportive leadership and clear communication have rarely been researched in relation to banking technology issues, despite its relevance for staff well-being (Yunita et al., 2023). This study fills this research vacuum by examining how job clarity and supervisor assistance mitigate technology hurdles' detrimental effects on employee job satisfaction. This study explores how technological overload, complexity, and insecurity impact Saudi banking workers' job satisfaction. Supervisor support and job clarity are mediating variables in reducing technology obstacles to job satisfaction.

Academic scholarship and Saudi finance sector activity are affected by this research. The study examines technical issues, supervisor assistance, job clarity, and employee job satisfaction in a specific organizational environment, expanding academic knowledge. This study fills gaps in the literature and analyzes supervisor support and job clarity as mediators to better understand the complex link between technology and employee well-being. This research may provide evidence-based answers to technical issues and employee job satisfaction for Saudi Arabian bank executives and managers. Personalized care boosts employee well-being, engagement, and performance. This requires understanding how technology affects employee satisfaction. This research seeks to develop sustainable and friendly Saudi banking workplaces and will also boost employee satisfaction and company success.

2. Literature review

2.1. Techno-overload and job satisfaction

Techno-overload describes the complexity of modern workplace technology systems and equipment (Khlaif et al., 2023). These systems' complex software, hardware, and network infrastructures may be challenging for employees to understand (La Torre et al., 2020). Employees face new hurdles when companies use complex technology to be competitive and innovative (Khlaif et al., 2023). These issues may affect job satisfaction and well-being. Scholars believe that fast technology innovation has workplace perks and downsides. Techno-overload hampers individuals and businesses (Urukovičová et al., 2023). Techno-overload comprises constant connectivity, too much information, and the need to quickly adapt to new digital interfaces. These characteristics can considerably affect cognitive burden, work-life balance, and job satisfaction (Khlaif et al., 2023). Technological excess impacts job satisfaction and workplace characteristics. Stress and overload from emails, alerts, and virtual meetings may impair job satisfaction and increase business turnover (Califf et al., 2020). Too many digital resources can also distract employees, reducing job happiness and engagement (Kaltenegger et al., 2024). Technology-enabled work-life integration may limit employees' autonomy and time control, which may lower job satisfaction and well-being (Nazareno and Schiff, 2021). To minimize techno-overload's negative effects on employee job satisfaction and establish a nurturing atmosphere that promotes employee welfare and efficiency, businesses must grasp its effects.

- H1: Techno-overload has a negative impact on employee job satisfaction.

2.2. Techno-complexity and job satisfaction

When firms utilize complicated technology to innovate and compete, employees face new challenges. These factors may impair job satisfaction and well-being (Urukovičová et al., 2023). Technology increases cognitive strain and mental distress most for employees (Nascimento et al., 2024). Complex technological systems demand problem-solving, decision-making, and dissatisfaction, which can deplete and fatigue people (Shahzad et al., 2021). Technological difficulties, confusing interfaces, and slow processes may impair employee trust and job satisfaction (Bourlakis et al., 2023). Technology complexity may create job instability. More complex and interconnected technology systems may confuse and disorient personnel (Li and Wang, 2020). Keeping up with technology and acquiring new skills can cause job instability, affecting organizational commitment and job satisfaction (Yeniaras and Altiněğne, 2023). Technical complexity may hinder staff communication and collaboration. Complex technical systems require transparent communication and shared information for cross-disciplinary collaboration. Complex technology can cause communication interruptions and misunderstandings, leading to decreased job satisfaction and performance (Urukovičová et al., 2023). After reviewing the literature, we developed the following hypothesis:

- H2: Techno-complexity has a negative impact on employee job satisfaction.

2.3. Techno insecurity and job satisfaction

Techno-insecurity is the fear, anxiety, and vulnerability employees feel at work due to technology (Shen and Kuang, 2022). This literature review examines techno-insecurity's effects on employee well-being and job satisfaction and related mitigation techniques (Fernández-Batanero et al., 2021). Employment automation, technology obsolescence, data privacy breaches, cybersecurity concerns, and exponential technology progress cause technological insecurity (Asad et al., 2023). Employees may fear job insecurity and decreased job satisfaction as AI, ML, and automation technologies become more prevalent in the workplace (Yeniaras and Altiněğne, 2023). Data breaches and cybersecurity disasters also threaten employee well-being and job satisfaction. With the rise of digital data and online communication channels, employees must protect sensitive data that might harm individuals and businesses (Fernández-Batanero et al., 2021). Concerns about data breaches and privacy infringements may lower employee faith in technology and organizational procedures, causing stress and low job satisfaction (Kurniawaty et al., 2019). Rapid technology innovation increases employees' technical uneasiness. Technology's constant evolution requires people to adapt to new tools and platforms, creating uncertainty and the need to learn new skills (Murray et al., 2022). The strain to keep up with technology may make people feel inadequate and reduce job satisfaction. Technological uncertainty affects job satisfaction in several ways. Research shows that technologically insecure workers experience increased worry, stress, and weariness (Fernández-Batanero et al., 2021). Technology displacement or job loss may lower motivation, engagement, and job satisfaction (de Silva et al., 2024). Techno-insecurity may also discourage personnel from adopting new technology or exchanging information due to concerns about data protection and security. Expanding upon the literature review, the following hypotheses are formulated:

- H3: Techno-insecurity has a negative impact on employee job satisfaction.

