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**TURNOVER INTENTION AMONG IT PROFESSIONALS:
KEY ANTECEDENTS AND ORGANIZATIONAL IMPACTS**

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RECIFE, NOVEMBRO/2025

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RESUMO

A intenção de turnover de funcionários é um desafio constante para as organizações de Tecnologia da Informação (TI) devido à complexidade de mapear os fatores que influenciam a decisão de deixar a empresa e as perdas resultantes. O impacto desse fenômeno nas organizações de TI vai desde a diminuição da produtividade e dos custos com recrutamento e seleção até a consequência mais significativa: a perda de profissionais especializados, detentores de conhecimentos críticos e essenciais para o alcance dos objetivos empresariais em uma indústria que frequentemente enfrenta escassez de mão de obra qualificada. Diversos estudos contribuem para esse tema. No entanto, os fatores que impulsionam a intenção de turnover são diversos, complexos e ainda pouco compreendidos em nível global. Para preencher essa lacuna, o presente estudo buscará identificar os fatores chave que impactam na intenção de turnover dos profissionais de TI, subdividindo-os em dois ensaios. O primeiro deles foi realizado uma revisão sistemática da literatura (SLR) para identificar os principais fatores que influenciam a intenção de turnover dos profissionais de TI, entre 2015 e 2024, período marcado pela ascensão global da Indústria 4.0 e pela reconfiguração das práticas organizacionais em virtude da pandemia da COVID-19, que trouxe novos desafios de engajamento e retenção de profissionais. Destacaram-se os constructos relacionados à satisfação no trabalho e ao comprometimento organizacional, além do burnout, que se mostrou um fator potencialmente influente na decisão de deixar o emprego. O segundo retrata um estudo empírico com profissionais de TI em Recife, por meio de survey com 111 respondentes, utilizando análises estatísticas no SPSS e WarpPLS para testar o modelo conceitual proposto. Os resultados indicaram que, dentre os constructos avaliados, a satisfação no trabalho e o equilíbrio entre vida pessoal e profissional atuam como fatores motivadores na intenção de saída. Em contrapartida, o comportamento inovador, suporte gerencial, relação líder-membro e apoio de colegas não demonstraram impacto estatístico relevante. Dessa forma, os achados dos estudos, no contexto teórico, ampliam a compreensão sobre os determinantes da intenção de turnover e oferecem subsídios para que as organizações de TI desenvolvam estratégias mais eficazes de retenção, priorizando ações que aumentem a satisfação e o equilíbrio entre vida pessoal e profissional dos colaboradores, a fim de reduzir o risco de perda de profissionais-chave para a dinâmica organizacional.

Palavras-chave: *Intenção de Turnover; Profissional Qualificado; Profissionais de TI; Satisfação no Trabalho; Retenção de Talentos.*

ABSTRACT

Employee turnover intention is a persistent challenge for Information Technology (IT) organizations due to the complexity of identifying the factors that influence employees' decisions to leave the company and the resulting losses. The impact of this phenomenon on IT organizations ranges from reduced productivity and increased recruitment and selection costs to its most significant consequence: the loss of specialized professionals who hold critical knowledge essential for achieving business goals in an industry that frequently faces a shortage of qualified labor. Several studies have contributed to this topic; however, the factors driving turnover intention are diverse, complex, and still poorly understood at a global level. To address this gap, the present study seeks to identify the key factors influencing the turnover intention of IT professionals, divided into two manuscripts. The first one conducted a systematic literature review (SLR) to identify the main factors influencing IT professionals' turnover intention between 2015 and 2024 — a period marked by the global rise of Industry 4.0 and the reconfiguration of organizational practices following the COVID-19 pandemic, which brought new challenges to employee engagement and retention. The findings highlighted constructs related to job satisfaction and organizational commitment, as well as burnout, which emerged as a potentially influential factor in the decision to leave one's job. The second one presents an empirical study involving IT professionals in Recife, Brazil, through a survey of 111 respondents, using statistical analyses in SPSS and WarpPLS to test the proposed conceptual model. The results indicated that, among the evaluated constructs, job satisfaction and work-life balance act as motivating factors in turnover intention. In contrast, innovative behavior, managerial support, leader-member relationship, and coworker support did not show a statistically significant impact. Therefore, the findings of these studies, in a theoretical context, broaden the understanding of the determinants of turnover intention and provide insights for IT organizations to develop more effective retention strategies, prioritizing actions that enhance employee satisfaction and work-life balance, thereby reducing the risk of losing key professionals crucial to organizational dynamics.

Keywords: Turnover Intention; Skilled Professional; IT Professionals; Job Satisfaction; Talent Retention.

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1 Introduction

1.1 Contextualization of the topic

IT organizations benefit from skilled and talented employees to increase their annual growth and productivity (Farooq *et al.*, 2022). This is because skilled technology must continuously learn best practices on how to architect, deploy and optimize these new technologies to support business operations (Zaza *et al.*, 2022). Their expertise plays a critical role in an organization's ability to achieve its strategic goals (Harden *et al.*, 2018). However, attracting and retaining IT professionals remains a challenge (Zaza *et al.*, 2022). To keep up-to-date with the ever evolving and competitive IT industry, more so than in other industries, these professionals continuously need to learn new skills and take on board new and/or additional roles, making them prone to work exhaustion and job burnout (Rampadaruth, 2022).

In this context, IT workers who are less satisfied with their jobs are more likely to voluntarily leave their organizations (Serenko *et al.*, 2022). Moreover, due to their specialized skills, IT professionals are better equipped to leave one job and find another (Dinger *et al.*, 2011; Harden *et al.*, 2018). Considering that the IT industry has a high-pressure atmosphere in which it is difficult to maintain specialized technical prowess over time, this leads to the phenomenon of turnover intention (Gupta; Bhatia, 2023; Mergel *et al.*, 2021). As a result, the IT and software industries experience one of the highest turnover intentions rates (Farooq *et al.*, 2022).

The repercussions of high turnover intention encompass reduced performance and a decrease in productivity (Pereira *et al.*, 2024). Additionally, when experienced and competent technology professionals leave a company, they tend to take valuable knowledge and expertise with them (Harden *et al.*, 2018). Furthermore, IT specialists can move to other organizations anytime and with little effort (Nierdeman *et al.*, 2007; Prommegger *et al.*, 2024).

Numerous studies have explored various factors affecting employee turnover in the IT industry (Tahir; Ashraf, 2024). Turnover intention remains one of the most frequently reported predictors of actual turnover (Farooq *et al.*, 2022). Therefore, managing turnover effectively requires identifying the specific antecedents that shape these intentions (Serenko *et al.*, 2022). However, a significant gap remains regarding conceptual foundations and evolving trends within this domain (Narvaria *et al.*, 2024).

Furthermore, existing literature is constrained by a focus on general trends, often overlooking the nuances of specific organizational contexts (Tahir; Ashraf, 2024).

Voluntary turnover in the IT sector imposes significant costs through rehiring, re-training, lower productivity and/or lower product or service quality (Rampadaruth, 2022). Consequently, understanding the factors influencing voluntary turnover or intention to leave is crucial for organizations to design effective Human Resources strategies aimed at retaining skilled professionals (Pereira *et al.*, 2024).

1.2 The problem

Turnover intention refers to an employee's intention to leave and seek employment elsewhere (Santoso *et al.*, 2023). As a result, organizations must replace the employees, leading to increased hiring and training costs while potentially reducing work quality (Gupta, Bhatia, 2023; Zimmerman *et al.*, 2020). In this sense, when key employees leave, subordinates often face uncertainty regarding work continuation and incoming leader (Mufitha *et al.*, 2019; Shapiro *et al.*, 2016). In addition, this issue can have massive effects on a company's performance, especially for new businesses and startups (Kanchana, Jayathilaka, 2023).

Studies have been conducted globally on the turnover intention of human capital in the IT industry (Chouhan, 2022). Farooq *et al.*, (2022), Haran and Niederman (2022) Kanchana and Jayathilaka (2023), Pereira *et al.* (2024), Serenko *et al.* (2022), and Suárez-Al Sanchez *et al.* (2022) are some of the works that have been cataloged related to the topic. Employee turnover is largely influenced by several elements, including job satisfaction, job stress, organizational culture, organizational commitment, remuneration, organizational justice, career opportunities, leadership styles, and organizational climate (Dhakal *et al.*, 2024).

Among these factors, job satisfaction has been identified as the most direct predictor affecting turnover intentions in the IT industry (Haran; Niederman, 2022). Asri (2022) corroborates this position, revealing that job satisfaction has a significant negative relationship with employee turnover intention (Santoso *et al.*, 2023). Similarly, Hariyanto *et al.*, (2022) confirms that job satisfaction negatively impacts turnover intention.

Turnover can be costly for organizations, leading to the loss of valuable employees, increased recruitment and training costs, and reduced productivity (Santoso *et al.*, 2023). Employee replacement cost ranges from 90% to 200% of a

company's annual income and it can even be higher in the technological sector (Mufitha *et al.*, 2019). Moreover, since 2014, the turnover rate in the IT sector has been increasing: 9% in 2014, 8.6% in 2015, 8% in 2016, 7.3% in 2017 and 8.2% in 2018, with 69.9% of these being voluntary turnover (Idell *et al.*, 2021), impacting on the financial costs that affect the organization's capital (Alla; Rajaa, 2019).

Other negative effects of professionals leaving companies, as highlighted in the literature, includes high costs of recruitment, selection and integration of new employees, decreased productivity, and breakdown of teams (Souza *et al.*, 2023). Therefore, turnover symbolizes a failure of relationship between employees and the organization and this scenario needs to be mitigated (Avanzi *et al.*, 2014).

In this context, understanding the agents that cause turnover is a strategic imperative for organizations in the sector (Souza *et al.*, 2023). Furthermore, the expansion of emerging technology hubs intensifies the demand for skilled IT labor, exacerbating talent shortages and reinforcing the need for studies that investigate the factors influencing IT professionals' retention (Metin, 2023).

1.3 General objective

- Examine the factors influencing the turnover intention of IT professionals.

1.4 Specific objectives

- Provide insights for strategic decisions regarding talent retention for managers and HR professionals;
- Investigate the main factors influencing the turnover intention of IT professionals in Recife.

1.5 Justification and relevance

Information Technology (IT) has become one of the most competitive industries, adopting modern technologies to enhance business processes (Seneviratna *et al.*, 2024). In 2024 alone, this market, including process automation and artificial intelligence, has grown on average 20% per year, with expectations of reaching USD 5 billion (Urrutia Pereira *et al.*, 2022). Consequently, the growing demand for qualified IT professionals has led to a skills shortage, generating global competition for specialized talent (Metin, 2023). Farooq *et al.* (2022) emphasize that the success of the IT industry fundamentally depends on the retention of skilled and

talented employees. However, employee retention is currently the most pressing challenge faced by managers, resulting in a shortage of qualified workers, slow economic growth, and high personnel turnover (Sepahvand; Bagherzadeh Khodashahri, 2021).

Turnover intention refers to the degree to which an employee demonstrates a willingness to end their employment relationship with the current employer (Sinisterra *et al.*, 2024). In this sense, a high level of turnover becomes a problem because it indicates that professionals do not remain with the company for long, leading to low retention levels in both companies and projects (Chaves *et al.*, 2022). However, even with a substantial volume of turnover studies, academic consensus is lacking regarding the proper operationalization of its different types and their interrelationships (Ahmad Saufi *et al.*, 2023). This lack of clarity further underscores the importance of effectively managing turnover intention, as IT organizations face substantial costs associated with pre-departure, recruitment, selection, orientation, training, and lost productivity (Narayanan, 2016; Tracey; Hinkin, 2008).

The costs of replacing professionals are even higher when tasks require continuous learning and training, as is the case with IT personnel (Souza *et al.*, 2023). According to Kumar (2022), losing a qualified employee can be costly not only in terms of replacement but also due to potential business losses, particularly in the rapidly growing IT and ITeS sectors, where firms mature quickly (Haque, 2024). In this scenario, retaining employees allows organizations to save the costs, time, and energy involved in recruitment, which can then be redirected to other critical processes (Kumar, 2022).

The identification of the main factors contributing to turnover intention among IT professionals has been studied in various contexts for more than two decades (Armstrong *et al.*, 2018). However, its causes remain multifaceted, complex, and still poorly understood on a global scale (Da Silva; Sampaio, 2025). Therefore, it is essential for organizations to find ways to minimize turnover intention (Le; Vo, 2024), since turnover is considered a key indicator of human capital management (Ramalho Luz *et al.*, 2018). Moreover, understanding the factors that drive turnover is a strategic imperative for organizations in the sector (Souza *et al.*, 2023).

While adopting a global perspective on the topic, this study focuses on Recife, the capital of Pernambuco, due to its growing relevance in the information technology (IT) sector. The city was selected as the locus of analysis because of its remarkable

expansion in the technology industry, which offers a meaningful context for examining IT employment trends and workforce dynamics. According to data from the Cadastro Geral de Empregados e Desempregados (Caged), reported by *Jornal do Comércio* (2025), formal employment in Recife's technology sector increased by 11.98% in June 2025 compared to the same month in 2024, nearly three times the growth rate observed in total formal employment. In contrast, São Paulo recorded an increase of only 1.48%, while Rio de Janeiro experienced a decline of 3% during the same period. These figures underscore Recife's position as the Brazilian capital with the highest growth in technology-related employment.

Recife is also home to Porto Digital, one of Brazil's leading technology parks, which currently accommodates more than 350 companies and institutions operating in the Information and Communication Technology (ICT), Creative Economy (CE), and Technologies for Cities sectors (Porto Digital, 2025). In 2024, Porto Digital employed 21,551 professionals, while the revenue generated by companies within its ecosystem reached R\$ 6.2 billion, representing a 14% increase and further reinforcing Recife's position within the global innovation ecosystem (Porto Digital, 2025). Additionally, according to *Revista Algo Mais* (2025), Porto Digital is expected to generate up to 60,000 new jobs over the next 25 years, strengthening the city's consolidation as an important global technology hub.

1.6 Structure of the dissertation

The main body of this research is composed of two distinct but highly interconnected manuscripts. Each designed to address specific research objectives while collectively achieving the overall goal of the dissertation.

Manuscript I, entitled *They Want to Quit! Why IT Professionals Leave: A Systematic Literature Review on Turnover Intention*, is a systematic review of the literature that rigorously synthesizes existing academic knowledge, which identifies, categorizes, and analyzes, by consolidating fragmented evidence from prior studies, the main drivers influencing IT professionals' intentions to leave their organizations. Following a structured review protocol and the PRISMA guidelines, the study examines peer-reviewed articles published between 2015 and 2024, resulting in a comprehensive analysis of 42 selected studies. The findings reveal a wide range of 47 internal and 35 external determinants of turnover intention, with job satisfaction, organizational commitment, and burnout emerging as the most influential factors. Overall, this manuscript contributes to the theoretical consolidation of turnover

intention research in IT and provides practical insights to support managerial decision-making and the development of effective talent retention strategies. Furthermore, the findings of this manuscript served as a key source of insight and theoretical support for the conceptualization and development of the second manuscript.

Manuscript II, titled *Exploring Predictors of Turnover Intention among IT Workers*, presents an empirical study conducted with IT professionals working in software development and IT departments in the city of Recife. Addressing the persistent challenge of employee turnover intention in IT and software organizations, this manuscript examines the complex and multifaceted factors influencing professionals' intentions to leave their jobs, a phenomenon that negatively affects organizational performance, productivity, and talent retention. To fill empirical gaps identified in the literature, particularly in the Brazilian context, the study adopts a cross-sectional survey design, collecting data through an online questionnaire administered via Google Forms to a sample of 111 IT professionals based in Recife, a major technology hub in Brazil. The proposed conceptual framework was empirically tested using statistical analyses performed with SPSS and WarpPLS. The results indicate that job satisfaction and work-life balance exert a significant negative effect on turnover intention, whereas innovative work behavior, management support, leader-member exchange, and co-worker support do not show a direct influence. These findings offer relevant theoretical contributions and practical insights for IT organizations seeking to reduce turnover intention and retain skilled professionals.

The two articles complement and connect with each other by examining the phenomenon from distinct yet interrelated perspectives. While the first enhances the theoretical understanding of the factors associated with turnover intention, the second empirically validates these findings in a specific context, thereby providing, together, a comprehensive and coherent analysis that directly supports the achievement of the dissertation's overall objective.

The following sections of this article are structured as follows. Section 2 presents the first manuscript, which has been submitted to the *Science of Computer Programming Journal* following an invitation to submit an extended version of selected best papers presented at CIBSE 2025 (see Appendix A). Section 3 introduces the second manuscript developed for this dissertation, which is currently being revised and refined based on feedback from previous unsuccessful

submissions, with the aim of submission to a different target outlet. Finally, Section 4 concludes the dissertation by summarizing the key insights and highlighting its overall contributions to research and practice.

2 First Manuscript: They Want to Quit! Why IT Professionals Leave: A Systematic Literature Review on Turnover Intention

Abstract

Employee turnover intention is a persistent challenge for Information Technology (IT) organizations, as it compromises productivity, disrupts team continuity, and increases operational costs due to the difficulty of retaining skilled professionals. Although research on turnover intention has expanded in recent years, its determinants remain fragmented and lack systematic consolidation, especially in the IT sector. This study aims to identify, categorize, and analyze the key drivers of turnover intention among IT professionals, consolidating findings from the literature to support future research and managerial decision-making. A Systematic Literature Review (SLR) was conducted following a structured protocol and the PRISMA guidelines. Scientific articles published between 2015 and 2024 were retrieved from major academic databases. After applying inclusion and exclusion criteria, 42 peer-reviewed studies were selected for analysis. The review identified 81 distinct drivers of turnover intention, grouped into 47 internal and 35 external factors. Job satisfaction emerged as the most recurrent internal factor, consistently demonstrating a negative relationship with turnover intention. Organizational commitment was identified as the main external factor influencing retention. Burnout also appeared as a critical internal driver due to its strong negative impact on employee well-being. The year 2022 showed the highest concentration of studies, reflecting increased academic interest in the post-pandemic work context. The findings consolidate theoretical knowledge on turnover intention in IT and highlight practical implications. Organizations should prioritize strategies that foster job satisfaction and organizational commitment while implementing burnout prevention programs to reduce turnover and strengthen talent retention.