2.4. Supervisor support as mediator

Supervisor support entails advising, motivating, and equipping employees to enhance their well-being and productivity (Chen and Wu, 2020; Epler et al., 2023). Supervisors who aid employees with techno-overload—an overwhelming flow of technological requests and information—may boost job satisfaction. Supervisor support links job satisfaction and techno-overload by giving resources, help, and emotional support to solve technological issues (Sargent et al., 2022). Ilyas et al. (2020) suggest supervisors who exhibit empathy and compassion to technology-overwhelmed personnel can foster a friendly, respectful workplace. Managers may encourage technology use by providing training, flexible work hours, and skill development (Elmadag et al., 2022). Despite technological excess, employees report higher job satisfaction and workplace accommodations (Christian et al., 2020). Supervisor support influences workers' fairness and organisational support, which affect job satisfaction (Elmadag et al., 2022). Sinha and Laghate (2023) found that managers that promote a balanced approach to technology use and employee well-being boost job satisfaction by building confidence in the company. Technical excess and job satisfaction depend on supervisor help (Ojo et al., 2022). Technical challenges hurt

worker health and productivity, but supportive leadership mitigates them. Superiors who help employees with technology may reduce stress and boost job satisfaction. Employees can overcome current workplace technology with supportive supervisors (Ojo et al., 2022). Supervisors can also help team members overcome technology issues and improve job satisfaction through collaborative problem-solving and reciprocal aid (Epler et al., 2023). Supervisor support boosts organisational support and impartiality, which boosts job satisfaction (Ma et al., 2021; Richter et al., 2022). Supervisors who exhibit empathy and compassion for technical difficulty create a pleasant workplace where employees feel valued and appreciated. Thus, despite technological complexity, this increases employee loyalty and trust, which boosts job satisfaction. Generally, supervisor support mediates the association between job satisfaction and techno-complexity (Elmadag et al., 2022). Supportive leadership is essential for navigating complicated technology settings. Positive views of supervisor support help employees overcome technical uneasiness. This help might be practical, informational, or emotional. Emotional support from managers shows empathy for employees' cyber-security worries (Urukovičová et al., 2023). Supervisors provide a caring atmosphere where employees are valued and encouraged to overcome their fears about technology improvements. Managers give pragmatic support to help employees learn digital job skills (Califf and Brooks, 2020). This includes training, guidance, and resources to improve employees' digital literacy and competency. Supervisors educate employees to help them understand technical issues and make educated decisions (Issa et al., 2024) Through good communication and performance assessment, supervisors may help employees grasp technology-related challenges. Supervisors' assistance alleviates employee anxieties and doubts, linking job satisfaction and technological insecurity (Elmadag et al., 2022). Supportive supervisory connections help employees overcome techno-insecurity, which boosts job satisfaction and wellbeing. Expanding upon the literature review, the following hypotheses are formulated:

- H4a: Supervisor support mediates the relationship between techno-overload and job satisfaction.
- H4b: Supervisor support mediates the relationship between techno-complexity and job satisfaction.
- H4c: Supervisor support mediates the relationship between techno-insecurity and job satisfaction.

2.5. Job clarity as a mediator

Individuals' understanding of their roles, responsibilities, and the organization's expectations are evaluated in terms of job clarity. When technical ambiguity emerges, unambiguous job tasks boost job satisfaction and confidence. A flood of technology information and expectations impacts employee well-being and job satisfaction (Bullini Orlandi et al., 2024). Job clarity helps workers understand their duties, objectives, and deliverables, despite technical issues. Technology overload lowers job satisfaction, yet job clarity offers individuals purpose and direction while overcoming technology (Jolly et al., 2021). Knowing their jobs and goals helps workers prioritize and manage time and resources. Clear employment objectives help people manage

their tasks and avoid technological overwhelm (Tu et al., 2022). Despite technological obstacles, job clarity promotes job satisfaction by giving workers more control over their work (Niet et al., 2023). Employees who understand how their work supports corporate goals report higher levels of job satisfaction and achievement (Ressang-Wildschut et al., 2023). Employees feel appreciated when job goals and feedback are discussed. Unambiguous job criteria help staff manage schedules and minimize tech issues (Shen and Kuang, 2022). Job clarity promotes mastery and job satisfaction despite technological obstacles (Ma et al., 2021). When people feel appreciated by the company, employees are happy (Rayburn et al., 2021). Work tasks and expectations communicated well create a strong business culture where employees feel valued and encouraged when overcoming technical issues. Lack of awareness of how technology fits into professional obligations can also cause techno-insecurity. Workers may become overwhelmed by technology's fast advancement and question how it may impact their jobs (Asad et al., 2023). Ambiguity can affect job satisfaction, anxiety, and inadequacy. Job clarity counteracts the negative effects of techno-insecurity on employees by giving them a sense of purpose and direction in their jobs. Understanding how technology fits into their professions and helps them achieve their goals improves technical problem-solving. Setting realistic goals, communicating properly, and offering training and assistance to help people incorporate technology into their work will improve job clarity (Zada et al., 2023). Establishing staff technology positions can enhance job satisfaction and minimize technological insecurity. Job clarity fosters work respect. Employees are happy when their work matches the company's goals. Improves job satisfaction and well-being. Expanding upon the literature review, the following hypotheses are formulated:

- H5a: Job clarity mediates the relationship between techno-overload and job satisfaction.
- H5b: Job clarity mediates the relationship between techno-complexity and job satisfaction.
- H5c: Job clarity mediates the relationship between techno-insecurity and job satisfaction.

2.6. Underpinning theory

Social exchange theory provides a comprehensive framework for understanding the dynamics of relationships and interactions within organizations, particularly in the context of employee satisfaction and organizational behavior (Bukhatir et al., 2023). According to Social Exchange Theory, individuals engage in social exchanges with others based on the expectation of mutual benefits and rewards (Ampofo, 2020). These exchanges involve the exchange of resources, such as support, assistance, and information, between individuals and their social environment. The theory posits that individuals are motivated to maintain relationships and engage in behaviors that maximize rewards and minimize costs (Querbach et al., 2022). In the context of the current study on the impact of techno-overload, techno-complexity, and techno-insecurity on employee job satisfaction, social exchange theory offers valuable insights into the mechanisms underlying these relationships (Afrin et al., 2023). Employees facing technological challenges may perceive these challenges as costs

within the social exchange framework, leading to reduced job satisfaction. However, the presence of supportive supervisors and clear job roles can serve as rewards within the social exchange process, mitigating the negative impact of technological challenges and enhancing job satisfaction (Wen and Liu-Lastres, 2021). In line with social exchange theory, supervisor support and job clarity serve as key mediators in the relationship between technological challenges and employee job satisfaction (Querbach et al., 2022). Employees perceive supervisor support and clear job roles as valuable resources exchanged within the organizational context. Supportive supervisors provide employees with emotional support, guidance, and resources to navigate technological challenges effectively, thereby enhancing job satisfaction (Ampofo, 2020). Similarly, clear job roles enable employees to understand their tasks, responsibilities, and expectations amidst technological complexities, contributing to a sense of control and autonomy that fosters job satisfaction (Bukhatir et al., 2023). Hence based on the above literature, the following conceptual framework is developed which is shown in **Figure 1**.

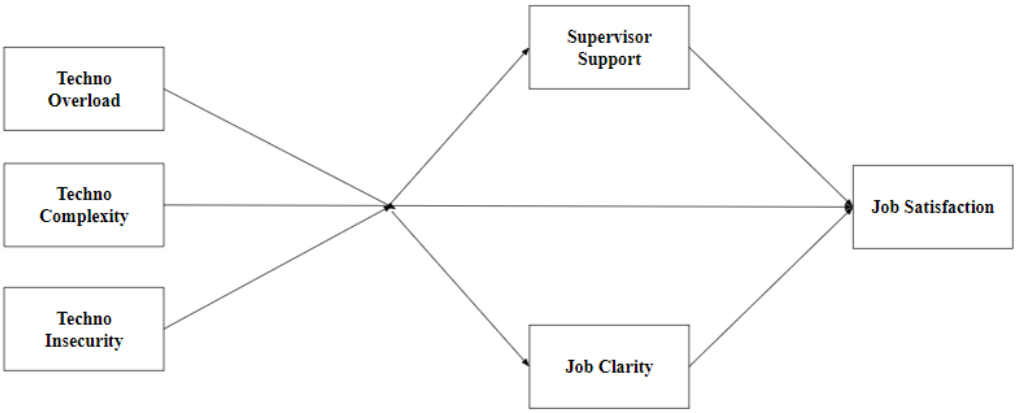

Figure 1. Conceptual framework.

3. Methodology

The study used a quantitative approach to examine how technology challenges affect Saudi finance industry workers' job satisfaction. Quantitative research collects and analyzes numerical data to test hypotheses and draw statistical conclusions. Due of their everyday technological hurdles, the banking industry was chosen as the target market. To give rapid financial sector insights and affect Saudi Arabian regulatory frameworks and organizational practices, the research focused on this sector. Rule of thumb was used to determined sample size according to which one hundred people is usually enough for quantitative research. To guarantee the reliability of the findings and account for dropouts or non-responses, a sample size of 135 individuals was chosen to boost study reliability, applicability, and statistical strength. Random sampling was used to choose participants from the intended population. This strategy reduced bias and improved sample representation. Data was collected by using structured questionnaire through online survey (shown in Appendix). Online surveys remove logistical issues that plagued paper questionnaires (shown in Appendix), making data collection and analysis faster. The questionnaire (shown in Appendix) sought to assess technology, supervisor assistance, job clarity, and job satisfaction.