Keywords: Turnover Intention; Employee Retention; IT Professionals; Job Satisfaction; Systematic Literature Review.

2.1 Introduction

Information Technology (IT) is widely recognized as one of the fastest-growing sectors and an important contributor to global economic development (Farooq et al., 2022). Over the past decade, empirical research has highlighted a significant growth in the IT and software industry (Sandhya; Sulphrey, 2019), which are projected to generate approximately 546,100 new jobs in the coming years (Moquin et al., 2019). However, at the same time, organizations in software and IT intensive environments face a persistent structural challenge, including intense workloads, constant performance pressure (Joseph et al., 2007). They also struggle to retain qualified

professionals given rapid change, continuous learning demands, and macro-level uncertainty (Gannon, 2013; Gefen et al., 2015).

Turnover intention refers to the employee's desire to seek new job opportunities or voluntarily switch employers (Pereira *et al.*, 2024), and is widely recognized as a significant attitudinal predictor of voluntary job resignation (Chouhan, 2022; Jha, 2009). High turnover intention is associated with poor performance and high absenteeism (Chouhan, 2022), productivity losses and organization's reputation harm (Berger; Berger, 2017), and the erosion of critical skills and tacit knowledge that are costly to replace (Scholtz *et al.*, 2019; Souza *et al.*, 2023). This phenomenon directly impacts the organizational well-being and the balance between IT labor supply and demand (Lo, 2015), resulting in high replacement costs and revenue loss (Scholtz *et al.*, 2019). Given the recognized importance of human capital in shaping the financial performance of IT organizations (Chouhan, 2022; Gupta; Raman, 2021), understanding and mitigating turnover intention has become a strategic priority in software-intensive contexts and the IT industry (Kumar, 2022), where turnover rates are significantly higher than other sectors (Pereira *et al.*, 2024).

The fast-paced character of IT work amplifies turnover risk. High expectations for innovation and productivity, combined with the need for constant learning to maintain up to date expertise and uphold professional knowledge base, impose heavy stress and pressure on employees (Pereira *et al.*, 2024; Ajayi; Udeh, 2024). Moreover, the industry's culture of constant connectivity, prolonged focus, and tight deadlines (Ajayi; Udeh, 2024), further blurs boundaries between work and personal life, and exacerbates stress levels, decreasing overall well-being (Derks; Bakker, 2014). This dynamic often culminates in burnout among IT professionals (Ajayi; Udeh, 2024). As a result, individuals experiencing persistent emotional exhaustion and work-related strain tend to develop stronger intentions to leave the organization as a coping strategy (Tulili *et al.*, 2023). Retaining professionals thus emerges as a critical challenge in IT, which is characterized by intense workloads, rapid technological change, and constant performance pressure. Notably, this concern extends beyond IT, as turnover intention has also been widely reported in other labor-intensive sectors such as hospitality (Koo et al., 2020), healthcare management (Lee; Kim, 2020), and banking (Yukongdi; Shrestha, 2020).

Despite substantial empirical attention, the literature on turnover intention among IT professionals remains fragmented, and understanding the factors influencing voluntary turnover continues to be challenging (Tahir; Ashraf, 2024). Although numerous variables have been identified as potential drivers (Kanchana; Jayathilaka, 2023), the causes are multifaceted and not yet coherently integrated at a global level (Cohen; Blake, 2016). Nevertheless, there is a lack of comprehensive synthesis and discussions on recent research, particularly regarding its conceptual foundations and emerging trends (Narwaria *et al.*, 2024).

To address these salient gaps, this study systematically reviews the literature on turnover intention among IT professionals between 2015 to 2024, encompassing diverse geographical contexts. The review identifies key antecedents such as job satisfaction, organizational commitment, burnout, role overload, and worklife conflict into internal (individual or attitudinal) and external (organizational or relational) factors. It also maps the methodological landscape of the field, revealing a predominance of survey-based research and a concentration of studies in technological advanced sectors such as the United States and India. By consolidating and analyzing this evidence, the study provides clear, evidence-based guidance for IT organizations seeking to prioritize interventions (e.g., burnout mitigation, workload redesign, leadership and supportive practices) to strengthen employee retention. Understanding these elements is crucial in a landscape where the demand for qualified talent exceeds supply (Chouhan, 2022), making it essential to mitigate turnover and ensure the retention of a skilled workforce (Pereira *et al.*, 2024). Accordingly, the study addresses the following research question: "What are the factors influencing turnover intention among IT professionals?".

The following sections of this article are structured as follows. Section 2.2 introduces the background and related works about the theme. Section 2.3 documents the research method applied. Section 2.4 highlights the results, their implications and limitations, respectively. In addition, section 2.5 presents discussion and research implications. Finally, section 6 marks the conclusion, threats to validity, limitations, and future research directions.

2.2 Background and related works

2.2.1 Turnover intention

Turnover intention refers to the tendency of employees to search for alternative employment (Sommer; Haug, 2011). Among IT professionals, whose competencies are highly transferable, intentions crystallise quickly when their expectations are unmet (Ramos; Joia, 2013). Nevertheless, within the IT context, a high rate of turnover intention has been noticed due to different challenging issues such as work stress, lack of job satisfaction, and inefficient compensation plans (Al-Dalahmeh *et al.*, 2020; Pereira *et al.*, 2024). In addition, IT employees face constant changes that accompany rapid technological leaps in the field (Aryee, 1991; Joseph *et al.*, 2011; Prommegger *et al.*, 2019).

Because software development work can be performed from virtually anywhere, IT professionals can easily switch employers (Sharma; Stol, 2020), intensifying the turnover challenge. According to Rampadaruth (2022), when the IT employee chooses to move to another IT company or to completely change his or her career path to a non-IT job, turnover or turnaway results in money lost through rehiring, re-training, lower productivity and/or lower product or service quality. There is a negative effect on organizational performance and can be a costly affair (Shaw *et al.*, 2009). On the financial side, a Deloitte study indicates that the cost of losing a single employee can vary from tens of thousand to 1.5 to 2 times their salary (Ajit, 2016) and it has been estimated to take almost nine months to fill an IT vacancy and get a new IT employee up to speed (Witt; Burke, 2022). Therefore, there is a significant loss of knowledge related to IT workers (Zylka; Fischbach, 2017).

Losing high-performing employees to competitors poses substantial risks (Narayanan, 2016), while persistently high turnover signals weak retention and threatens project continuity (Graziotin *et al.*, 2017). Given this scenario, understanding the agents that cause turnover is a strategic imperative for organizations in the IT context (Chaves *et al.*, 2022; Souza *et al.*, 2023). Besides that, the majority of turnover intention studies focus on the organizational level, neglecting employees' personal views and perceptions (Kakar *et al.*, 2018). Thus, this study addresses this gap by incorporating both internal, individual-level perceptions and external, organizational-level perspectives.

2.2.2 Antecedents to turnover intention

Workplace tensions are among the most consistent precursors of turnover intention. Stress arising from job overload (Sarker *et al.*, 2019) and feelings of unhappiness (Graziotin *et al.*, 2017; Marinho *et al.*, 2021) can trigger employees' turnover intentions (Tulili *et al.*, 2023). In the IT sector, such tensions are intensified by the constant change and high job demands, increasing the desire to leave work, which negatively affects mental health, contributing to burnout (Ajayi; Udeh, 2024; Tulili *et al.*, 2023).

Burnout, although still comparatively understudied, is recognized as a major factor hindering career advancement and is at the base of job stress (Ajayi; Udeh, 2024, Chemiss, 1992). As research in the IT domain indicates, burnout not only diminishes employees' well-being but also directly reduces job satisfaction (Ajayi; Udeh, 2024), a key variable inversely related to turnover intention (Farooq *et al.*, 2022).

Beyond psychological factors, several studies have identified organizational and demographic antecedents that influence IT professionals' turnover intentions. Al-Dalahmeh *et al.*, (2020) reports that work stress, lack of job satisfaction, and inefficient compensation were the most recurrent challenges. Kanchana and Jayathilaka (2023), examining IT professionals in Sri Lanka, highlighted the joint effect of psychographic and socio-demographic factors on the turnover intention scenario. Similarly, Narayanan (2016) reported that demographic factors and job embeddedness significantly shape employees' intentions to stay or leave. Other research across contexts reinforces that identifying such antecedents is essential for designing talent retention strategies (Cho; Huang, 2012; Samgnanakkan, 2010).

Evidence from other contexts further supports this view. Vizano *et al.*, (2021), studying turnover intention in Indonesia, found that pay, career, and job satisfaction had a negative impact on turnover intention. Job satisfaction, which has been linked to several positive outcomes, as organizational commitment, can significantly impact both the employee and the organization, leading to high turnover rates, decreased productivity, poor quality of work, a negative work environment, and health mental issues such as burnout (Santoso *et al.*, 2023). Burnout is a work-related syndrome marked by emotional exhaustion, depersonalization, and a reduced sense of accomplishment (Tulili *et al.*, 2023). It has been shown to not only affect individual

employees but also to have a detrimental impact on the organizations for which they work, leading to decreased productivity, higher turnover rates, and increased absenteeism (Ajayi; Udeh, 2024). Employee burnout leads to adverse organizational outcomes, including challenges in retaining employees both within the organization and the broader IT field (Zaza et al., 2022). According to Feng et al. (2022), job satisfaction has a direct negative influence on turnover intention and serves as a partial mediator of the effect of burnout on turnover intention.

Ramalho Luz et al., (2018) reported, based on a Brazilian sample, that affective and normative commitments as well as satisfaction with remuneration, promotions opportunities, and nature of work are significantly correlated with lower turnover intention. Moreover, the lower one's organizational commitment, the higher one's turnover intention becomes, according to Harden et al., (2018). Thus, these findings highlight that turnover remains a global concern and one of the most pressing issues for CIOs and senior IT managers worldwide (Idell et al., 2021).

2.2.3 Employee retention

Employee retention has become a central concern for software companies, representing one of the most critical challenges faced by business executives (Ahmad Saufi et al., 2023; Balasubramanian; Malini, 2020). Retaining key professionals is essential for sustaining organizational performance, maintaining competitive advantage, and mitigating the negative effects associated with employee turnover (Tahir; Ashraf, 2024). As the demand for qualified IT workers continues to exceed supply (Kumar, 2022), organizations face increased pressure to secure and develop their most capable employees, whose technical expertise directly influences project success and service quality (Serenko et al., 2022).

Effective retention strategies rely on understanding the drivers that influence employees' decisions to stay, as reducing turnover intention is a crucial step toward lowering actual turnover (Ahmad Saufi et al., 2023). To ensure productivity and continuity, companies must retain experienced professionals long enough for them to deliver substantive contributions and minimize ramp-up losses (Ambrosius, 2018; Cohen; Blake, 2016; Paillé, 2012). From a managerial perspective, high retention contributes to stable operations, improved service delivery, and reduced organizational costs associated with frequent replacement (Pereira et al., 2024).

Although retention is strategically important across settings (Al-Dalahmeh *et al.*, 2020), its drivers and effective levers vary with cultural values, job attitudes, economic conditions, institutional norms, political environments, conceptions of long-term employment, and even the historical development of the IT industry (Huff; Kelley, 2003; Sasaki *et al.*, 2019; Serenko *et al.*, 2022). Consequently, findings from single countries or Western contexts may not fully generalize to the global IT workforce. Addressing this limitation, our study synthesizes evidence across regions, moving beyond the predominant Western perspective that characterize the global IT work environment (Serenko *et al.*, 2022).

2.2.4 Related work

Previous research has examined why employee leave organizations (Kumar, 2022). In a Japan-based study, Serenko *et al.* (2022) showed that the effects of work exhaustion, personal accomplishment, and friendship networks on turnover intention are fully mediated through job satisfaction and work-home conflict did not influence satisfaction. They also found stronger relationships in younger organizations and that individualistic factors (i.e., work exhaustion and personal accomplishment) had greater influence than collectivistic ones (Serenko *et al.*, 2022). However, as mentioned to the authors, Japan-specific and may not generalize to other Asian or Western countries (Serenko *et al.*, 2022). In this sense, this paper will seek to complement the research by Serenko *et al.* (2022), by providing a global perception of how the issue is measured.

However, using this study as a reference introduces several limitations. First, the management style, as described by the authors, in the research context, is predominantly mechanistic and bureaucratic across industries, including IT, which may differ substantially from more flexible or agile organizational environments. Additionally, the Japanese IT sector presents a series of cultural and structural idiosyncrasies, such as the strong tradition of long-term employment, that may uniquely shape turnover dynamics and limit the generalizability of the findings to other contexts. Furthermore, although the survey relied on validated instruments, the questionnaire comprised 160 items, which raises concerns related to respondent fatigue, dropout rates, and potential common method bias. These contextual and methodological characteristics must therefore be carefully considered when interpreting or extrapolating the study's results to different IT labor markets.

Farooq et al. (2022) conducted an SLR, collecting 47 primary studies and a questionnaire with 250 Pakistani IT professionals. They reported that recruitment and selection, managerial and team support, performance and career management, salary and compensation, work engagement, job security, recognition, organizational demographics, and personal demographics, mediated by the role of job satisfaction, significantly impact turnover intention (Farooq et al., 2022). However, their review window missed the post-pandemic period (2016-2021), leaving out a crucial phase in which COVID-19 profoundly reshaped work arrangements, employee expectations, and turnover dynamics. According to Fouad (2020), the COVID-19 pandemic has brought several implications for organizations and their employees. Affecting the environment in which people work, with whom they work, and how they work (Xavier et al., 2024), and therefore may have impacted on the turnover intention. Besides, the authors did not distinguish between internal (individual/psychological) and external (organizational/market) drivers.

A broader narrative review by Allaa and Rajaa (2019) synthesized turnover theories (organizational equilibrium, social exchange, unfolding theory, and job embeddedness) and reaffirmed the negative repercussions of turnover for employee well-being and productivity, and organizational performance. However, it did not identify specific attributes driving turnover intention (Allaa; Rajaa, 2019).

Previous studies present important findings but also reveal gaps that hinder an integrated understanding of the factors that influence turnover intention among IT professionals. Although research such as Serenko et al. (2022) identifies relationships between exhaustion, satisfaction, and intention to leave, its conclusions are restricted to the Japanese context and are grounded in organizational and cultural structures that are not representative of other IT markets. Similarly, the review by Farooq et al. (2022) identifies relevant determinants but does not cover the post-pandemic period, which profoundly reshaped work arrangements, professional expectations, and turnover patterns, and also does not clearly distinguish between internal and external factors that shape the phenomenon. In addition, previous narrative reviews (Allaa; Rajaa, 2019) outline classical theories but do not identify specific attributes capable of clarifying which factors are most determinant in the global IT sector.

These limitations reveal that, despite dispersed findings, there is still a lack of a comprehensive, updated, and comparative synthesis that organizes the various

factors associated with turnover intention, taking into account recent changes in work, distinctions between levels of analysis, and the particularities of the IT sector. Thus, these gaps directly converge toward the research question of this study: “What are the factors that influence the turnover intention among IT professionals?” and justify the need for a systematic literature review that integrates and updates the existing knowledge.

This study extends the literature in three ways. First, it updates the evidence base to 2015-2024 to capture pandemic and post-pandemic dynamics. Second, it classifies determinants into internal and external drivers, addressing a gap in prior syntheses (Farooq et al., 2022). Third, it identifies additional factors salient to the global IT workforce, such as work integration, burnout, psychological contract violation, and perceived work overload, thereby responding to calls for deeper attention to psychological mechanisms linked to mental health and turnover (Farooq et al., 2022).

2.3 Research methodology

2.3.1 Review framework and scope

This study adopts a systematic literature review (SLR) approach, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method (Page et al., 2021). The review was designed to answer the research question: What are the factors that influence the turnover intention among IT professionals? A SLR was chosen because it allows for the comprehensive identification, extraction, and synthesis of recent evidence in a transparent, unbiased, and reproducible manner (Kitchenham; Charters, 2007). SLRs also enable rigorous organization and evaluation of existing research through well-defined stages (Pratiwi et al., 2024).

In addition to PRISMA’S protocol, this review follows the guidelines proposed by Kitchenham and Charters (2007). A detailed research protocol was developed, outlining the research questions, inclusion and exclusion criteria for gathered studies, search string, selected digital libraries and quality evaluation procedures. Relevant studies were identified from multiple electronic repositories using predefined search terms, and all retrieved publications were screened according to the protocol and established inclusion, exclusion, and quality criteria.

2.3.2 Database selection and search terms

To achieve the study's objective, searches were conducted in five electronic repositories (IEEE Xplore, Science Direct, ACM Digital, Google Scholar, and EBSCO), from 2015 to 2024. This period was selected because it coincides with intensified transformations in the digital economy and the expansion of Industrial 4.0, a concept introduced by Klaus Schwab, executive chairman of the World Economic Forum, in 2015 (Gianolli, 2020). These developments, further catalyzed by the COVID-19 pandemic, have driven significant growth in IT-related roles and occupations (Souza *et al.*, 2023).

The string was initially based on the string used by Farooq *et al.*, (2022):
(__turnover intention“ OR __job change“ OR __turn away“ OR __job mobility“ OR __job movement“ OR __job flow“ OR __career change“)
AND (__software developer“ OR __IT professional“ OR __IT personnel“ OR __software engineer“ OR __software coder "OR "developer" OR "tester")
AND (__software industry“ OR __IT industry“ OR "software engineering").