The evaluation uses proven tools to evaluate each dimension. Job satisfaction was measured by using 3-item scale adapted from Ragu-Nathan et al. (2008). A 5-item scale was used to measure techno-overload adapted from Tarafdar et al. (2007). Six-item scale was adapted form Naqvi and Bashir (2015) to measure supervisor support. Techno-complexity and techno-insecurity was measure by using 5-item scale for each variable adapted form Tarafdar et al. (2007). A 3-item scale adapted from Ju et al. (2013) was used to measure job clarity. All items were measured on a 5-point Likert scale. Statistical Package for Social Sciences (SPSS) was used to analyze the data which is a popular statistical analysis program that lets researchers run various tests and analyses. These tests and analyses let researchers find data patterns, correlations, and linkages. The SPSS-based study included descriptive statistics, correlation, and regression analysis. This study examined the direct and indirect relationships between technological problems, supervisor support, job clarity, and job satisfaction among Saudi banking employees.

4. Results

Table 1 summarizes descriptive data on numerous important research aspects. The initial survey results showed that job satisfaction varied from 1 to 5, with an average score of 4.050 and a standard deviation of 1.002. This indicates that people were highly satisfied. A small negative skewness (−1.053) indicated that respondents were more satisfied. Participants reported techno-overload levels from 1 to 5, with an average score of 1.990 and a standard deviation of 1.026%. Moderate workload was indicated by a modest positive skewness towards 0.899. Participants reported problems on a 1–5 scale, averaging 1.740 and varying by 0.782, to describe techno-complexity. The distribution's positive skewness of 1.158 indicated a greater issue rate. Techno-insecurity ranged from 1 to 5, with an average score of 1.870 and a standard deviation of 0.945. Insecurity levels ranged from 1 to 5. The results indicated a small positive skewness (0.864) indicating mild insecurity. Supervisor support obtained high marks from 1 to 5 compared to other survey areas. The mean score was 4.150, and standard deviation (SD) was 0.877. Results showed a small negative skewness (−0.901), indicating higher supervisor support. On a scale of 1 to 5, participants reported job clarity. The average score was 4.100, with 0.925 standard deviation. The data distribution has a modest negative skewness (−0.899), suggesting work roles and expectations are becoming clearer. These descriptive statistics illuminate the study's primary variables' distribution and core patterns.

Table 1. Descriptive statistic.

	Mini	Maxi	Mean	Std. Deviation	Skewness	Kurtosis
Job Satisfaction	1	5	4.050	1.002	−1.053	0.688
Techno-Overload	1	5	1.990	1.026	0.899	0.405
Techno-Complexity	1	5	1.740	0.782	1.158	1.966
Techno-Insecurity	1	5	1.870	0.945	0.864	0.032
Supervisor Support	1	5	4.150	0.877	−0.901	0.521
Job Clarity	1	5	4.100	0.925	−0.899	0.301

Cronbach's Alpha coefficients for the study's constructs are shown in **Table 2**. The reliability analysis shows high internal consistency in the measurements. Cronbach's Alpha coefficient for job satisfaction is 0.826, indicating its reliability. Techno-overload has a Cronbach's Alpha of 0.880, indicating excellent internal consistency. This statistic demonstrates that it accurately analyses participants' technical challenges. Techno-complexity has a below-average Cronbach's Alpha of 0.732. It still accurately assesses technology occupations' complexity. The instrument's Cronbach's Alpha score of 0.852 indicates good internal consistency. This suggests that the test accurately measures participants' technological apprehension. Supervisor support, with a Cronbach's Alpha value of 0.821, is a credible measure of supervisory aid. Cronbach's Alpha of 0.867 indicates the job clarity scale's high internal reliability. This value promotes constant evaluation of participants' work knowledge. Cronbach's Alpha coefficients suggest that the research's measuring techniques were reliable. Thus, the study outcomes are more accurate and reliable.

Table 2. Cronbach's alpha.

	Cronbach's alpha
Job Satisfaction	0.826
Techno-Overload	0.880
Techno-Complexity	0.732
Techno-Insecurity	0.852
Supervisor Support	0.821
Job Clarity	0.867

Table 3 shows the correlation matrix of the variables of the study. The correlation coefficients reveal construct-to-construct links' strength and direction. Job satisfaction is negatively correlated with techno-complexity ($r = -0.354$, $p < 0.01$), techno-overload ($r = -0.500$, $p < 0.01$), and techno-insecurity ($r = -0.505$, $p < 0.01$). The data show that technical load, complexity, and instability lower job satisfaction. Job satisfaction is substantially connected with supervisor support ($r = 0.586$, $p < 0.01$) and job clarity ($r = 0.453$, $p < 0.01$). The results show that supervisor help and defined job tasks boost job satisfaction. Additionally, techno-overload is positively associated with both techno-complexity ($r = 0.416$, $p < 0.01$) and techno-insecurity ($r = 0.384$, $p < 0.01$). These findings suggest that technological overload increases complexity and insecurity. Supervisor support is negatively associated with techno-overload ($r = -0.497$, $p < 0.01$), techno-complexity ($r = -0.640$, $p < 0.01$), and techno-insecurity ($r = -0.625$, $p < 0.01$). These connections show that supervisor support reduces technical burden, complexity, and insecurity. Furthermore, job clarity is negatively correlated with techno-overload ($r = -0.550$, $p < 0.01$), techno-complexity ($r = -0.623$, $p < 0.01$), and techno-insecurity ($r = -0.608$, $p < 0.01$). These associations show that explicit job tasks reduce technological strain, complexity, and insecurity. These connections illuminate the complex relationship between job satisfaction and organizational technology. They also stress the need of tackling technological issues to improve employee well-being and performance.

Table 3. Correlation matrix.

	JS	TO	TC	TI	SS	JC
Job Satisfaction	1	-	-	-	-	-
Techno-Overload	−0.500**	1	-	-	-	-
Techno-Complexity	−0.354**	0.416**	1	-	-	-
Techno-Insecurity	−0.505**	0.384**	0.589**	1	-	-
Supervisor Support	0.586**	−0.497**	−0.640**	−0.625**	1	-
Job Clarity	0.453**	−0.550**	−0.623**	−0.608**	0.616**	1

Table 4. Outer loadings.

Variables	Items	Outer loading
Job satisfaction	JS1	0.733
	JS2	0.661
	JS3	0.667
Techno-Overload	TO1	0.655
	TO2	0.733
	TO3	0.743
	TO4	0.691
	TO5	0.675
Techno-Complexity	TC1	0.518
	TC2	0.733
	TC3	0.626
	TC4	0.625
	TC5	0.688
Techno-Insecurity	TI1	0.771
	TI2	0.763
	TI3	0.682
	TI4	0.715
	TI5	0.704
Job clarity	JC1	0.63
	JC2	0.742
	JC3	0.706
Supervisor support	SS1	0.72
	SS2	0.64
	SS3	0.572
	SS4	0.687
	SS5	0.784
	SS6	0.721

Table 4 shows the outer loadings for the variables under study, which reveal the link between each item and its construct. JS1, JS2, and JS3 had substantial outside loadings of 0.733, 0.661, and 0.667 for job satisfaction. These criteria appear to be strongly linked to job satisfaction. Technical overload components TO1, TO2, TO3,

TO4, and TO5 have external loadings from 0.655 to 0.743. This shows a strong link between these products and the participants' technology overload experiences. Technical difficulty shows that components TC2, TC3, TC4, and TC5 have outer loadings from 0.626 to 0.733. This shows a strong link between these and technological complexity. In technical insecurity, components TI1, TI2, TI3, TI4, and TI5 have outside loadings from 0.682 to 0.771. These criteria appear to be linked to participants' technological insecurity. For job clarity, components JC1, JC2, and JC3 have high outer loadings of 0.630, 0.742, and 0.706. This shows that these parameters are strongly linked to job clarity. Finally, supervisor help significantly affects outside loadings of items SS1, SS2, SS3, SS4, SS5, and SS6. The loadings range from 0.572 to 0.784, indicating a high association between these characteristics and supervisory assistance. External loadings improve study credibility and comprehension. These loadings reveal important construct measurement validity information.

Table 5 and **Figure 2** shows the regression analysis findings for the hypothesis that technical variables affect job satisfaction. Technological overload reduces job satisfaction, according to the idea. Regression model beta coefficient of −0.489 (t = 6.666, p = 0.000) supported Hypothesis 1, however it was not statistically significant. This suggests that job satisfaction decreases significantly as technology overload increases. Hypothesis 2 held that technological complexity decreased job satisfaction. The statistically significant beta coefficient of −0.454 (t = 4.366, p = 0.000) supported Hypothesis 2 in regression analysis. This shows that job satisfaction decreases with technological complexity. Hypothesis 3 shows techno insecurity lowers job satisfaction. The regression data supported Hypothesis 3, as shown by the significant beta coefficient of −0.536 (t = 6.745, p = 0.000). According to this data, technology-induced insecurity has decreased participants' job satisfaction. Regression analysis offers strong evidence for the hypothesis. This study stresses how excessive technical expectations, complex technological systems, and technological vulnerabilities affect job satisfaction in organizations. This study shows that technology problems must be addressed to improve employee welfare and happiness, creating a productive and successful workplace.