However, minor adjustments were made to accommodate database specific syntax limitations and ensure comprehensive coverage. The final search string represents the overlap of articles addressing job turnover intention, its associated factors, and professional roles within the software or IT industry.

2.3.3 PRISMA flow diagram

In line with the PRISMA guidelines, a structured four-step process was followed to ensure transparency and consistency. The procedure comprised identification, filtering, eligibility verification, and final inclusion. A systematic search was conducted across the selected databases, and all studies meeting the predefined inclusion and exclusion criteria were evaluated. Figure 1 presents the PRISMA flow diagram, offering a visual overview of the selection process, and illustrating each stage from the initial identification of articles to the final inclusion of the relevant studies.

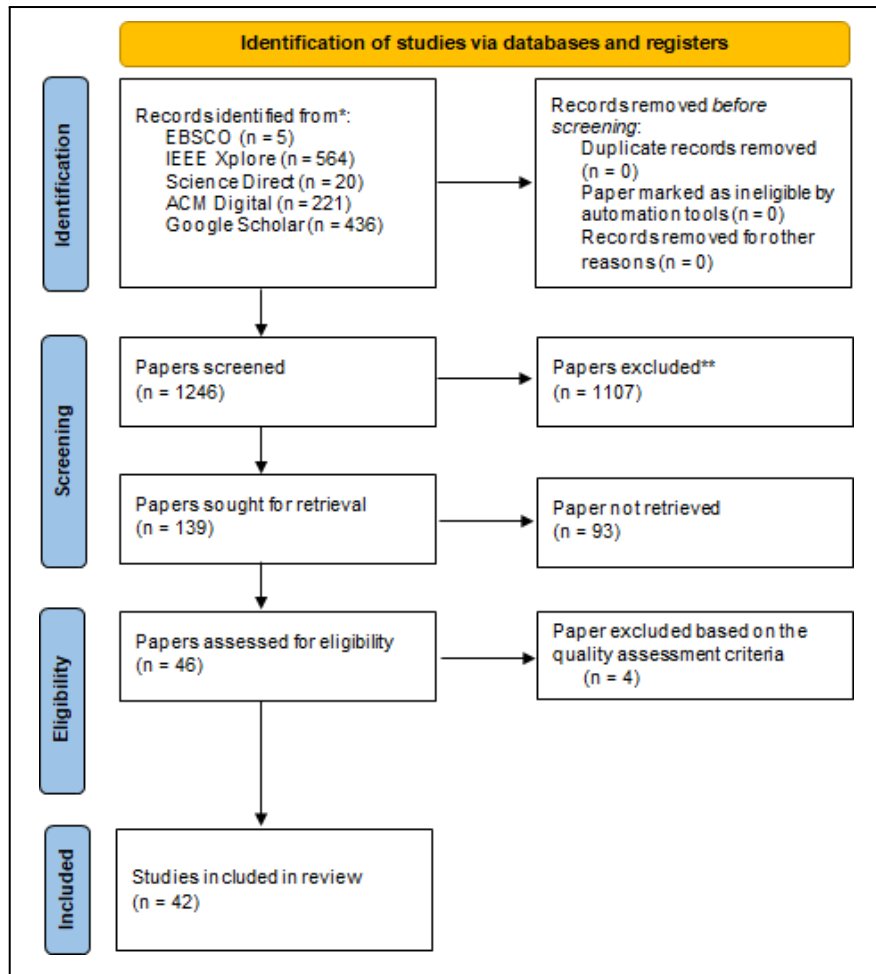
Table 1. Study selection criteria

Inclusion criteria	Exclusion criteria
The selected studies were published in a conference or journal.	Those studies were excluded, not written in the English language.
The selected studies were written in the English language.	Blog, slides, technical reports, book chapters, white papers, and workshop papers were

The time duration of selected studies lies between 2015 to 2024.	Studies that were inaccessible or unavailable online.
Studies that the open access articles were freely available for download.	Reluctant or duplicated studies were excluded.
The selected study referred to turnover factors in the software or IT industry.	The studies were not relevant to the turnover intention of IT professionals.

Source: Own elaboration

Figure 1 PRISMA flow chart.



Source: Own elaboration

2.3.4 Inclusion/exclusion and quality assessment criteria

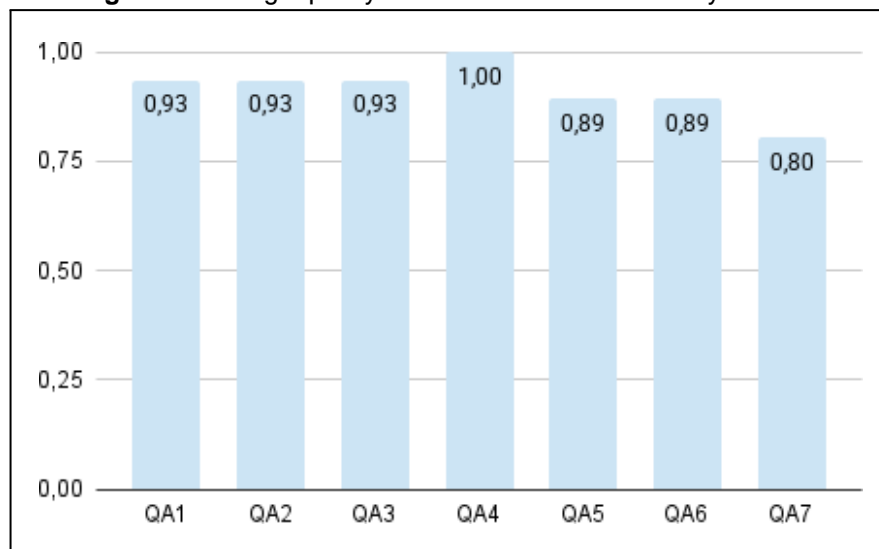
To evaluate the primary studies identified through the PRISMA protocol, a checklist with seven quality assessment questions (see Appendix B) was applied to systematically assess the quality of each study. The questions addressed aspects such as the clarity and relevance of study objectives, adherence to inclusion criteria, examination of job turnover intention factors, methodological rigor, empirical

validation, and the coherence between findings and conclusions.

In the identification phase, a search was conducted using the predefined search string, which was applied across different search engines, resulting in a total of 1252 articles. Subsequently, during the screening phase, the established inclusion and exclusion criteria (Table 1) were applied based on Farooq *et al.*, (2022), reducing the number of studies to 139. After the application of quality assessment criteria, 46 studies remained that met the defined methodological requirements..

The 46 studies were assessed using a structured quality evaluation process. Each study received a score of 1 if it fully addressed the quality assessment questions, 0.5 for partial responses, and 0 if it did not address the questions at all. Only studies that achieved a positive score on all quality assessment criteria were selected for inclusion. Figure 2 presents a graph illustrating the overall mean scores of the quality criteria for the selected articles. Following this evaluation process, a total of 42 studies were identified as satisfying the established quality criteria and were subsequently incorporated into the final set for further analysis.

Figure 2 Average quality scores of selected articles by criterion.



Source: Own elaboration

2.4 Results

2.4.1 Overview of primary studies

The SLR identified 42 relevant studies investigating the factors that impact turnover intention among IT professionals (Table 2). Following the framework proposed by Pratiwi *et al.*, (2024), these factors are classified into internal

(demographic, personal, job-related) and external (working conditions, interpersonal relationships, organizational dynamics) categories. Internal factors comprise individual characteristics such as personality traits (e.g. extraversion, openness, emotional resilience, and assertiveness), whereas external factors encompass contextual and organizational aspects such as professional development, supportive supervisors, career anchors, organizational skills and knowledge (Chouhan, 2022). Each study was then meticulously analyzed and classified according to its research method, country of origin, and the period of publication, highlighting the time frames with the highest concentration of empirical work. The detailed classification and distribution of these studies are presented in the following subsections.

Table 2. SLR final set of studies

Author, Year	Country	Method	Factors affecting turnover intention	
			Internal	External
Abid, Zahra and Ahmed (2016)	Pakistan	Quantitative	<ul style="list-style-type: none"> Demographic (age; education; gender; Organizational tenure) Perceived organizational support 	<ul style="list-style-type: none"> Heedful relating
Al Akasheh et al. (2024)	Arab Emirates	Quantitative	<ul style="list-style-type: none"> Job satisfaction Job involvement 	<ul style="list-style-type: none"> Job environment
Apostel, Syrek and Antoni (2018)	Germany	Quantitative	-	<ul style="list-style-type: none"> Illegitimate tasks
Armstrong et al. (2018)	United States	Quantitative	<ul style="list-style-type: none"> Work exhaustion 	<ul style="list-style-type: none"> Organizational commitment
Atouba (2018)	United States	Quantitative	<ul style="list-style-type: none"> Employee work participation Organizational identification 	<ul style="list-style-type: none"> Internal communication adequacy
Booyesen and Malan (2024)	South Africa	Mixed Methods (Quantitative and Qualitative)	<ul style="list-style-type: none"> Benefits satisfaction 	<ul style="list-style-type: none"> Job embeddedness Supportive organisational climate Transformational leadership
Chiu (2017)	Taiwan	Quantitative	<ul style="list-style-type: none"> Job crafting 	-

Cho, Yoo and Lim (2020)	Korea	Quantitative	<ul style="list-style-type: none"> • Job satisfaction 	-
Chouhan (2022)	India	Quantitative	<ul style="list-style-type: none"> • Career adaptability 	-
Dinger et al. (2015)	United States	Quantitative	<ul style="list-style-type: none"> • Perceived job alternatives • Intrinsic motivation • Job satisfaction • Affective commitment 	-
Dunukara and Pushpakumari (2021)	Sri Lanka	Quantitative	-	<ul style="list-style-type: none"> • Advancement opportunities • Pay and benefits • Job security • Supervisor/Management relations • Peer relations
Eckhardt et al. (2016)	Germany	Quantitative	<ul style="list-style-type: none"> • Personality traits • Neuroticism • Extraversion • Conscientiousness 	-
Farooq et al., (2022)	Pakistan	Quantitative	<ul style="list-style-type: none"> • Employee commitment • Recognition • Employee experience • Education level 	<ul style="list-style-type: none"> • Recruitment & selection • Team & management support • Performance & career management • Salary & compensation • Job security • Organizational demographics (organization size and department size)
Gumussoy (2016)	Turkey	Quantitative	<ul style="list-style-type: none"> • Job satisfaction • Career commitment • Conscientiousness • Openness to experience • Career satisfaction 	-
Haran and Niederman (2022)	India	Quantitative	<ul style="list-style-type: none"> • Job satisfaction • Organizational justice 	-
Harden, Boakye and Ryan (2018)	United States	Quantitative	<ul style="list-style-type: none"> • Perceived work overload • Perceived skill obsolescence • Fairness of rewards 	<ul style="list-style-type: none"> • Organizational commitment

Haridas, Ture and Nayanpally (2022)	India	Quantitative	-	<ul style="list-style-type: none"> Organizational career management
Idell, Gefen and Ragowsky (2021)	United States	Quantitative	<ul style="list-style-type: none"> Distrust in organization 	-
Jia and Li (2024)	China	Quantitative	-	<ul style="list-style-type: none"> Transformational leadership Innovative work behavior
Josifoski (2024)	Macedonian	Qualitative	<ul style="list-style-type: none"> Job satisfaction 	<ul style="list-style-type: none"> Organizational commitment
Kanchana and Jayathilaka (2023)	Sri Lanka	Quantitative	<ul style="list-style-type: none"> Job Satisfaction Demographic (gender: male) 	-
Kato and Koizumi (2024)	Japan	Quantitative	-	<ul style="list-style-type: none"> Advanced technology
Kmieciak (2022)	Poland	Quantitative	<ul style="list-style-type: none"> Co-worker support 	<ul style="list-style-type: none"> Organizational commitment
Moquin, Riemenschneider and Wakefield (2019)	United States	Quantitative	<ul style="list-style-type: none"> Psychological contract breach 	-
Mufitha, Lee and Yong (2019)	Sri Lanka	Quantitative	<ul style="list-style-type: none"> Job satisfaction Professional commitment 	-
Naqvi and Bashir (2015)	Pakistan	Quantitative	-	<ul style="list-style-type: none"> Supervisor support
Prommegger (2024)	Europe, USA and Asia	Quantitative	<ul style="list-style-type: none"> Job satisfaction 	<ul style="list-style-type: none"> Shock events Organizational embeddedness
Ramalho Luz, Luiz de Paula and De Oliveira (2018)	Brazil	Quantitative	<ul style="list-style-type: none"> Demographic (age) Affective commitment Normative commitment Job satisfaction Satisfaction with pay Satisfaction with promotions satisfaction with the nature of the work 	<ul style="list-style-type: none"> Organizational commitment
Ramaprasad, Lakshminarayanan and Pai (2021)	Indian	Quantitative	<ul style="list-style-type: none"> Work engagement 	<ul style="list-style-type: none"> High-Performance work systems Organizational commitment

Sasaki (2019)	Japan	Quantitative	• Job satisfaction	-
Scholtz (2019)	South Africa	Quantitative	• Job satisfaction	• Organizational size • Occupational culture
Serenko et al. (2022)	Japan	Quantitative	• Job satisfaction	-
Sethar, Channar and Jatoi (2022)	Pakistan	Quantitative	• Job satisfaction	-
Setiawan Wahidin and Heryjanto (2024)	Jakarta	Quantitative	• Employee engagement	-
Sharma and Stol (2020)	Ireland	Quantitative	• Job satisfaction	-
Singh (2024)	India	Quantitative	• Work-Life balance	• Organizational commitment
Sivarethnamohan and Aranganathan (2015)	Chennai City - India	Quantitative	• Role ambiguity • Role conflict • Work exhaustion • Promotion satisfaction • Fairness of individual rewards • Job security	• Supervisor's feedback • Leader member exchange • Work schedule flexibility • Career accommodation
Souza et al. (2023)	Brazil	Mixed Method (Quantitative and Qualitative)	• Perception of material support	• Performance management • Compensation and development policies • Management and leadership style • Social support
Suárez-Albanchez et al. (2022)	Spain	Quantitative	• Organizational support perceived	• Organizational commitment
Vennila and Vivekanandan (2017)	Coimbatore District	Quantitative	• Work exhaustion	-
Vidya (2023)	India	Quantitative	• Emotional dissonance • Burnout components (emotional exhaustion, depersonalization and personal accomplishment)	-
Zaza, Armstrong and Riemenschneider	United States	Quantitative	• Burnout	-

(2022)				
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Source: Own elaboration

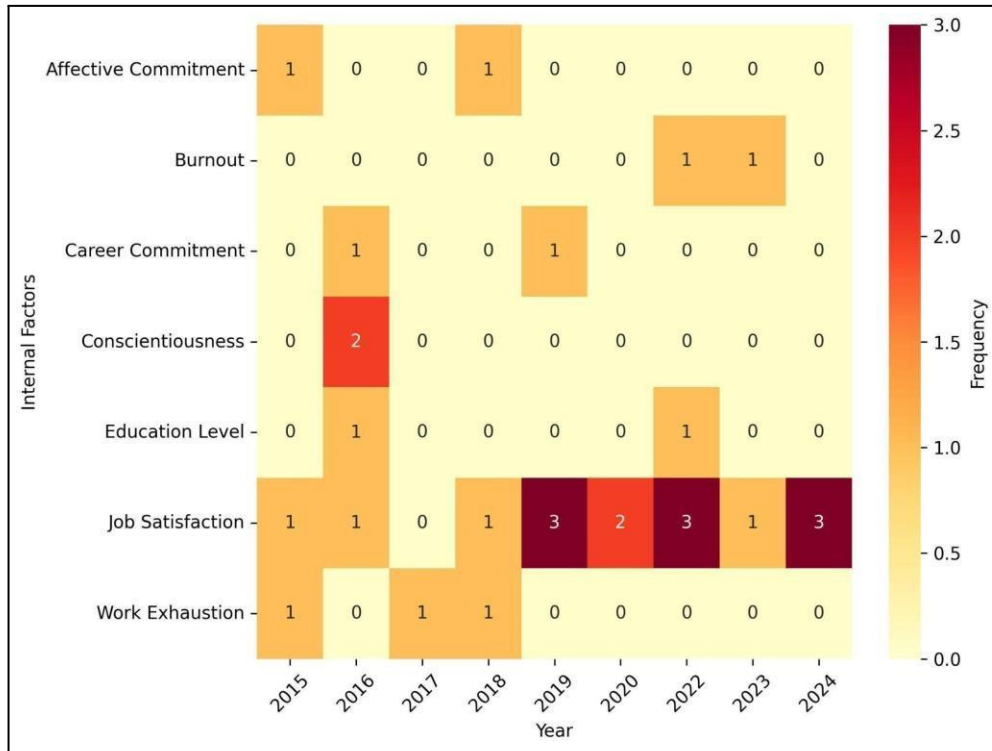
2.4.2 Key drivers in turnover intention research among it professionals

The analysis of 42 studies revealed that turnover intention among IT professionals is shaped by a combination of 47 internal and 35 external distinct factors. Internal factors encompass demographics, job satisfaction, burnout, and factors perceived and experienced by employees regarding organizational dynamics. External factors include organizational commitment, a supportive organizational climate, and transformational leadership.

Among the internal drivers, job satisfaction stands out as the most recurrent, identified in 15 of the analyzed studies (Figure 3). It was absent in only two years (2017 and 2021) demonstrating consistent presence in the literature since 2018. Another prominent internal driver is burnout, which is referenced in two of the analyzed papers. It stands out as the only driver with more than one occurrence in the most recent years of the examined time frame. As defined by Tulili *et al.*, (2023), burnout is a work-related condition commonly manifested through emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment. Job-related burnout has detrimental consequences, including lower job satisfaction, diminished organizational commitment, and a higher likelihood of employee turnover (Rampadaruth, 2022).