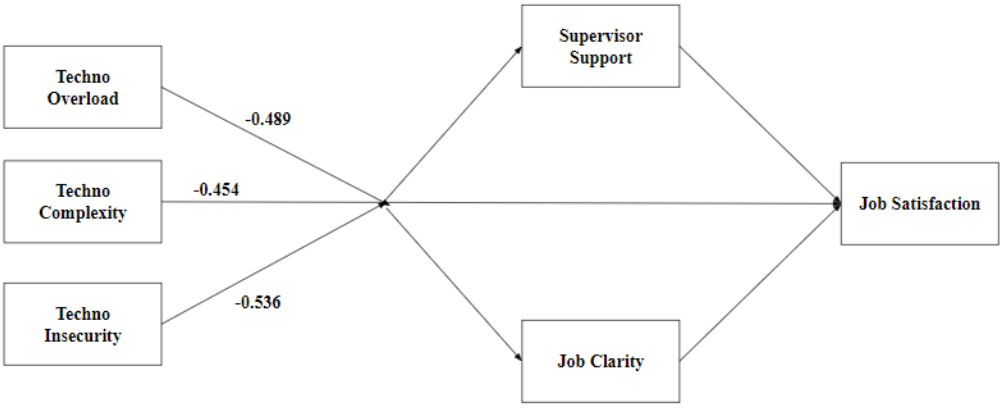

Figure 2. Direct path model.

Table 5. Regression analysis.

Hypothesis		Beta value	*T* value	*P* value
H1	TO → JS	−0.489	6.666	0.000
H2	TC → JS	−0.454	4.366	0.000
H3	TI → JS	−0.536	6.745	0.000

Table 6 shows mediation analysis results. This study examined the indirect impact of technical elements on job satisfaction through supervisor support and job clarity. Supervisor support mediates job satisfaction, techno overload, complexity, and techno insecurity, according to hypotheses 4a–4c. The study found significant beta coefficients for all three hypotheses, demonstrating that supervisor support partially mediates the effect of these technological aspects on job satisfaction. Hypothesis 4a showed a significant indirect impact of techno overload on job satisfaction via supervisor support (β = −0.217, t = 3.586, p = 0.000). Hypothesis 4b showed that technical complexity indirectly impacts job satisfaction via supervisor support (β = −0.499, t = 6.623, p = 0.000). Additionally, Hypothesis 4c revealed a substantial indirect impact of techno insecurity on job satisfaction via supervisor support (β = −0.293, t = 2.589, p = 0.000). This study suggests that supervisors can mitigate the negative impact of technical barriers on job satisfaction. Techno overload, complexity, insecurity, and job satisfaction were explored in hypotheses 5a, 5b, and 5c. These hypotheses examined job clarity as a mediator. The study found that job clarity mediated indirect effects for all three hypotheses. Hypothesis 5a indicates a substantial indirect impact of techno overload on job satisfaction via job clarity (β = −0.137, t = 4.118, p = 0.000). Hypothesis 5b revealed a substantial indirect impact of technological complexity on job satisfaction via job clarity (β = −0.303, t = 3.851, p = 0.000). Additionally, Hypothesis 5c revealed that job clarity indirectly affected job satisfaction because to techno insecurity (β = −0.496, t = 3.937, $p < 0.001$). Supervisor support and job clarity are key to decreasing the negative effects of technological problems on job satisfaction. Organizational support and communication are crucial to employee well-being and happiness.

Table 6. Mediation analysis.

Hypothesis		Beta value	*T* value	*P* value
H4a	TO → SS → JS	−0.217	3.586	0.000
H4b	TC → SS → JS	−0.499	6.623	0.000
H4c	TI → SS → JS	−0.293	2.589	0.000
H5a	TO → JC → JS	−0.137	4.118	0.000
H5b	TC → JC → JS	−0.303	3.851	0.000
H5c	TI → JC → JS	-0.496	3.937	0.001

5. Discussion

This research explores Saudi Arabia's banking industry's complicated linkages between technology issues, supervisor help, job clarity, and employee job satisfaction. Techno-complexity, techno-overload, and techno-insecurity decreased employee job

satisfaction (La Torre et al., 2020). The results reveal that technology issues affect employee well-being and organizational effectiveness worldwide, underlining the necessity to address them in banking. Techno-overload significantly affects Saudi Arabian finance professionals' job satisfaction, supporting hypothesis H1. Prior study indicates that techno-overload may decrease job satisfaction (Urukovičová et al., 2023). Staff may be overwhelmed by technology's continual connectivity and information overload. Maintaining balance and authority at work might diminish job satisfaction. This study supports H2 that technological complexity decreases Saudi finance personnel job satisfaction. Recent research found that complex workplace technology systems and tools generate issues (Nascimento et al., 2024). Technological complexity lowers job satisfaction. Employees that struggle with technical systems may perform poorly (Yeniaras and Altiněğne, 2023). Discontent, inefficiency, and job satisfaction may follow. As personnel learn new tools and processes, fast technological innovation may increase techno-complexity. This study also validates hypothesis H3, that technological insecurity affects Saudi banking job satisfaction. Technology uncertainty and incompetence can hurt employees, according to other studies (Shen and Kuang, 2022). Kurniawaty et al. (2019) say technology insecurity lowers employees' confidence, competence, and workplace control. Technological changes may scare employees about their professional duties and digital abilities. Uncertainty and instability might lower job satisfaction.