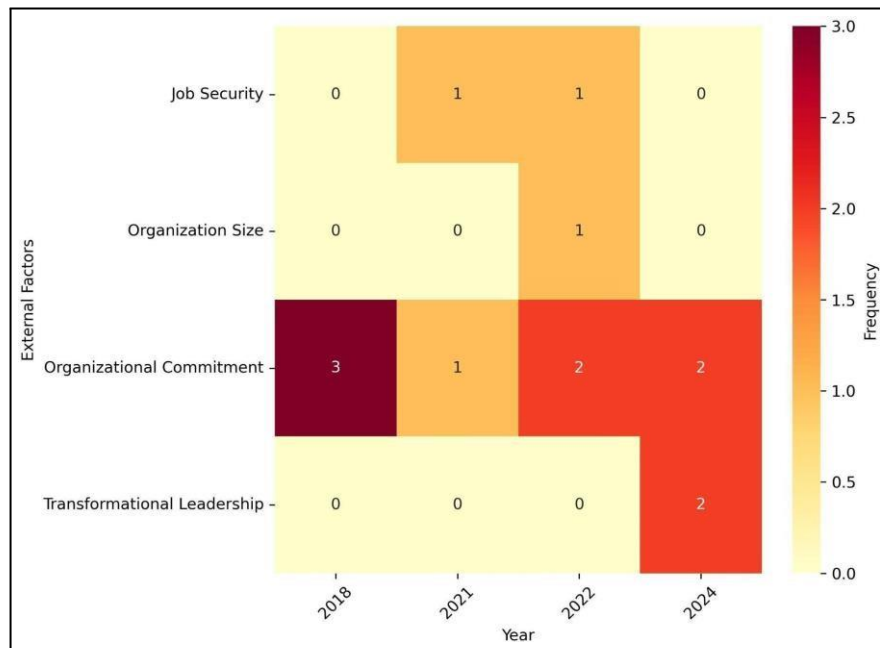
Regarding external factors, organizational commitment was the most prominent, appearing in 8 of the cataloged studies, as highlighted by the heat map (Figure 4) This result aligns with the findings of Pereira *et al.*, (2024), who emphasize that job satisfaction and organizational commitment exert a substantial influence on turnover intention. Similarly, Dhakal *et al.*, (2024) highlighted that these two constructs are significantly and negatively associated with turnover intention among IT professionals. These findings were echoed by (Lo, 2014; Mufitha *et al.*, 2019; Santoso *et al.*, 2023), which also stated that IT professionals' turnover decisions are directly related to job satisfaction and commitment.

Figure 3. Heat map: most frequent internal drivers by year



Source: Own elaboration

Figure 4. Heat map: most frequent external drivers by year



Source: Own elaboration

2.4.3 Methodological trends in the study of turnover intention

A predominant characteristic of the studies on the turnover intentions among IT professionals is the preference for quantitative research methods, primarily empirical surveys. The majority of the cataloged works employed this approach, relying on structured questionnaires to collect data from IT professionals. Only three studies analyzed purely qualitative designs, indicating limited exploration of interpretive or mixed-method approaches in the field.

Farooq *et al.*, (2022) exemplify this trend, using a survey of 250 professionals from Pakistan's IT and software industry, and stating that survey offers a more convenient method for gathering information. Additionally, Haran and Niederman (2022) argued that quantitative analysis provides strong evidence for identifying significant factors in the turnover process. Their study also applied a survey method involving 75 participants. Overall, the methodological landscape reveals a dominance of quantitative, cross-sectional surveys, with relatively few studies employing qualitative or mixed-method designs to explore the contextual and experiential dimensions of turnover intention.

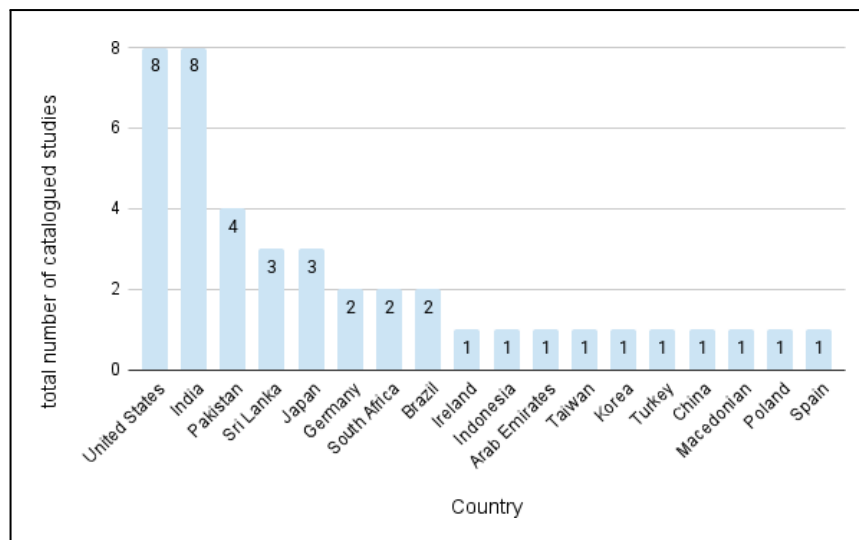
2.4.4 Geographic trends in turnover intention research among IT professionals

As presented in Figure 5, the United States and India stand out, each accounting for eight studies. Contrary to the findings of Serenko *et al.*, (2022), who reported that most research on turnover intention is concentrated in Western countries, particularly in the United States, the present review reveals a balanced geographical distribution, reflecting growing scholarly interest across diverse regions.

In the United States, despite ranking third among the world's ten most technologically advanced countries in 2024 (Ajayi, 2024), retaining valuable skilled IT professionals remains a growing concern. The persistent supply-demand gap in the IT labor market exacerbates staffing problems, as dissatisfied employees can easily find alternative employment opportunities (Chiu, 2017). Furthermore, in 2020, US IT organizations were projected to lose approximately \$435.7 billion in revenue due to the shortage of skilled and talented employees (Farooq *et al.*, 2022). Consequently, identifying the antecedents of turnover intention has become a promising avenue for improving retention and addressing this imbalance (Zaza *et al.*, 2022).

In India, one of the global leaders in the IT outsourcing market (Krishnan; Singh, 2010; Nasscom, 2020), turnover remains a central challenge despite the sector's rapid growth. High mobility among information-systems professionals continues to threaten organizational stability (Haran; Niederman, 2022; Upadhy; Vasavi, 2006). This prevalence explains the large number of Indian studies focussing on turnover intention, given that the country's IT industry is characterized by intense competition and technological dynamism (Chouhan, 2022).

Fig. 5. Distribution of articles by country



Source: Own elaboration

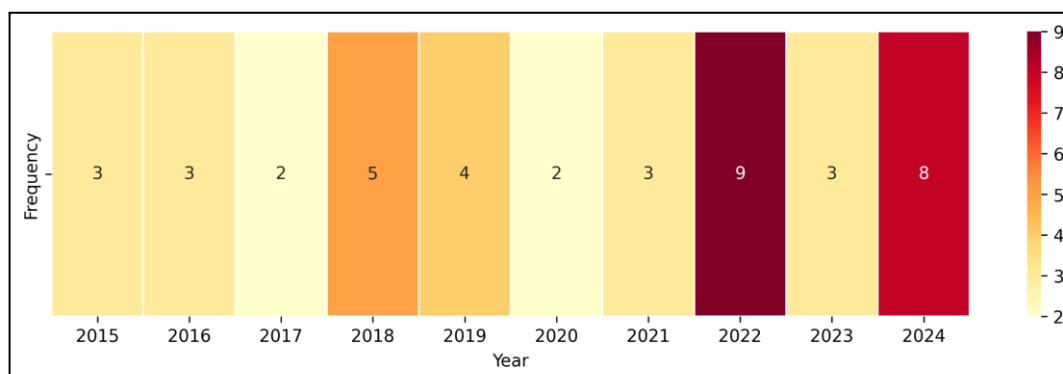
Beyond these two countries, notable contributions also emerge from Pakistan (four studies), Sri Lanka (three studies), and Japan (three studies). In Pakistan, the growing IT sector, which increased by more than 11% from 2021 to 2022, faces an average employee turnover rate of 21.3%, the third-highest turnover among national industries (Farooq et al., 2022). In Sri Lanka, due to the recent growth in the IT industry, the demand for qualified IT professionals has increased (Dunukara; Pushpakumari, 2021). However, the instability typical of startup environments fosters job insecurity and higher turnover intention (Tahir; Ashraf, 2024). Consequently, IT professionals find it easy to leave their current job and find better opportunities in the industry (Dunukara; Pushpakumari, 2021), identifying determinants of turnover intention is therefore essential to help manage retention more effectively (Dunukara; Pushpakumari, 2021).

2.4.5 Temporal trends in turnover intention research among IT professionals

As shown in Figure 6, 2022 was the year with the highest number of studies on turnover intention among IT professionals. This aligns with Poulouse (2023), which notes that, following the gradual recovery from the COVID-19 pandemic, the mental health of IT workers became a prominent focus in international literature. During the pandemic, IT professionals experienced a substantial increase in mental distress as a result of increased anxieties caused by issues of job insecurity and salary reduction (Kurian; Thomas, 2022). Feelings of frustration, anxiety, fear, and loneliness become pervasive, impacting the mental health of individuals (Waight *et al.*, 2022), negatively affecting job satisfaction, work engagement, and turnover intention (Xavier *et al.*, 2024) and signalling a widespread risk of burnout among IT professionals (Ajayi; Udeh, 2024).

The software engineering field, and the broader IT sector, is therefore not immune from the effects of burnout (Tulili *et al.*, 2023). The Covid-19 pandemic reshaped where people work, how they work and with whom they work, creating new forms of pressure on both organizations and employees (Fouad; 2020; Xavier *et al.*, 2024). In response, many organizations began implementing a variety of employee well-being initiatives aimed at mitigating these pressures, promoting healthier work-life balance and creating a more supportive work environment (Ajayi; Udeh, 2024).

Fig. 6. Heat map: frequency of publications by year



Source: Own elaboration

The surge in studies in 2022 can thus be interpreted as part of a post-pandemic adaptation phase, in which organizations explicitly confronted mental health risks, the sustainability of workload, and burnout. This is consistent with the findings of the present review, which highlights burnout as an emergent and recurrent driver of turnover intention in recent years.

2.5 Discussion and research implications

This review consolidates and contextualises empirical evidence on turnover intention among IT professionals, clarifying how this phenomenon has been conceptualized and investigated in the past decade. Consistent with prior work in organizational behavior and information systems (Jha, 2009, Lo, 2015), the findings indicate that job satisfaction and organizational commitment are negatively associated with turnover intention. Multiple studies reinforce the same pattern, confirming that higher levels of job satisfaction consistently reduce employees' intention to leave (Al-Dalahmeh *et al.*, 2020; Berger; Berger, 2017; Haran; Niederman, 2022; Kanchana; Jayathilaka, 2023; Mufitha *et al.*, 2019; Sharma; Nambudiri, 2015; Pereira *et al.*, 2024; Prommegger *et al.*, 2024; Ramalho Luz *et al.*, 2018; Sasaki, 2012; Serenko *et al.*, 2022). In IT settings, where cognitive demands are high and change is frequent, this link becomes particularly salient, indicating that job satisfaction plays a pivotal role in promoting employee retention. Organizational commitment shows a similarly consistent negative association with turnover intention, such that employees who report stronger levels of organizational commitment are less likely to intend to leave (Biswas; Varma, 2012; Mahindru *et al.*, 2023; Suárez-Albanchez *et al.*, 2022). These patterns support the perspectives that link organizational alignment and engagement to retention in software-intensive environments.

The review also highlights the growing relevance of psycho-emotional factors. Burnout is repeatedly associated with both turnover intention and adverse productivity outcomes, expanding the understanding of how psycho-emotional factors shape workforce decisions in IT organizational (Ajayi; Udeh, 2024; Trinkenreich *et al.*, 2024). Although the number of studies that explicitly test burnout is smaller than those examining satisfaction and commitment, the available evidence suggests that burnout increases in employees' intention to leave (Trinkenreich *et al.*, 2024). In parallel, burnout has been linked to absenteeism, the detrimental effects job performance and other withdrawal behaviors (Ajayi; Udeh, 2024). Overall, the evidence supports a plausible pathway in which job demands elevate burnout, burnout erodes job satisfaction and organizational commitment, and reduced satisfaction and commitment correspond to higher turnover intention (Ajayi; Udeh, 2024; Joseph *et al.*, 2011; Tulili *et al.*, 2023).

A concept-centric reading of the literature further clarifies how antecedents cluster and how they may operate in explanatory models. Internal antecedents include individual characteristics and appraisals, such as satisfaction, role overload, work to life conflict, and burnout. External antecedents include organizational commitment, leadership support, reward systems, role clarity, and climate. This structure helps organize and reduce construct proliferation, aligns conceptually similar predictors, and points to likely mediating and moderating relationships that future research should test more explicitly. For example, internal strain factors (e.g. role overload, work-life conflict) may act through burnout, while external factors (e.g. leadership climate, fair rewards) may act by strengthening commitment.

Regarding the research method, there is a noticeable trend toward a quantitative, whereas most studies rely on survey methods and single time points, which constrains tests of mediation and moderation and limits causal inference (Lo, 2015). The evidence base is also geographically concentrated in regions with established technology sectors. The United States and India appear most frequently, followed by Pakistan, Sri Lanka, and Japan, raising questions about external validity for underrepresented regions and for public-sector or smaller-firm contexts. These features help explain why findings for satisfaction and commitment are comparatively stable across studies, while estimates for burnout, role stress and work-life conflict show more contextual variability. Regarding publication trends, 2022 marked the peak in research activity, likely reflecting the intensified organizational and workforce challenges that emerged following the Covid-19 pandemic and the heightened visibility of mental health risks in IT (Ajayi; Udeh, 2024; Kurian; Thomas, 2022; Poulouse, 2023; Waight *et al.*, 2022; Xavier *et al.*, 2024).

From a practical standpoint, the evidence suggests mutually reinforcing levers for reducing turnover intention. First, organizations should strengthen job satisfaction and organizational commitment through human resource practices such as career development opportunities (Chouhan, 2022), recognition programs, fair and transparent reward practices, and participatory leadership that builds trust and inclusion (Jha, 2009; Lo, 2015). Second, targeted well-being initiatives can mitigate emotional strain and sustain performance, including burnout prevention programs, work-life balance, resilience development initiatives, and access to psychological assistance (Ajayi; Udeh, 2024; Ramaprasad *et al.*, 2021). These insights also provide guidance for strategic workforce planning by aligning retention policies, benefit

structures, and organizational support practices with antecedents most consistently associated with intention to remain, notably higher satisfaction and stronger organizational commitment (Joseph *et al.*, 2007; Ramalho Luz *et al.*, 2018; Scholtz *et al.*, 2019; Samgnanakkan, 2010; Serenko *et al.*, 2022, Suárez-Albanchez *et al.*, 2022).

2.6 Conclusion

This review synthesizes recent evidence on the determinants of turnover intention among IT professionals and clarifies how these relationships have been examined in the literature. In direct response to our research question, the most consistently supported antecedents are job satisfaction and organizational commitment, both of which show a negative association with turnover intention. In parallel, burnout and transformational leadership emerge as salient drivers in more recent studies, indicating that cognitive, affective, and contextual dimensions jointly shape intentions to stay or leave in software-intensive environments.

A key contribution of this review is the organization of these determinants into internal and external antecedents. Internal antecedents (e.g., satisfaction, burnout, role overload, work-life conflict) capture employees' own appraisals, strain, and emotional states, while external antecedents (e.g., commitment as an organizational bond, leadership climate, rewards) reflect contextual levers available to management. This internal and external framing offers a clearer analytical structure for future studies and makes explicit a recurrent pathway observed across primary studies: increasing job demands and strain feed burnout; burnout undermines satisfaction and organizational attachment; and reduced satisfaction and attachment are associated with higher turnover intention.

The synthesis also reveals important gaps in the evidence base. Most studies rely on cross-sectional survey designs, limiting causal inference and obscuring how turnover intention evolves over time. The evidence base is also geographically concentrated in regions with significant IT industry presence, including the United States, India, Pakistan, Sri Lanka, and Japan. Conceptual and measurement variability, particularly for satisfaction, commitment and burnout, complicates cross-study comparison. Addressing these gaps will require longitudinal and multi-wave designs, harmonized constructs and measurement scales, and

multi-level, cross-cultural research that systematically links individual, team and organizational factors.

For practice, the findings point to three actionable priorities for organizations seeking to reduce turnover intention: (i) enhance job satisfaction through career development, recognition, and fair reward systems; (ii) strengthen organizational commitment via participatory leadership, organizational identification, and a supportive climate; and (iii) prevent burnout by governing workload, supporting recovery, and ensuring access to psychological support. These priorities can be embedded into workforce analytics to monitor leading indicators such as overload, strain, and declining attachment, enabling earlier and more targeted interventions.

This review is subject to several limitations. The 2015-2024 inclusion window may exclude earlier foundational studies that remain relevant. The search strategy drew on five major databases and on open-access availability, which may have led to the omission of studies outside those sources. To mitigate selection bias, the search string was collaboratively developed and study selection by the first author was independently checked by an advisor and an additional reviewer, though dual independent screening was not performed. Future studies should broaden database coverage and extend the temporal window, while also prioritising longitudinal and quasi-experimental evaluations of managerial interventions, multi-level models that connect individual and organizational processes, and cross-cultural replications that test boundary conditions. Extending the factor set to include leadership approaches (e.g., servant leadership) alongside core antecedents such as satisfaction, commitment, and burnout would further deepen our understanding of retention mechanisms in global IT workforces.

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3 Second Manuscript: Exploring Predictors of Turnover Intention among IT Workers

Abstract

Information Technology (IT) and software organizations are facing numerous challenges due to high employee turnover intention, driven by the consequences of the effectiveness of this phenomenon on organizational dynamics. The effects of this phenomenon on IT organizations range from decreased productivity and increased recruitment and selection costs to the loss of skilled employees, who are essential for achieving organizational strategies. Despite global research efforts on the topic, the factors influencing turnover intention are varied and complex and still not fully understood on a global scale, as well as in Brazil, as highlighted in the literature. To fill this gap, the present study assesses the key factors that impact turnover intention among Brazilian IT professionals, with a focus on the city of Recife, recognized as a major technology hub in Brazil, and the capital with the highest concentration of IT students in the country. For this purpose, a survey through an online Google Forms was conducted, using a cross-sectional survey technique, among IT professionals from Recife, which involved 111 respondents. Statistical tests on collected data are applied in statistical packages for social sciences (SPSS) and warp partial least squares (WarpPLS) to evaluate the proposed conceptual framework empirically. The findings revealed that job satisfaction and work-life balance negatively impact the employee's turnover intention decision. Contrary to expectations, innovative work behavior, management support, leader-member exchange, and co-worker support have no direct effect on this desire to leave. Thus, the current study's outcomes may provide IT companies with insights into the importance of job satisfaction and work-life balance in mitigating employee turnover and retaining experienced and skilled employees.

Keywords: *Turnover Intention; IT Organizations; Job Satisfaction; Work-Life Balance; Employee Retention.*

3.1 Introduction

The Information Technology (IT) industry has experienced tremendous growth worldwide in recent years (Džambić; Hadziahmetovic, 2025). In Brazil, technology companies are projected to demand 797,000 professionals between 2021 and 2025 (Souza *et al.*, 2023), representing 1.8% of the global IT market and 40.7% of the Latin American market (Urrutia Pereira *et al.*, 2022). However, it estimates that Brazil will graduate substantially fewer technology professionals than demanded, thereby creating a considerable shortage in the national market (Steil *et al.*, 2022). This issue

is also a major concern due to the shortage of highly skilled professionals (Seneviratna et al., 2024). Based on Social Exchange Theory (SET), this study adopts the premise that employee-employer relationships are shaped by a cost-benefit assessment in which perceptions of fairness in Human Resource Management (HRM) practices, recognition, and rewards determine the quality of the exchange and, consequently, foster positive outcomes such as higher job satisfaction and reduced turnover intentions (Rahman et al., 2024).

Despite the growth of IT opportunities, turnover intention remains a critical challenge for the Brazilian IT sector, affecting its future development (Souza *et al.*, 2023). This phenomenon refers to the desire to relocate or leave an organisation to find a better job (Ahmad Saufi *et al.*, 2023; Lestari; Margaretha, 2021). It can negatively impact an organisation, since it results in the loss of key skills, knowledge and abilities and ultimately in high replacement costs and a reduction of revenue (current and/or future) (Scholtz *et al.*, 2019). Furthermore, retention of professionals has become vital for organizations as these skilled and knowledgeable employees are the central force for the organizations to function and survive in this competitive business world (Ramalu; Kalimuthu, 2022).

Employees' propensity to leave their organizations has been the focus of extensive research, given its significance as a critical challenge in expanding industries (Farooq *et al.*, 2022). For businesses, a high turnover rate can be expensive and disruptive (Džambić; Hadziahmetovic, 2025) because many employees after being well-trained and having rich top-level knowledge of the particular skills, leave the company, which creates one of the major issues in the IT industry today (Seneviratna *et al.*, 2024). Thus, it became crucial for organizations to take 'proactive' measures to human capital management by studying the reasons why people remain in an organization rather than being 'reactive' and studying the reasons why they leave (Ramalu; Kalimuthu, 2022).

Numerous studies have examined the variables that affect employees' intention to leave their jobs (Džambić; Hadziahmetovic, 2025). Multiple antecedents have been reported, with those related to attitude and decision (Gupta; Bhatia, 2023), occupational options, better job opportunities elsewhere, career satisfaction, and job stress (Chouhan, 2022). However, the causes of employee turnover intentions are still multiple and complex (Da Silva; Sampaio, 2025). Also, retaining professionals is

still a persistent challenge in organizational environments, especially in the IT sector, characterized by labor shortages in the Brazilian context (Pereira *et al.*, 2024).

The shortage of IT professionals intensifies competition among organizations and highlights the need to understand why employees stay or leave voluntarily (Steil *et al.*, 2021). To address this gap, the present study is guided by the following research question: “What are the key factors that impact the turnover intention of IT professionals in Recife?”. This question responds directly to the gap identified in a previous SLR (Da Silva; Samapio, 2025), which highlighted the scarcity of studies on this topic within the Brazilian context, despite the evident economic relevance of the technology sector and the strategic importance of retaining qualified IT professionals.

To pursue this objective, a study was conducted with IT professionals from public and private software technology companies, as well as IT departments of other organizations in Recife, Pernambuco. The city was chosen due to its prominent IT ecosystem and status as a leading innovation hub in Latin America. Recife hosts Porto Digital, one of the largest technology and innovation districts, with over 470 companies and 21,000 employees in the IT sector, generating R\$ 6.2 billion in revenue in 2024 (Porto Digital, 2024). This concentration of firms, combined with a strong talent pool and a dynamic environment for research, development, and business networking, makes Recife a suitable context for examining the factors influencing IT workforce retention.

Besides hosting one of Brazil’s most important innovation ecosystems, Porto Digital, Recife also exhibits labour market dynamics that make it a relevant setting for examining turnover intention. Data from the Cadastro Geral de Empregados e Desempregados (Caged, reported by Jornal do Comércio (2025)), show that formal employment in the city’s technology sector grew by 11.98% in June 2025 compared to the same month in 2024, far exceeding São Paulo’s 1.48% growth and Rio de Janeiro’s 3% decline. Such accelerated expansion intensifies competition for qualified IT professionals and creates market pressures that may directly influence turnover intention, thereby offering a theoretically grounded justification for selecting Recife as the empirical context of this study.

Data were collected through an online questionnaire distributed via Google Forms, following a cross-sectional survey design. The Statistical Package for the Social Sciences (SPSS) and the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique were employed to analyze the relationships between

organizational and demographic characteristics and turnover intention. Results indicate that job satisfaction and work-life balance have a negative impact on employee turnover among IT professionals in Pernambuco while innovative work behavior, management support, leader-member exchange, and co-worker support did not demonstrate a statistically significant impact on employee turnover intention.

The article is structured as follows: Section 3.2 reviews the literature on turnover intention and the hypotheses tested in the empirical study, which were directly informed and guided by the findings from the first manuscript of the dissertation. Section 3.3 outlines the methodology and empirical testing. Section 3.4 presents the findings. Section 3.5 provides the discussion. Finally, Section 3.6 concludes with limitations and future directions.

3.2 Literature Review and Hypotheses development

3.2.1 Employee Turnover Intention (ETI)

Recent studies have extensively examined ETI across a variety of organizational contexts, including the banking sector (Yukongdi; Shrestha, 2020), the hospitality industry (Koo et al., 2020), and particularly the IT sector (Farooq et al., 2022). Across these fields, concerns regarding the retention of qualified professionals remain prominent, as organizations strive to maintain competitiveness within increasingly dynamic and turbulent business environments (Frye et al., 2020; Ramalu; Kalimuthu, 2022). High levels of employee attrition have consistently been linked to several adverse outcomes, including higher recruitment and onboarding costs, lower productivity, and disruptions to operational continuity (Koshak et al., 2024). Consequently, identifying effective strategies to reduce turnover intention has become a critical organizational priority (Le et al., 2024).

Turnover intention refers to the extent to which employees express a conscious desire or plan to leave their current employer (Sinisterra et al., 2024; Triningsih; Darma, 2024). It is widely regarded as one of the most reliable predictors of actual voluntary turnover behavior (Chouhan, 2022). When turnover levels remain persistently high, organizations face substantial financial and operational burdens, including the loss of resources invested in training, declines in overall employee performance, and recurring expenditures related to the hiring and development of new personnel (Koshak et al., 2024). Furthermore, the ongoing challenge of

employee retention is closely linked to broader issues such as shortages of skilled workers, slower organizational growth, and long-term erosion of institutional knowledge (Sepahvand; Bagherzadeh Khodashahri, 2021).

High turnover rates also serve as an indicator of deeper organizational issues. They often lead to disruptions in production processes, elevated time and financial costs associated with workforce replacement, and the continual need to train newly hired employees (Pereira et al., 2024). These disruptions can weaken organizational resilience and hinder strategic initiatives. As a result, scholars and practitioners have increasingly focused on understanding the determinants of turnover intention, particularly within knowledge-intensive industries such as IT, where human capital is a primary source of competitive advantage.

In the IT sector, a significant body of research has emerged over the past two decades aimed at identifying the key factors influencing turnover intention among IT professionals (Cho; Huang, 2012; Armstrong et al., 2018). Despite this substantial academic effort, the causes of turnover intention remain multifaceted, deeply interrelated, and insufficiently understood on a global scale (Da Silva; Sampaio, 2025). The complexity arises from the unique characteristics of IT work, which is marked by rapid technological change, high levels of job autonomy, intense market competition for talent, and ongoing skill obsolescence. These conditions make the retention of skilled IT professionals particularly challenging (Sumanarathna; Samarakoon, 2019).

When turnover rates rise, organizations face far-reaching repercussions, including diminished team cohesion, weakened organizational memory, and operational disruptions that may compromise service quality and project continuity (Al Akasheh et al., 2024). Given these consequences, the need for organizations to adopt systematic and evidence-based retention strategies becomes even more urgent (Le et al., 2024).

Based on the social exchange theory (SET), it is claimed that when employees receive these job resources from their organization they repay by engaging themselves with varying intensity, which results in positive outcomes such as job satisfaction and reduced turnover intention (Sharma; Nambudiri, 2020). SET posits that relationships emerge and endure through a continual evaluation of the costs and benefits exchanged between the parties (Rahman; Malarvizhi, 2024). Additionally, it suggests that an individual's behavior unfolds through ongoing interactions that

shape their responses according to the principle of reciprocity (Ramalu; Kalimuthu, 2022).

From a positive standpoint, low turnover intention typically reflects employee satisfaction and alignment with organizational values, which in turn contributes to enhanced performance and productivity. Employees who intend to remain with their organization tend to be more engaged, motivated, and committed to achieving organizational objectives (Kotimah, 2024). Reduced turnover intention also generates tangible financial benefits, as organizations save on recruitment, training, and the indirect costs associated with workforce instability. Furthermore, whether an IT employee chooses to move to another company, it results in money lost through rehiring, re-training, lower productivity and/or lower product or service quality (Rampadaruth, 2022).

Therefore, minimizing turnover intention is essential not only for preserving organizational resources but also for supporting long-term strategic success (Koshak et al., 2024). High turnover intention undermines core business objectives and leads to substantial organizational losses, demonstrating the need for continuous attention to the factors that influence employees' decisions to stay or leave (Ahmad Saufi, 2023; Kumar et al., 2021). Understanding these drivers is fundamental for organizations seeking to develop effective talent retention policies, strengthen workforce stability, and sustain a competitive advantage in dynamic and knowledge-driven environments.

3.2.2 Job Satisfaction

Job satisfaction (JS) refers to an employee's overall sense of happiness, fulfillment, and contentment with their job, representing a subjective evaluation of their position and related experiences (Koshak et al., 2024). It is the employee's perception of how well his/her current employment confirms his/her ideal job (Rahman et al., 2024; Ratnawita et al., 2023; Tampubolon; Sagala, 2020). Moreover, job satisfaction is an affectively oriented psychological perception influenced by the work environment which is considered an intermediary variable between complex antecedents and turnover intention or decision (Chang et al., 2023). Due to that, the relationship between job satisfaction and turnover intention has been the subject of several studies (Santoso et al., 2023).

Job satisfaction is one of the leading contributors to several factors affecting turnover intention (Rahman et al., 2024). Thus, the intricate interplay between job satisfaction and turnover intention has been a subject of substantial scholarly attention, given its profound implications for organizational stability and productivity, and employee well-being (Koshak et al., 2024). Rahman et al., (2024) declared that job satisfaction is inversely proportional to turnover intention, where higher job satisfaction leads to fewer turnover intentions. Besides that, employees who experience high job satisfaction are more likely to be happy in their current positions and less inclined to search for other job opportunities (Koshak et al., 2024). Thus, based on the past literature, the current study proposes the following hypothesis:

Hypotheses 1: Job satisfaction has a negative impact on employee turnover intention among IT professionals.

3.2.3 Work-life Balance

Work-life balance (WLB) is defined as the degree to which an employee is consistently satisfied with their family, job and personal roles (Ahmad Saufi et al., 2023). Also, it is considered the ability to minimize conflict between work and other responsibilities while not necessarily spending equal time in each (Oloyede; Soyemi, 2022). Companies that value work-life balance improve employee well-being and consequently have a more engaged and efficient workforce (Rahman et al., 2024).

The increasing relevance of work-life balance in professional settings has played a critical role in altering individual psychological and behavioral patterns, a shift that gained momentum during the COVID-19 pandemic (Sinisterra et al., 2024). This has resulted in several implications for organizations and their employees, affecting the environment in which people work, with whom they work, and how they work (Fouad, 2020; Xavier et al., 2024). In this sense, the increasing importance of work-life balance has become a key contributor to employee satisfaction and retention (Rahman et al., 2024). Moreover, it creates an enabling work environment and serves as a motivating factor to employees, reducing counterproductive attitudes such as absenteeism, lack of commitment and turnover intention (Oloyede; Soyemi, 2022).

Work-life balance initiatives lead to higher job satisfaction and lower stress levels, and are negatively associated with turnover intentions (Rahman et al., 2024). Furthermore, it significantly influences employees' decisions to stay or leave their

positions, according to Seneviratna et al., (2024). For this reason, incorporating work-life balance initiatives into HRM policies is essential for firms seeking to reduce employee turnover and improve retention amid intense competition for IT professionals (Rahman et al., 2024). Based on theoretical evidence, the following hypothesis is stated:

Hypotheses 2: Work-life Balance has a negative impact on employee turnover intention among IT professionals.

3.2.4 Innovative Work Behavior

Innovative work behavior (IWB) refers to an individual's proactive behavior aimed at initiating and deliberately introducing novel and valuable ideas, processes, products, or procedures within the context of their organizational role, team, or workplace (Kundu et al., 2020). It also encompasses critical thinking and the pursuit of new ideas, not only fosters creativity but also encourages employees to find effective and efficient solutions to problems (Novitasari, 2020; Rasheed; Kiani, 2024).

Experts emphasize that IWB at work is essential for an organization's ability to remain competitive and dynamic (Rasheed; Kiani, 2024). Besides that, Sharma and Nambudiri (2020) indicated that employees who are high in openness are likely to exhibit higher levels of innovative work behavior if they are engaged and immersed in their work. However, the possible negative effect of turnover intention on employees' feeling of possessiveness toward the organization and their motivation to engage in creative solutions for the sake of the organization require more comprehensive consideration (Ucar et al., 2021).

Organizations within the IT sector are increasingly faced with the need to maximize the innovative potential of employees to sustain or obtain a competitive advantage (Van Zyl et al., 2021). In this scenario, the organization's innovative capacity is substantially shaped by the level of IWB exhibited by its individual members (Kundu et al., 2020). However, employees with the intention to leave may no longer be interested in positive behaviors and higher performance (Ucar et al., 2021). Thus, IWBs are therefore expected to be vital within the IT sector as it directly impacts organizational performance (Van Zyl et al., 2021). Hence, the following hypothesis is stated:

Hypotheses 3: Innovative work behaviour has a negative impact on employee turnover intention among IT professionals.

3.2.5 Management Support

Management support (MS) can be referred to as the provision of the instruments and resources by the organization for the workers to accomplish novel work (Ismail et al., 2021). It helps to maintain team members' interaction and foster trust relationships, which are critical for knowledge sharing (Saeed et al., 2023). Furthermore, MS encourages employees to apply their knowledge and skills to propose job improvements (Ismail et al., 2021).

IT professionals are more likely to stay in an organization if they are provided with management support (Koshak et al., 2024). A sense of employee involvement and contribution is essential for inspiring creative ideas, discovering new opportunities, and converting them into action without losing efficiency at work (Ismail et al., 2021). When employees receive a significant amount of management support, they are less inclined to leave the company (Patil et al., 2023).

Therefore, resource management plays a crucial role in the progress and success of a company (Koshak et al., 2024). In this context, it can create social networks for organizational employees (Saeed et al., 2023). Thus, if MS is robust and beneficial, it helps employees increase their intention to stay with the company (Patil et al., 2023). Accordingly, this study infers that:

Hypotheses 4: Management Support has a negative impact on employee turnover intention among IT professionals.

3.2.6 Leader-Member Exchange

Leader-member exchange (LMX), refers to the quality of the relationship between a manager and an employee (Chang et al., 2023). It indicates a mutual exchange of respect, loyalty, understanding, trust, expertise, technical skills, and support between leaders and their members (Karimikia et al., 2022). In the LMX approach, unlike the traditional approaches, each leader adopts a partly different leadership style to each follower according to their unique reciprocal social exchange (Metin, 2023). However, research studies have highlighted the possibility that high LMX has a detrimental effect on follower outcomes (Mishra, 2024).

High-quality LMX have been found to have a significant impact on individual-and-team outcomes, job satisfaction, commitment and job performance (Karimikia et al., 2022). Besides that, employees who experienced high-quality LMX

received greater support and more opportunities compared to those with lower-quality LMX (Mishra, 2024). In this sense, leader support has the power to increase employee creativity and create an environment that is favorable for job autonomy in innovative behaviors (Rasheed; Kiani, 2024).