This study confirms hypothesis H4a, H4b, and H4c that supervisor support influences techno-overload, techno-complexity, techno-insecurity, and job satisfaction in Saudi Arabian banking. Supervisor assistance lowers the detrimental effects of technological demands on employee well-being (Chen and Wu, 2020; Epler et al., 2023). Informational, instrumental, and emotional support are all part of supervisor support for technologically overburdened staff (Christian et al., 2020). Supervisors who understand, care, and resolve technological concerns quickly create a great work atmosphere where workers feel appreciated and supported. Managers may also provide guidance, tools, and constructive criticism to assist employees manage their calendars, cope with technology, and prioritize tasks. Supervisor support helps workers employ complex technology (Ma et al., 2021). By empowering, recognizing, and respecting staff, supervisors may minimize technical irritation and inefficiency and improve job satisfaction and well-being. Supervisor assistance also helps techno-insecure employees feel supported, guided, and motivated. Supervisors may help employees overcome technology uncertainty and inadequacy by giving emotional support, practical assistance, and educational advice (Califf and Brooks, 2020). Through a supportive and empathic work environment, supervisors may help employees gain confidence, competency, and resilience in the face of technology insecurity while boosting job satisfaction and well-being.

Hypothesis 5a suggested that job clarity mediates the relationship between technological excess and job satisfaction. Understanding how technology fits into their jobs helps them manage technological excess and its problems (Bullini Orlandi et al., 2024). Organizations empower members by clarifying job criteria, performance goals, and technology use. Thus, employees may better handle technology excess and maintain job satisfaction. Job clarity offers employees autonomy and self-governance by giving a plan for completing activities despite technological issues (Jolly et al.,

2021). Work clarity reveals how employees assist the organization achieve its goals, which boosts employee satisfaction and contentment. Technology system and process management requires role clarity and good communication (Ressang-Wildschut et al., 2023). Employees who understand how they contribute to the company's goals feel fulfilled and happy, boosting job satisfaction despite technical difficulty. Job clarity helps employees grasp their efforts, particularly technical details. Understanding how technology helps workers accomplish their tasks and how their work influences organizational success boosts job satisfaction (van der Linden et al., 2023). Thus, job clarity measures consisting of education, open verbal exchange, and useful resource deliver can also mitigate technological complexity's detrimental effects on Saudi banking task pride. Hypothesis H5c shows that process clarity indirectly influences banking experts' technological insecurity and task satisfaction. This underlines the need for proactive and open communique to deal with employee statistics protection breach concerns (Tu et al., 2022). Despite technical challenges, people who understand safety requirements and their function in protecting touchy facts sense robust and guarded at paintings, which enhances activity pleasure. Clear process descriptions can assist personnel overcome technical obstacles and reduce emotions of inadequacy (Casino-García and García-Pérez, 2019). Effective supervisor communication on performance objectives and feedback may enhance job satisfaction and confidence.

5.1. Implications

This research can assist Saudi Arabian financial corporations improve employee activity satisfaction in spite of technical hurdles. Development of assisting leadership traits is crucial. Supervisors have to be able to mentor, guide, and encourage their staff, especially throughout technical issues. Active listening, war resolution, and empathy education may also assist managers create a healthy workplace that encourages worker appreciation and aid. Second, duty accuracy and communique are critical. As technology advances, businesses may additionally offer conversation channels to make certain employees apprehend their roles, obligations, and anticipated performance. Technological systems that enable open discourse, supervisor-group of workers one-on-one contacts, and frequent group meetings can enhance communique. By growing a culture of process readability, organizations can equip their people to address technological demanding situations, enhancing job pleasure and properly-being. Additionally, group of workers properly-being should be prioritized. Employee stress control, intellectual health assistance, and paintings-life balance may be promoted through groups. Counseling, fitness programs, and flexible work preparations can improve worker nicely-being and job pride. Prioritizing employee nicely-being boosts job satisfaction, reduces attrition, and creates a great place of work tradition that promotes creativity and productivity. This work advances social change concept and function principle. This study indicates that manager help and process readability moderate the hyperlink between technical troubles and employee activity delight, including to the literature on place of job social interchange. It promotes open communique and supportive leadership to reduce the negative outcomes of technological demanding situations on employee nicely-being. The incorporation of role theory ideas emphasizes the need of function clarity in decreasing the poor results

of generation disasters on worker task pride. Effective communique and clear activity requirements are had to help employee nicely-being amid technological limitations. This advances organizational conduct theory inside the context of generation breakthroughs by way of opening new regions for examine on job clarity, technological problems, and worker results. This study's conclusions have predominant results for organizational practices and theoretical frameworks. Businesses may also create healthful surroundings that promotes worker health and helps them prevail no matter generation advances with the aid of adopting this finding into their regulations.