According to Mishra (2024), the LMX relationship is considered pivotal for employees' future in the organization. In this sense, members experience more resources or benefits, such as better communication, improved emotional support, autonomy, better roles and information, from their leaders in "high-quality" exchange (Kapil; Rastogi, 2020). Thus, Chang et al., (2023) presented that the high quality of LMX enhances the negative relation between performance and turnover intention. Therefore, the following hypothesis was formulated:

Hypotheses 5: Leader-member exchange (LMX) has a negative impact on employee turnover intention among IT professionals.

3.2.7 Co-worker Support

Co-worker support (CWS) refers to the perception of employees that their co-workers are willing and able to help them with their tasks and problems (Le et al., 2024). It includes the act of looking after colleagues, offering practical aid, exchanging valuable knowledge, providing guidance, and expressing admiration (Hussin et al., 2024). Furthermore, CWS may influence an employee's decisions regarding further employment in the organization and can improve the well-being of an employee by reducing stress, role conflict and overload (Kmieciak, 2022).

Empirical studies show a negative relationship between co-worker support and voluntary turnover intention, although some studies do not confirm a significant direct relationship (Kmieciak, 2022). However, the co-worker support may affect construction safety performance, emphasizing the importance of peer-driven actions in enhancing safety outcomes and it is crucial in alleviating the adverse consequences of discrimination and harassment in the professional environment (Hussin et al., 2024).

Co-worker support can mitigate the negative effects of role expectation conflict by offering emotional, informational, and instrumental support to employees (Le et al., 2024). The co-workers can help their colleagues in multitasking by assuming some responsibilities, enabling them to leave work early, addressing personal matters, and providing a sympathetic ear for their concerns (Hussin et al., 2024). Besides that, the

lack of co-worker support may also have an impact on voluntary turnover intention (Kmieciak, 2022). Hence, it is hypothesized that:

Hypotheses 6: Co-worker support style has a negative impact on employee turnover intention among IT professionals.

3.3 Research methodology

3.3.1 Sample size calculation and data collection

In the current study, a cross-sectional survey approach was used in which data were collected from IT professionals from Recife. Regarding the sample size, according to Hair *et al.*, (2011), a frequently employed criterion for minimum sample size determination is the $\geq 10x$ rule, the same criterion applied in the study by Sharma and Stol (2020), which asserts that the sample should be no less than ten times the largest number of structural paths leading to a latent construct.

In the present study, the maximum number of structural paths to a latent construct is six, suggesting a sample size of only 60. A total of 111 complete and valid responses were obtained for analysis. This number exceeds the minimum required threshold, thereby confirming the adequacy of the sample for conducting the proposed analysis.

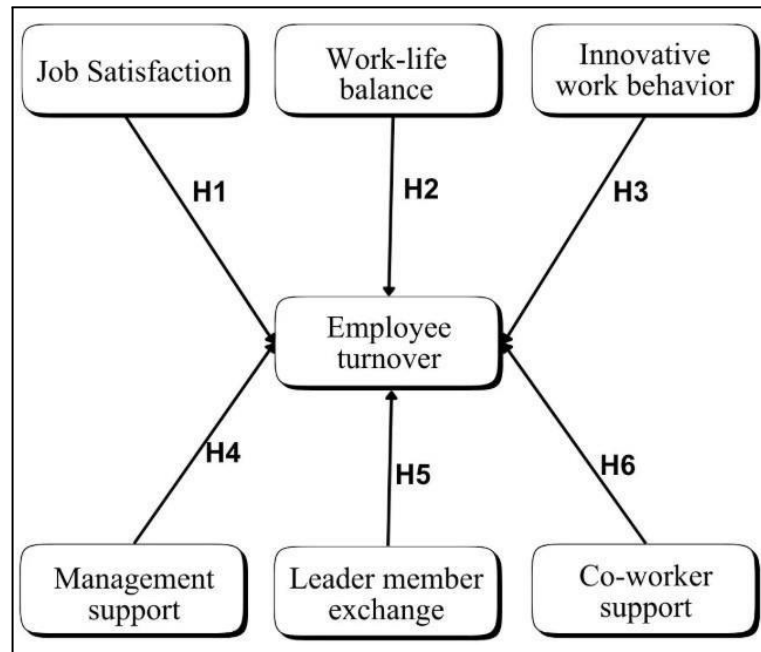
3.3.2 Research instrument

A survey method has been employed to collect data similar studies by Farooq *et al.*, (2022) and Kanchana and Jayathilaka (2023). They were collected through an online questionnaire, using the Google Forms platform, from June to July 2025. The authors directly distributed the questionnaire through email groups and the social network LinkedIn. The study adopted a non-probabilistic convenience sampling strategy, relying on voluntary self-selection. Additionally, no quotas, stratification procedures, or incentive mechanisms (such as prize draws) were implemented. SPSS was used to validate the questionnaire reliability. The data collection protocol is described in Appendix C.

To minimize potential common method variance (CMV), the study followed the recommendations of Podsakoff *et al.* (2003). Accordingly, the questionnaire was designed following several procedural safeguards: (i) items were presented in a randomized order, (ii) reverse-coded items were incorporated to reduce response pattern bias, and (iii) the conceptual relationships among constructs were not made explicit to respondents.

The current study questionnaire consists of two main sections. The first section focuses on the factors affecting IT professionals' turnover intention in the IT industry, distributed in six independent variables. The variables were drawn from Da Silva and Sampaio (2025) and the conceptual model of Kanchana and Jayathilaka (2023), which was adapted in this study (Figure 1). The second section provides respondents' personal and organizational demographic information.

Figure 1. Proposed conceptual framework.



Source: Own elaboration

3.3.3 Statistical analyses

Data were statistically evaluated using the PLS-SEM technique with the WarpPLS 8.0 software. This multivariate method estimates complex relationships among multiple variables, including unobservable ones (Williams *et al.*, 2009). The PLS-SEM for hypothesis evaluation is effective in various studies and widely applied (Hair *et al.*, 2019). Farooq *et al.*, (2022), Sai and Pinapati (2023), Sharma and Stol (2020), and Suárez-Albanchez *et al.*, (2022) have also employed the same technique for their respective works.

The PLS-SEM flexibility in data allocation renders it ideal for complex model analysis (Ahmad Saufi *et al.*, 2023). The method is appealing as it allows estimating complex models without imposing distributional assumptions (Hair *et al.*, 2019). Furthermore, in PLS-SEM, the measurement model is assessed to confirm construct

reliability, convergent validity and discriminant validity before the structural model is constructed (Henseler *et al.*, 2017).

Given the exploratory objectives of this study and the need to estimate complex relationships among latent variables, PLS-SEM emerges as an appropriate methodological approach. This technique is also recommended when dealing with relatively small samples and data that do not meet normality assumptions (Sanchez, 2013). In the present study, the sample size ($n = 111$) is relatively small for covariance-based alternatives, and the analysis of skewness and kurtosis indicates violations of multivariate normality. These factors collectively reinforce the suitability of PLS-SEM for this research.

The internal consistency reliability was determined using Cronbach's alpha (CA) and composite reliability (CR). Convergent validity was measured using the average variance extracted (AVE) and variance inflation factor (VIF) (Hair *et al.*, 2019). Discriminant validity was evaluated using the Fornell-Larcker criterion and cross-loading was employed to validate the Convergent Validity. The hypotheses were tested by estimating path coefficients (Beta), Std. Error, T-Stat and value of p (Hair *et al.*, 2017).

3.4 Findings

3.4.1 Respondents' demographic profile

In this study, there was a higher incidence of male respondents (74.8%) compared to female respondents (25.2%) (see Table 1). The majority respondents were between 21 and 29 years old (46.9%), followed by those aged 30 to 39 (38.7%). Regarding education, most respondents held an undergraduate degree (63.1%), with (21.6%) having completed postgraduate studies and (9.9%) holding a master's degree. In terms of professional roles, developers were the most prevalent group (34.2%), although a significant portion of respondents (28.9%) reported occupations not explicitly listed in the survey. Concerning company size, the largest share of participants worked in organizations with more than 500 employees (39.7%), followed by those employed in companies with 201 to 500 employees (19.8%).

Table 1. Respondent demographics.

Demographics	Respondent	Frequency
Gender	Male	83 (74.8%)

	Female	28 (25.2%)
Age	18-20 years	0
	21-29 years	52 (46.9%)
	30-39 years	43 (38.7%)
	40-49 years	12 (10.8%)
	50-59 years	3 (2.7%)
	>59 years	1 (0.9%)
Education	High School	2 (1.8%)
	Undergraduate	70 (63.1%)
	Postgraduate	24 (21.6%)
	Master's degree	11 (9.9%)
	Ph.D	4 (3.6%)
Role	Developer	38 (34.2%)
	Support Analyst	10 (9%)
	Tester	8 (7.2%)
	Data Scientist	7 (6.3%)
	Tech Leader	7 (6.3%)
	Software Engineer	5 (4.5%)
	Project Manager	4 (3.6%)
	Others	32 (28.9%)
Organization Size	1-10 employees	11 (9.9%)
	11-50 employees	15 (13.5%)
	51-100 employees	10 (9%)
	101-200 employees	9 (8.1%)
	201-500 employees	22 (19.8%)
	More than 500 employees	44 (39.7%)

Source: Own elaboration

3.4.2 Construct reliability and validity

Factor analysis was conducted to assess the reliability and validity of the constructs using Cronbach's Alpha (CA), composite reliability (CR), average variance extracted (AVE), and variance inflation factor (VIF) (see Table 2). According to Hair Jr *et al.*, (2017), CA between 0.6 to 0.7 are considered acceptable for exploratory research. The composite reliability (CR) between 0.70 and 0.90 is considered satisfactory to good, different from values of 0.95 and higher, which are problematic, as they indicate that the items are redundant (Hair *et al.*, 2019). All other constructs

demonstrated CR values within the recommended range, indicating their adequate reliability, while only the CWS construct slightly exceeded the 0.95 threshold with a CR of 0.954; nevertheless, its Cronbach's alpha, AVE, and VIF values further support the construct's robustness.

The average variance extracted (AVE) value for all constructs were > 0.50, thereby demonstrating suitable and sufficient convergent validity (Hair *et al.*, 2019). Moreover, there were no multicollinearity issues among the study constructs, as all variance inflation factor (VIF) values were below 5, not indicating critical collinearity issues among the indicators of formatively measured constructs (Hair *et al.*, 2019). Hence, the constructs satisfied the criteria for reliability and convergent validity.

Table 2. Reliability analysis results.

Constructs	Items	CA	CR	AVE	VIF
JS	8	0.873	0.900	0.534	2.687
WLB	5	0.831	0.882	0.601	2.192
IWB	3	0.712	0.847	0.650	1.206
MS	5	0.876	0.911	0.672	3.520
LMX	3	0.851	0.911	0.773	2.714
CWS	4	0.934	0.954	0.837	1.329
ETI	3	0.663	0.820	0.621	1.521

Source: Own elaboration

3.4.3 Descriptive Analysis

This section elaborates on the descriptive analysis of the survey data. Each construct item is measured using mean, standard deviation, skewness, and kurtosis (see Table 3). Furthermore, each construct was measured through three, four, five, or eight items by using a five-point Likert scale, which extends from strongly disagree to strongly agree.

In this study, four items across the constructs (JS4, CWS1, CWS2, and CWS3) obtained mean scores higher than 4, indicating a significant level of agreement among the respondents. In contrast, the item JS8 exhibited the lowest mean score (2,85), thereby signaling the comparatively weakest level of concordance among respondents with respect to this particular statement. The standard deviation values of the items ranged from 0.829 to 1.363, with a mean of approximately 1.17, suggesting a moderate to high level of response dispersion across most items. Over

half of the items exhibited a standard deviation greater than 1.2, indicating variability in respondents' perceptions.

These descriptive patterns also provide insights into the specific context of Recife. The high mean values found in items such as JS4, CWS1, CWS2, and CWS3 suggest that respondents generally perceive favorable work-related conditions, which may reflect characteristics of Recife's growing service-oriented economy, where organizational stability and interpersonal collaboration are increasingly emphasized. Conversely, the lower mean observed for item JS8 suggests less consensus regarding this particular aspect of job satisfaction, possibly mirroring the heterogeneous nature of working conditions across different sectors in the city, which range from highly formalized industries to informal labor markets. The relatively high dispersion in several items further aligns with the socioeconomic diversity of Recife, indicating that perceptions of work experiences vary substantially across individuals.

To confirm that the distributions of the constructs are non-normally distributed, the recommendation is to use kurtosis and skewness measures (Ucar *et al.*, 2021). The acceptable range for skewness and kurtosis for normality is below +1.5 and above -1.5 for kurtosis and +1.0 to -1.0 for skewness (Tabachnick; Fidell, 2013). However, in the present study, the skewness ranged from -1.593 to +0.173, and kurtosis from -1.317 to +2.999, exceeding commonly accepted thresholds. These results indicate potential non-normality in the data distribution. Although the skewness and kurtosis statistics indicate that several variables deviate substantially from normality, it is important to highlight that, as noted in the literature, lack of normality can distort results in traditional multivariate analyses; however, this issue is significantly less severe in PLS-SEM, whose approach is robust to non-normal distributions.

Table 3. Descriptive analysis of items.

Items	Mean	Std. Deviation	Skewness	Kurtosis
JS1	3,81	1,195	-0,929	-0,042
JS2	3,25	1,345	-0,313	-1,156
JS3	3,58	1,210	-0,606	-0,453
JS4	4,24	0,936	-1,049	0,100
JS5	2,92	1,363	0,061	-1,317
JS6	3,19	1,332	-0,213	-1,086
JS7	3,81	1,187	-0,887	-0,047
JS8	2,85	1,363	0,173	-1,273

WLB1	2,99	1,304	-0,033	-1,108
WLB2	3,67	1,209	-0,777	-0,442
WLB3	3,72	1,222	-0,785	-0,424
WLB4	3,95	1,205	-1,006	-0,094
WLB5	3,95	1,178	-1,167	0,530
IWB1	3,95	0,829	-0,774	0,899
IWB2	3,98	0,874	-0,714	0,016
IWB3	3,59	1,217	-0,665	-0,563
MS1	3,31	1,249	-0,432	-0,891
MS2	3,67	1,201	-0,739	-0,317
MS3	3,57	1,298	-0,698	-0,614
MS4	3,65	1,233	-0,749	-0,402
MS5	3,84	1,180	-0,965	0,113
LMX1	3,79	1,207	-0,95	0,002
LMX2	3,16	1,339	-0,163	-1,204
LMX3	3,44	1,298	-0,491	-0,856
CWS1	4,22	0,919	-1,593	2,999
CWS2	3,96	0,990	-0,957	0,718
CWS3	4,22	0,976	-1,524	2,212
CWS4	4,03	1,004	-1,097	0,915
ET1	3,77	1,286	-0,804	-0,462
ET2	2,91	1,210	0,05	-0,874
ET3	3,77	1,142	-0,702	-0,419

Source: Own elaboration

3.4.4 Correlation Analysis

This research used Pearson's correlation coefficient to examine relationships among the constructs in the conceptual framework. As shown in Table 4, most correlations ranged from moderate to strong (Schober *et al.*, 2018), where coefficients between ± 0.40 and ± 0.69 indicate a moderate correlation, and those between ± 0.70 and ± 0.89 indicate a strong correlation. Strong positive correlations were found between JS and Motivation to MS (.734) and between LMX and MS (.750). Although the correlation between JS and MS is high, the items used to measure each construct capture conceptually different aspects of employees' experiences. MS reflects employees' perceptions of the extent to which supervisors provide guidance, resources, and encouragement. In contrast, JS assesses

employees' affective evaluations of their job as a whole, including enjoyment, fulfillment, and overall contentment.

Moderate positive correlations emerged between JS and WLB (.654), JS and LMX (.592), and WLB and MS (.658), indicating meaningful interconnections. Negative correlations with ETI were observed for JS (-.502), WLB (-.478), and MS (-.406), suggesting that lower levels of these constructs are linked to a higher intention to leave.

Table 4. Correlation analysis and discriminant validity of constructs.

	JS	WLB	IWB	MS	LMX	CS	ETI
JS	0.731						
WLB	,654**	0.775					
IWB	,364**	,348**	0.806				
MS	,734**	,658**	,430**	0.820			
LMX	,592**	,612**	,308**	,750**	0.879		
CS	,323**	,352**	,280**	,418**	,471**	0.915	
ETI	-,502**	-,478**	-,231**	-,406**	-,359**	-,198*	0.788

Source: Own elaboration

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

3.4.5 Discriminant Validity

The Fornell-Larcker criterion was used to assess discriminant validity. Besides Table 4 reports the constructs' correlation matrix, it shows the values of the square roots of the AVEs positioned on the diagonal. This method compares the square root of AVE with the correlation of latent constructs (Hair; 2014). Therefore, analysis using the Fornell-Larcker criterion showed that the square of the AVEs of all constructs was higher than their respective correlations, except for JS and MS, which presented very close values (0.731 and 0.734, respectively), suggesting potential conceptual overlap between the two constructs.

Although the correlation between JS and MS slightly exceeds the square root of the AVE, the difference is minimal (approximately 0.003). Such a small deviation represents a borderline case rather than a substantive violation of the Fornell-Larcker criterion. In PLS-SEM, discrepancies of this magnitude are not unusual, particularly when the constructs are theoretically related or reflect closely connected dimensions of organizational experience

3.4.6 Hypothesis Evaluation

The study hypotheses were tested using SEM, and the results indicate that two out of six were accepted. Table 5 presents the direct impact of each individual independent variables on dependent variable employee turnover intention. The results provide evidence that JS and WLB are significant predictors of ETI, both demonstrating negative relationships. However, the constructs related to IWB, MS, LMX and CWS did not show significant statistical effects, indicating that they do not substantially contribute to impact ETI in this sample.

Table 5. Evaluation of structural model.

Hypothesis Testing	Beta-Value	Std. Error	T-Stat	P-Value	Result
H1: JS -> ETI	-0.351	0.133	-2.632	p<0.001	Supported
H2: WLB-> ETI	-0.260	0.119	-2.188	p<0.003	Supported
H3: IWB -> ETI	-0.035	0.111	-0.314	p>0.338	Not Support
H4: MS -> ETI	0.042	0.144	0.294	p>0.460	Not Support
H5: LMX -> ETI	-0.021	0.111	-0.193	p>0.413	Not Support
H6: CWS -> ETI	0.005	0.100	0.052	p>0.405	Not Support

Source: Own elaboration

3.5 Discussion

3.5.1 Theoretical contributions

The results of this study confirmed a significant negative relationship between JS and ETI, consistent with prior findings (Al Akasheh *et al.*, 2024; Kanchana; Jayathilaka, 2023; Mufitha *et al.*, 2019; Ramalho Luz *et al.*, 2018; Sasaki, 2019; Scholtz, 2019; Serenko *et al.*, 2022; Sethar *et al.*, 2022; Sharma; Stol, 2020). A similar pattern was observed for WLB, which also showed a negative association with ETI, in line with previous studies (Rahman *et al.*, 2024; Singh, 2024). These findings suggest that employees who maintain equilibrium between professional and personal responsibilities experience higher satisfaction and well-being, which, according to reciprocity norms, diminishes their intention to leave (Ahmad Saufi *et al.*, 2023). Thus, when satisfaction and balance are not prioritized within organizations, individuals tend to seek another job as a strategy to restore psychological well-being and regain work-life balance.

In contrast, no direct relationship was found between IWB and ETI, as

employees perceiving poor career prospects are less likely to engage in innovative behaviors (Ucar *et al.*, 2021). However, this relationship was not statistically significant, even though employee IWB, which encompasses the generation, promotion, and implementation of novel ideas, is crucial for organizational innovation (Kundu *et al.*, 2020). Nevertheless, turnover intention can reduce motivation and engagement, limiting employees' creative contribution to organizational challenges (Ucar *et al.*, 2021). This highlights the complex interplay between individual behavior, organizational innovation, and retention dynamics, suggesting that even high levels of IWB may not translate into organizational benefits when turnover intention is present.

Similarly, this study found no direct association between MS and ETI, even though strong managerial support and higher work engagement generally encourage IT professionals to stay. (Koshak *et al.*, 2024). Moreover, prior research highlights the critical role of MS in retaining IT professionals, as greater satisfaction with supervisors fosters a supportive environment that encourages employees to voice concerns and remain with the organization (Farooq *et al.*, 2022). It suggests that the relationship between MS and ETI may depend on specific contextual or sample-related factors, meaning that its effect could vary across different organizational settings or employee groups.

Similarly, LMX and CWS also did not show significant relationships with ETI in this study. This outcome contrasts with earlier research, such as Chang *et al.*, (2023), who reported a negative relationship between LMX and turnover intention, and Lin and Wang (2025), who highlighted that high-quality LMX relationships provide support and opportunities, fostering engagement and reducing employees' likelihood of leaving (Mishra, 2024). Regarding CWS, prior studies have indicated that the support of colleagues creates positive feelings that increase the ability of employees to cope with organizational challenges (Kmieciak, 2022). Besides that, when it is insufficient, it exacerbates work strain and disengagement, thereby increasing turnover intention (Kotimah, 2024). However, the current analysis did not corroborate these findings, as no statistically significant associations were observed. One plausible explanation lies in the restricted variability of the measured constructs, with most respondents reporting similar levels across the scales. This clustering of responses reduces the variance necessary to detect statistical relationships, thereby limiting the analytical sensitivity of the model. In addition, the uneven distribution of

respondents across relevant subgroups may have further constrained the ability to identify significant effects.

3.5.2 Implication for practice

This study has significant implications for managerial practices, as it highlights the importance of job satisfaction (JS) and work-life balance (WLB) among IT workers. The findings suggest that employees' turnover intention (ETI) can be mitigated by enhancing JS and WLB. Organizations should adopt effective human resource management practices to foster job satisfaction and reduce turnover among these knowledgeable workers (Rahman *et al.*, 2024). Moreover, when employees achieve a balance between work and family life, they are more likely to feel satisfied and fulfilled in both domains, which, according to the norms of reciprocity, reduces their ETI (Ahmad Saufi *et al.*, 2023).

Based on these results, decision-makers and human resources managers are encouraged to develop targeted strategies that include supportive policies and flexible work arrangements. Such initiatives can strengthen employees' sense of commitment and loyalty, thereby mitigating turnover intention. Offering flexible work opportunities that provide greater autonomy over work hours, locations, and assignments helps employees better balance professional and personal demands (Talluri; Uppal, 2023). Moreover, initiatives such as timely payments, promotion incentives, and clear channels for reporting abuse and feedback must be explicitly aligned with how they enhance employees' job satisfaction (Nagpaul *et al.*, 2022). Understanding these relationships enables organizations to design interventions that elevate job satisfaction, reduce turnover intention, and promote positive behaviors among employees (Santoso *et al.*, 2023).

Although the study did not find significant evidence supporting the influence of some constructs, the practical implications remain relevant, as the literature consistently emphasizes. The IWB construct highlights that organizations should create the environment which leads to higher perceived role clarity among employees, because while employees feel confused about their work role, they cannot be motivated and involved in their jobs, which are crucial for an IWB (Kundu *et al.*, 2020). To management support, it emphasizes that this construct should support organizational efforts to enhance employee productivity and performance (Ismail *et al.*, 2021). The findings indicate that, as a managerial practice, HR

practitioners should prioritize building a supportive organizational culture that enables high-quality LMX, supported by continuous policies and programs that encourage regular interaction between leaders and employees (Kapil; Rastogi, 2020). Finally, regarding CWS, management should invest in team-based activities that strengthen employees' sense of solidarity by encouraging cross-functional collaboration and promoting a workplace culture grounded in mutual support (Le et al., 2024).

3.6 Limitations and future directions

Although this study adds to the existing literature, it also has limitations. First, although the sample size was adequate for the statistical analyses performed, it may limit the generalizability of the findings beyond the studied region, particularly in light of the statistical techniques employed. Furthermore, this study adopted a non-probabilistic convenience sampling strategy through the dissemination of a Google Forms questionnaire via social media and email. While such an approach is commonly used in organizational and behavioral research and facilitates access to dispersed populations, it may entail a risk of self-selection bias. Nevertheless, this limitation is mitigated by the study's analytical focus on relationships between variables rather than population-level parameter estimation. As a result, although the sample may overrepresent younger and more digitally engaged respondents, this characteristic is unlikely to substantially compromise the internal validity of the findings. In this context, future research should address this limitation by employing probabilistic or stratified sampling procedures, collecting data through organisational partnerships, and expanding the sample to include professionals from different regions, company sizes, and cultural backgrounds.

Second, the cross-sectional survey design hinders causal inferences, which makes it difficult to conclude that there is causality in the relationship between the variables. Therefore, future research can address this limitation by adopting a longitudinal design, collecting data at multiple points in time to enhance the robustness and generalisability of the results (Kundu et al., 2020). Third, due to the scope of the theoretical model adopted from Kanchana and Jayathilaka (2023), important variables such as salary, burnout, and organizational commitment were not incorporated into the present study. Although excluded, these factors represent critical dimensions of employees' work experiences and are well established in the literature as potential predictors of turnover intention. In addition, some constructs

examined in this study did not achieve statistical significance; nevertheless, given their theoretical consolidation and recurrent empirical support in prior research, they remain relevant and should be further investigated in future studies in other samples. Examining both omitted and non-significant constructs may contribute to a more comprehensive and nuanced understanding of turnover intention in the IT context.

Fourth, new studies could investigate the influence of personal factors, such as personality traits and lifestyle preferences, which could offer a deeper understanding of what motivates IT workers to stay or leave their positions (Carvalho et al., 2024). Finally, This study employed demographic variables as controls. However, future research could examine their role as moderators or mediators.

Overall, this study advances the literature on turnover intention among IT professionals by clarifying the mechanisms through which job satisfaction and work-life balance exert the strongest influence on employees' intention to stay, thereby reinforcing the centrality of social exchange processes in shaping retention outcomes. By showing that innovative work behavior, management support, leader-member exchange, and co-worker support did not significantly predict turnover intention in this context, the findings also highlight boundary conditions and contextual nuances that merit further theoretical attention, particularly regarding how organizational environments and sample characteristics may moderate these relationships. From a practical perspective, the results underscore the need for organizations to prioritize human resource practices that enhance satisfaction and support employees' efforts to reconcile professional and personal demands. Strengthening job satisfaction, ensuring fair and transparent HR policies, and designing flexible work arrangements emerge as actionable strategies that can meaningfully reduce turnover intention and, effectively, retain skilled employees.

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4 Conclusion

This research provided a comprehensive examination of turnover intention among IT professionals by integrating a SLR (Manuscript I) with an empirical analysis (Manuscript II). The first manuscript encompassed 42 studies published between 2015 and 2024, sourced from five major repositories (IEEE Xplore, ScienceDirect, ACM Digital Library, Google Scholar, and EBSCO). Following the application of inclusion, exclusion, and quality assessment criteria aligned with the PRISMA protocol, the resulting sample enabled a rigorous examination of the 47 internal and 35 external determinants associated with employees' intention to leave. Job satisfaction emerged as the most frequently cited internal factor, whereas organizational commitment stood out as the predominant external driver. Additionally, burnout consistently appeared as a critical internal variable, underscoring its potential centrality in explaining turnover intention among IT professionals.

The second manuscript presented findings of the empirical study, with focus on IT workers from Recife, that reinforce these insights, revealing a significant negative relationship between job satisfaction and employees' turnover intention, as well as between work-life balance and turnover intention. These results corroborate the findings and key factors identified in the first manuscript and align with prior research indicating that employees who experience satisfaction and a balanced integration between work and personal life are less likely to seek new employment opportunities. In contrast, when organizations neglect these aspects, employees often perceive job changes as a means to restore psychological well-being. However, the study found no significant associations between innovative work behavior, managerial support, or coworker support and turnover intention, contradicting some previous findings and suggesting that these relationships may be shaped by contextual or organizational factors specific to Recife, the local IT sector, and companies within the Porto Digital ecosystem.

From a managerial standpoint, the results emphasize the need for human resource strategies that enhance job satisfaction and promote work-life balance through supportive leadership, flexible work arrangements, and positive organizational culture. Such perspectives corroborate the findings and key factors

identified in the first manuscript and are consistent with the principles of Social Exchange Theory (SET) (Rahman; Malarvizhi, 2024), further reinforcing the idea that positive and reciprocal exchanges between employees and their organizations reduce the likelihood of turnover intention. From this perspective, employees who perceive higher levels of satisfaction and a balanced integration between work and personal life are more likely to feel that the organization fulfills its side of the exchange relationship. Consequently, they are less inclined to seek new employment opportunities, reinforcing the idea that positive work experiences strengthen reciprocity and reduce turnover intention.

Despite its contributions, the study presents several limitations. First, the restricted database scope and the cross-sectional design constrain both generalizability and causal inference; adopting a longitudinal design would allow researchers to capture temporal dynamics and establish stronger causal links among the variables (Ohunakin; Olugbade, 2022). Second, the sample may reflect selection bias, as younger professionals, more active in digital communication channels such as email and social media, were likely overrepresented, which may have affected demographic representativeness. Finally, the model omitted relevant covariates widely recognized in the literature as central predictors of turnover intention, such as stress or burnout, remuneration, and workload, which limits the analytical depth and completeness of the explanatory framework.

To mitigate these limitations and strengthen the explanatory power of subsequent investigations, future research could incorporate qualitative methods and consider broader demographic and cultural factors to deepen the understanding of how job satisfaction relates to turnover intentions (Koshak et al., 2024). Moreover, although demographic variables were treated as control variables in this study, future research could explore their potential roles as moderators or mediators; for instance, gender could be examined as a moderating factor (Kapil & Rastogi, 2020). Finally, the study was conducted at the individual level; future research should investigate the phenomenon at the team level. (Azila-Gbettor et al., 2022).

In summary, this dissertation demonstrates the inherent complexity of measuring the phenomenon of turnover intention, as evidenced by the wide range of internal and external factors identified in the SLR, as well as the intensity of studies published in the post-pandemic period, reflecting a growing concern with the quality of work relationships. Moreover, across both manuscripts, the findings reinforce that

job satisfaction and work-life balance are central drivers of turnover intention among IT professionals revealing patterns that both converge with and diverge from international evidence. These results underscore the need for retention strategies that prioritize supportive work environments, equitable workload distribution, and policies that enhance well-being and employee autonomy.

The study also contributes to improving the precision and effectiveness of turnover-mitigation strategies by identifying, through the empirical results obtained, the specific guidelines that decision-makers should adopt to reduce the substantial organizational costs associated with turnover intention in Recife, a technologically dynamic innovation hub with national and international relevance. Beyond its practical implications, the dissertation advances the academic field by providing empirical evidence from an understudied emerging-market context and by illustrating how local cultural and organizational dynamics shape turnover intention. By integrating insights from SET and identifying context-sensitive determinants, this dissertation refines existing theoretical models while offering actionable guidance for organizations seeking to strengthen talent retention within the regional IT sector.

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APPENDIX A

IT Workforce Retention: Insights from a Decade of Turnover Intention Research

Abstract. *Employee turnover intention poses challenges for IT organizations, affecting performance and strategic goals. Despite research efforts, the factors driving turnover remain fragmented. This study conducted a systematic literature review of research published between 2015 and 2024, using PRISMA guidelines. A total of 41 studies were analyzed, identifying 29 internal and 25 external factors. Job satisfaction was the most cited internal factor, while organizational commitment was the most frequent external factor. Burnout also emerged as a key driver. These findings support IT organizations in developing targeted HR strategies to improve retention.*

1. Introduction

Information Technology (IT) is one of the fastest-growing industries, standing out as one of the most promising business segments for economic development on a global scale [Farooq et al., 2022]. According to [Sandhya and Sulphey 2019], more than 30% of significant growth has witnessed \$150 billion in the IT and software industry in the last few years. This growth is expected to require around 546,100 new jobs over the next few years [Moquin et al., 2019]. However, the IT sector is facing major challenges, such as rapid technological changes, continual training and retooling of IT professionals, high employee turnover, and economic fluctuations [Gefen et al., 2015] [Moquin et al., 2019].

The fast-paced environment of the IT industry, coupled with high expectations of innovation and productivity, creates significant stress and pressure on employees [Ajayi and Udeh 2024]. Due to that, to maintain professional competence, IT professionals must remain updated on technological advancements and uphold their knowledge base [Pereira et al., 2024]. Moreover, the IT industry has a culture of constant connectivity, high technical expertise, continuous learning, and extended periods of focused work, often under tight deadlines [Ajayi and Udeh 2024]. In this way, the boundaries between work and personal life can be blurred, further exacerbating stress levels and decreasing overall well-being [Lo 2015]. This dynamic often leads to burnout among IT professionals [Ajayi and Udeh 2024].

In such a high-pressure environment, retaining professionals becomes a persistent challenge, particularly for the IT sector [Joseph et al., 2007]. This challenge is further amplified by the phenomenon of turnover intention. Turnover intention refers to the employee's desire to seek new job opportunities or voluntarily switch companies [Pereira et al., 2024]. It is also recognized as a significant predictor of voluntary job resignation [Chouhan 2022]. Furthermore, this phenomenon directly impacts the organizational well-being and disrupts the supply and demand of the IT labor market [Lo 2015]. Moreover, previous studies have demonstrated that employees with high turnover intention often display poor performance and high absenteeism rates [Chouhan 2022].

Turnover intention can negatively impact organizations by leading to the loss of critical skills, knowledge and abilities, ultimately resulting in high replacement costs and a reduced revenue (current and/or future) [Scholtz 2019]. Consequently, mitigating the pretentiousness of this phenomenon has become the focus of attention for the IT industry in recent years [Kumar 2022]. This concern is legitimate because of the financial repercussions of high turnover rates in an industry that continuously reports poor employee retention [Lo 2015]. The IT sector is among the top four industries with poor employee retention rates [Rhatigan 2016] and overall human capital has a significant role in shaping the financial performance of IT organizations [Chouhan 2022] [Gupta and Raman 2021].

Many variables influence employee turnover intentions [Kanchana and Jayathilaka 2023]. However, the causes of employee turnover intention are multiple and complex, and still poorly understood globally [Cohen et al., 2016]. To address this salient and persistent issue, the present study systematically reviews the literature on turnover intention among IT professionals from 2015 to 2024. Preliminary results indicate that job satisfaction and organizational commitment are potential constructs in the analyses. Furthermore, the survey method is utilized in most of the studies. Another introductory point is the prevalence of studies in countries with technological prominence, such as the United States and India.

By identifying and analyzing key factors contributing to turnover intention, this study aims to provide actionable insights for IT organizations to develop more effective retention strategies. Specifically, it examines global trends, antecedents of turnover intention, and methodological approaches, highlighting research gaps

and laying the groundwork for future studies. In this context, understanding these elements is crucial in a landscape where the demand for qualified talent exceeds supply [Chouhan 2022]. Thus, it is essential to mitigate turnover and ensure the retention of a skilled workforce [Pereira et al., 2024].

Thus, to achieve these objectives, the study addresses the primary research question: "What are the main factors influencing turnover intention decisions among IT professionals according to the existing literature?". This primary question is supported by the following subquestions: (RQ1.1) "What are the key constructs explored in research on turnover intention among IT professionals?"; (RQ1.2) "What are the most commonly applied methods in the study of turnover intention?"; and (RQ1.3) "Which countries or regions have demonstrated a significant focus on researching turnover intention among IT professionals?".