5.2. Limitations and future direction

This study contains useful insights, yet it has limits. The cross-sectional study design makes causality determination difficult. Future study may use longitudinal designs to evaluate the temporal links between job clarity, technological issues, supervisor assistance, and employee job satisfaction. Second, self-report measures may add social desirability bias and common method bias, magnifying study associations. Objective metrics or multi-source assessments may be used in subsequent studies to reduce bias and better understand the phenomena. Because the sample included Saudi financial professionals, the findings may not be generalizable. To test the connections' robustness and relevance, further study might apply the findings to different commercial and cultural situations. The study examined the direct and indirect impacts of job clarity, supervisor help, and technology constraints on employee job satisfaction. Further study should examine company culture, leadership styles, and individual attributes that may affect these correlations. In conclusion, the study did not account for prospective moderating factors that may have altered the analyzed variables' correlations. Further research is needed to determine if employee tenure, organizational scale, and technical skill moderate the correlations found in this study. Technology and organizational changes may impact these linkages in longitudinal research. Second, future research may incorporate quantitative and qualitative data using mixed techniques. To further understand the issue, qualitative research might disclose employees' views on technology constraints, supervisor help, and job clarity. Comparative studies across businesses and cultures can confirm generalizability. Scholars can learn about contextual factors that impact job clarity, technical problems, supervisor assistance, and employee job satisfaction by researching how they vary by organizational setting. Future research should evaluate how technology-enabled solutions impact job satisfaction and technical issues. Digital training or AI-powered assistance systems can help employees manage technical complexity. Changes may improve job satisfaction and performance. Future research may analyze how organizational and individual factors moderated these associations. Scholars may study how firm size, employee duration, and technical skill impact job satisfaction, technological hurdles, supervisor support, and job clarity.

6. Conclusion

This study examines the complex correlation between technical obstacles, managerial assistance, task clarity, and employee satisfaction in the banking sector in

Saudi Arabia. The quantitative studies have verified that excessive exposure to technology, the complexity of technology, and the insecurity caused by technology have a detrimental impact on employee well-being. This highlights the importance for organizations to address these issues. The study also shown that managerial assistance mitigates the negative effects of technical limitations on work satisfaction. Supervisors may also promote worker engagement and satisfaction by providing guidance, resources, and emotional support. The research also verified that providing clear instructions mitigates the detrimental impact of generational barriers on employees. Effective communication of tasks, responsibilities, and expectations can assist employees in navigating technology obstacles and security issues, hence improving work satisfaction. These conclusions have significant implications for Saudi banking executives and governance. They prioritize the importance of creating a welcoming work environment and encouraging open communication in order to enhance employee well-being and achieve organizational success. Groups should emphasize initiatives aimed at resolving new technical difficulties, management development programs to enhance supervisory practices that promote support, and communication approaches to help workers comprehend their duties and ensure clarity of tasks. By comprehensively addressing the interrelated factors that impact employee job satisfaction, firms may enhance employee engagement, productivity, and satisfaction, and foster a positive workplace culture in response to evolving technology. Ultimately, our research contributes to the growing body of knowledge on how technological constraints impact worker well-being and gives valuable guidance for firms aiming to succeed in a digital world.

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Appendix

Questionnaire

Job Satisfaction:

1) I like doing the things I do at work.
2) I feel a sense of pride in doing my job.
3) My job is enjoyable

Techno-overload:

1) I am forced by this technology to work much faster.
2) I am forced by this technology to do more work than I can handle.
3) I am forced by this technology to work with very tight time schedules.
4) I am forced to change my work habits to adapt to new technologies.
5) I have a higher workload because of increased technology complexity.

Techno-complexity:

1) I do not know enough about this technology to handle my job satisfactorily.
2) I need a long time to understand and use new technologies.
3) I do not find enough time to study and upgrade my technology skills.
4) I find new recruits to this organization know more about computer technology than I do.
5) I often find it too complex for me to understand and use new technologies.

Techno-insecurity:

1) I feel constant threat to my job security due to new technologies.
2) I have to constantly update my skills to avoid being replaced.
3) I am threatened by coworkers with newer technology skills.
4) I do not share my knowledge with my coworkers for fear of being replaced.
5) I feel there is less sharing of knowledge among coworkers for fear of being replaced.

Job clarity:

1) I know how my performance is going to be evaluated
2) I feel certain about the level of authority I have
3) I know exactly what is expected of me in my job

Supervisor support:

1) My Boss praises positive performance in private and in presence of others.
2) I feel under valued by my boss.
3) My Boss never gives me feed back how well I completed the task.
4) My Boss gives a reward to good idea by implementing it and giving credit to responsible official.
5) My Boss seldom recognizes a job well one.
6) My boss often lets me know how well I am performing the job.