The following sections of this article are structured as follows. Section 2 introduces the background and related works about the theme. Section 3 documents the research method applied. Section 4 highlights the results, their implications, and discussion, respectively. Finally, section 5 marks the conclusion, limitations, and future research directions.

2. Background

2.1 Turnover Intention

Turnover intention refers to an employee's likelihood of leaving an organization voluntarily. In the IT sector, this issue is particularly prevalent due to job stress, lack of satisfaction, and inadequate compensation [Al-Dalahmeh et al., 2020] [Pereira et al., 2024]. Besides that, IT professionals leave the organization due to poor relationships with supervisors, co-workers, and management [Farooq et al., 2022]. Stressors such as job overload [Sarker et al., 2019] also contribute to turnover intention [Tulili et al., 2023].

In the IT sector, a high rate of turnover intention has been noticed due to different challenging issues such as work stress, lack of job satisfaction, and inefficient compensation plans [Al-Dalahmeh et al., 2020] [Pereira et al., 2024]. In addition, IT employees face constant changes that accompany rapid technological leaps in the field [Prommegger 2019]. Furthermore, IT professionals suffer from

high project error rates that typically occur in IT projects [Standish Group 2015] and are, therefore, often exposed to feelings of failure [Rampadaruth 2022]. In this way, mental health is impacted by the constant scenarios of change and tension, increasing the desire to leave work, which is a key factor contributing to burnout among IT professionals [Ajayi and Udeh 2024].

A key factor in turnover is burnout, which negatively impacts mental health and job satisfaction [Ajayi and Udeh 2024]. Burnout is often triggered by excessive workload, inadequate recognition, and poor work-life balance, making IT professionals more susceptible to leaving their jobs [Rampadaruth 2022]. Job satisfaction plays a critical role, as dissatisfied employees are more likely to seek alternative opportunities [Farooq et al., 2022]. High turnover rates lead to financial losses, knowledge drain, and recruitment challenges [Ajit 2016] [Witt and Burke 2002].

Global studies highlight the financial impact of turnover. Due to the shortage of skilled and talented employees, IT organizations have to bear the projected financial loss in revenue, such as the United States \$435.7 billion in 2020 [Farooq et al., 2022]. Understanding the factors driving turnover intention is vital to developing effective retention strategies [Kanchana and Jayathilaka 2023].

2.2 Employee Retention

Employee retention focuses on organizational efforts to keep skilled workers engaged and committed [Kong 2022]. In the IT sector, where demand for qualified professionals exceeds supply, companies invest heavily in retention strategies [Kumar 2022]. Retaining qualified IT professionals to strengthen organizational performance and competitiveness [Zaza et al. 2022]. High-performing employees contribute significantly to organizational success, making retention a priority [Serenko 2022].

Effective retention strategies include competitive salaries, career growth opportunities, and supportive work environments [Al Akasheh et al., 2024]. Organizations also focus on job satisfaction and engagement to reduce turnover [Pereira et al., 2024]. Studies indicate that employees with higher job satisfaction and organizational commitment exhibit lower turnover intentions [Mahindru et al., 2023].

2.3 Related Work

Prior research on turnover intention has identified multiple influencing factors, including job satisfaction, burnout, and organizational commitment [Serenko et al., 2022] [Farooq et al., 2022]. A study in Japan found that work exhaustion and job satisfaction mediate turnover intention [Serenko et al., 2022]. Another study in Pakistan identified job security, salary, and career management as significant factors [Farooq et al., 2022]. [Alla and Rajaa 2019] conducted a literature review on employee turnover. The authors concluded that turnover has negative repercussions on the psychological and productivity of employees as well as on the overall organizational performance.

However, it does not directly portray which attributes impact on turnover intention. This study addresses this gap by compiling, through an SLR, the key attributes that influence turnover intention. Moreover, this study extends previous research by analyzing turnover intention globally, covering a broader timeframe (2015-2024). Unlike earlier reviews, it incorporates additional factors such as work integration, burnout, and perceived workload [Farooq et al., 2022]. By consolidating findings, this review offers actionable insights to mitigate turnover and improve retention strategies in the IT sector, and support managers and leaders in effectively mitigating this phenomenon.

3. Research Method

This study follows a systematic literature review (SLR) approach, employing the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method. The review aims on answering the research question: *What are the main factors influencing turnover intention among IT professionals as identified in the literature?*

To ensure rigor, the methodology aligns with Kitchenham and Charters' (2007) guidelines, covering research questions, inclusion/exclusion criteria, search strategy, and quality assessment. Figure 1 illustrates the study selection process, summarizing how studies were filtered and finalized.

3.1. Data Collection

Four electronic repositories were selected: IEEE Xplore, ScienceDirect, ACM Digital, and Google Scholar. The search period spans 2015-2024, reflecting the growing influence of digital transformation and trends around the digital economy or Industry 4.0, which have been catalyzed by the COVID-19 pandemic, indicate a significant increase in functions and occupations in the IT area [Souza et al., 2023].

The following string was selected also based on the work of Farooq et al. (2022): (__turnover intention“ OR __job change“ OR __turn away“ OR __job mobility“ OR __job movement“ OR __job flow“ OR __career change“) AND (__software developer“ OR __IT professional“ OR __IT personnel“ OR __software engineer“ OR __software coder“ OR "developer" OR "tester") AND (__software industry“ OR __IT industry“ OR "software engineering").

The inclusion and exclusion criteria were outlined as follows, adapted from the work of [Farooq et al., 2022]. Inclusion criteria involved: studies written in English; peer-reviewed journal or conference papers published between 2015-2024; and research addressing turnover factors in IT/software sectors. Exclusion criteria included: non- English studies; book chapters, white papers, workshop reports; duplicates or inaccessible studies; and studies not relevant to the topic. Figure 1 illustrates the study selection process, summarizing how studies were filtered and finalized.

3.2. Study Selection and Quality Assessment

The selection followed PRISMA's four-step process:

1. Identification - 20,252 studies retrieved from databases
2. Screening - Filtering by title, abstract, and relevance
3. Eligibility - Exclusion of inaccessible or duplicate papers
4. Inclusion - Final selection of 41 primary studies for analysis

To ensure rigor, we applied a five-level Tollgate Quality Assessment [Farooq et al., 2022]: (1) consisted on search based on predefined string; (2) focused on Abstract/title screening; (3) removal of duplicates and inaccessible papers; (4)

full-text assessment for relevance; and (5) final selection and validation. Table 1 presents the primary studies selection results, in each level.

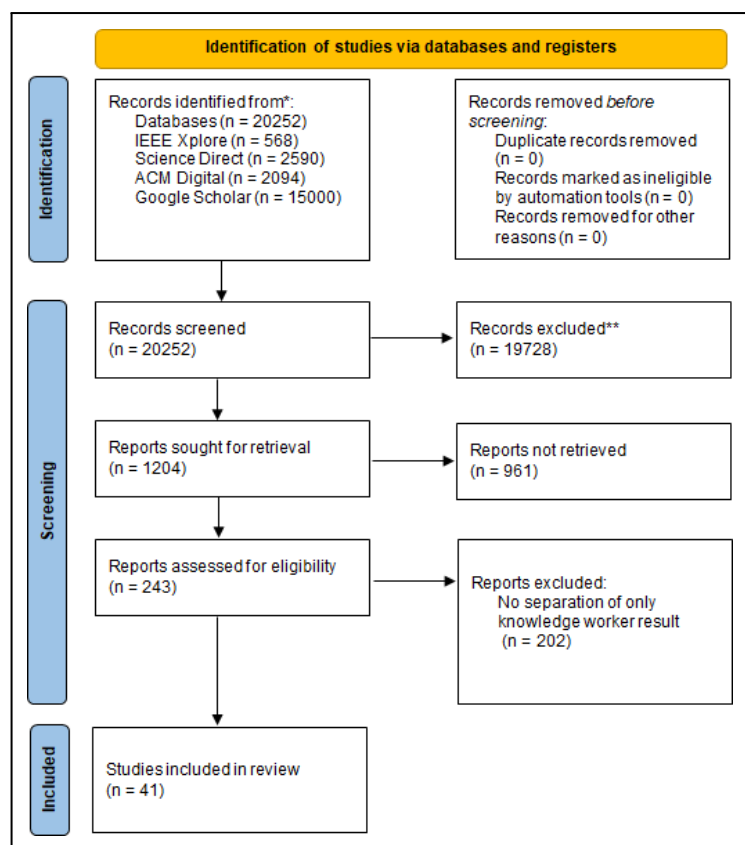


Figure 1. Selection process

TABLE 1 Primary studies selection.

Repository	Level 1	Level 2	Level 3	Level 4	Level 5
IEEE Xplore	568	531	86	42	2
Science Direct	2590	2471	684	29	2
ACM Digital	2094	2026	27	12	2
Google Scholar	15000	14700	407	160	35
Total	20252	19728	1204	243	41

3.3 Data Extraction and Synthesis

In this phase, all remaining studies were analyzed, for data extraction and synthesis. The analysis focused on:

1. Turnover intention factors - Classified as internal (job satisfaction, burnout, demographic attributes) or external (organizational commitment, compensation, leadership style).

2. Methodology trends – Majority used quantitative survey-based approaches, confirming prior findings [Haran and Niederman 2022].

3. Geographical focus – Studies concentrated in the United States, India, Pakistan, Sri Lanka, and Brazil, highlighting global concerns on IT retention.

4. Results and Discussion

4.1. Overview of primary studies

This SLR identified 41 relevant studies investigating the factors that impact turnover intention among IT professionals, as described in Table 2. The factors are classified as internal (demographics, job satisfaction, burnout) and external (organizational commitment, leadership style, compensation), as presented in the work of [Pratiwi, et al., 2024]. This categorization is based on variable definitions and characteristics [Alshammari et al., 2016] [Kim and Kim 2021]. Additionally, each study was meticulously analyzed and classified according to its method and country of origin.

Table 2. Primary studies and key findings

Author, Year	Country	Method	Factors affecting turnover intention	
			Internal	External
Abid, Zahra and Ahmed (2016)	Pakistan	Quantitative	<ul style="list-style-type: none"> Demographic (Age; Education; Gender; Organizational Tenure) Perceived Organizational Support 	<ul style="list-style-type: none"> Heedful Relating
Al Akasheh et al. (2024)	Arab Emirates	Quantitative	<ul style="list-style-type: none"> Job Satisfaction Job Involvement 	<ul style="list-style-type: none"> Job Environment
Apostel, Syrek and Antoni (2018)	Germany	Quantitative	-	<ul style="list-style-type: none"> Illegitimate Tasks
Armstrong et al. (2018)	United States	Quantitative	<ul style="list-style-type: none"> Work Exhaustion 	<ul style="list-style-type: none"> Organizational Commitment

Atouba (2018)	United States	Quantitative	<ul style="list-style-type: none"> Employee Work Participation Organizational Identification 	<ul style="list-style-type: none"> Internal Communication Adequacy
Booyesen and Malan (2024)	South Africa	Mixed Method (Quantitative and Qualitative Focus Literature Review)	<ul style="list-style-type: none"> Satisfaction With Benefits 	<ul style="list-style-type: none"> Job Embeddedness Supportive Organisational Climate Transformational Leadership
Chiu (2017)	Taiwan	Quantitative	<ul style="list-style-type: none"> Job Crafting 	-
Cho, Yoo and Lim (2020)	Korea	Quantitative	<ul style="list-style-type: none"> Job Satisfaction 	-
Chouhan (2022)	India	Quantitative	<ul style="list-style-type: none"> Career Adaptability 	-
Dinger et al. (2015)	United States	Quantitative	<ul style="list-style-type: none"> Perceived Job Alternatives Intrinsic Motivation Job Satisfaction Affective Commitment 	-
Dunukara and Pushpakumari (2021)	Sri Lanka	Quantitative	-	<ul style="list-style-type: none"> Advancement Opportunities Pay And Benefits Job Security Supervisor/Management Relations Peer Relations
Eckhardt et al. (2016)	Germany	Quantitative	<ul style="list-style-type: none"> Personality Traits Neuroticism Extraversion Conscientiousness 	-
Farooq et al., (2022)	Pakistan	Quantitative	<ul style="list-style-type: none"> Employee Commitment Recognition Employee Experience Education Level 	<ul style="list-style-type: none"> Recruitment & Selection Team & Management Support Performance & Career Management Salary & Compensation Job Security Organizational Demographics (Organization Size And Department Size)
Gumussoy (2016)	Turkey	Quantitative	<ul style="list-style-type: none"> Job Satisfaction Career Commitment Conscientiousness Openness To Experience 	-

			• Career Satisfaction	
Haran and Niederman (2022)	India	Quantitative	• Job Satisfaction • Organizational Justice	-
Harden, Boakye and Ryan (2018)	United States	Quantitative	• Perceived Work Overload • Perceived Skill Obsolescence • Fairness of Rewards	• Organizational Commitment
Haridas, Ture and Nayanpally (2022)	India	Quantitative	-	• Organizational Career Management
Idell, Gefen and Ragowsky (2021)	United States	Quantitative	• Distrust in organization	-
Kanchana and Jayathilaka (2023)	Sri Lanka	Quantitative	• Job Satisfaction • Demographic (Gender: Male)	-
Moquin, Riemenschneider and Wakefield (2019)	United States	Quantitative	• psychological contract breach	-
Mufitha, Lee and Yong (2019)	Sri Lanka	Quantitative	• Job Satisfaction • Professional Commitment	-
Naqvi and Bashir (2015)	Pakistan	Quantitative	-	• Supervisor Support
Pereira (2024)	Brazil	Qualitative	• Satisfaction With Compensations (Salary)	• Remote Work
Ramalho Luz, Luiz de Paula and De Oliveira (2018)	Brazil	Quantitative	• Demographic (Age) • Affective Commitment • Normative Commitment • Job Satisfaction • Satisfaction With Pay • Satisfaction With Promotions • Satisfaction With The Nature of The Work	• Organizational Commitment
Ramaprasad, Lakshmin	Indian	Quantitative	• Work Engagement	• High-Performance Work Systems • Organizational

arayanan and Pai (2021)				Commitment
Rusbadrol et al. (2017)	Malaysia	Qualitative	• Organizational Justice	-
Santoso et al. (2023)	Indonesia	Qualitative	• Job Satisfaction	• Organizational Commitment
Sasaki (2019)	Japan	Quantitative	• Job Satisfaction	-
Scholtz (2019)	South Africa	Quantitative	• Job Satisfaction	• Organizational Size • Occupational Culture
Serenko et al. (2022)	Japan	Quantitative	• Job Satisfaction	-
Sethar, Channar and Jatoi (2022)	Pakistan	Quantitative	• Job Satisfaction	-
Setiawan Wahidin and Heryjanto (2024)	Jakarta	Quantitative	• Employee Engagement	-
Sharma and Stol (2020)	Ireland	Quantitative	• Job Satisfaction	-
Singh (2024)	India	Quantitative	• Work-Life Balance	• Organizational Commitment
Sivarethinamohan and Aranganathan (2015)	Chennai City - India	Quantitative	• Role Ambiguity • Role conflict • Work Exhaustion • Promotion Satisfaction • Fairness of individual rewards • Job security	• Supervisor's feedback • Leader Member exchange • Work Schedule Flexibility • Career accommodation
Souza et al. (2023)	Brazil	Mixed Method (Quantitative and Qualitative Focus Literature)	• Perception Of Material Support	• Performance Management • Compensation And Development Policies • Management And Leadership Style • Social Support

		Review)		
Suárez-Albanchez et al. (2022)	Spain	Quantitative	• Organizational Support Perceived	• Organizational Commitment
Vennila and Vivekanandan (2017)	Coimbatore District	Quantitative	• Work Exhaustion	-
Vidya (2023)	India	Quantitative	• Emotional Dissonance • Burnout Components (Emotional Exhaustion, Depersonalization And Personal Accomplishment)	-
Zaza, Armstrong and Riemenschneider (2022)	United States	Quantitative	• Burnout	-
Zentner (2018)	United States	Quantitative	• Job Performance	-

4.2 Key constructs explored in research on turnover intention among IT professionals

Job satisfaction was identified in 14 studies, making it the most cited internal factor influencing turnover intention. Employees with higher satisfaction levels are less likely to leave, reinforcing findings from [Pereira 2024] and [Dhakal et al. 2024]. Organizational commitment appeared in 7 studies as the most frequent external factor. Strong commitment reduces turnover intention, as noted by [Suárez-Albanchez et al. 2022] and [Mahindru et al. 2023]. Burnout was highlighted in multiple studies as a significant internal factor, leading to decreased productivity and higher attrition rates, aligning with the work of [Ajayi and Udeh 2024].

4.3 Most applied methods when researching turnover intention

Quantitative surveys were the predominant approach, confirming findings from [Farooq et al., 2022]. Only three studies adopted a purely qualitative method, while mixed-method approaches remain underutilized in this field. This reliance on quantitative surveys underscores the need for more diverse methodologies,

including qualitative and longitudinal studies, to provide deeper insights into turnover intention.

4.4 Countries or regions of the research

The United States and India had the highest number of studies, with 8 each, emphasizing IT workforce concerns in these regions. Pakistan, Sri Lanka, and Brazil also emerged as focal points for turnover intention research. While research on turnover intention in developing IT markets is growing, it remains underrepresented in global literature. Expanding studies to diverse geographic regions could offer more comprehensive insights into turnover dynamics across different socio-economic and cultural contexts.

4.5 Discussion and Implications

The findings confirm that job satisfaction and organizational commitment are critical in understanding turnover intention. The dominance of quantitative surveys suggests a need for more diverse methodological approaches, including qualitative and longitudinal studies. The geographic distribution highlights the growing importance of emerging IT markets in turnover research.

To mitigate turnover intention, IT organizations should focus on enhancing job satisfaction through career development and well-being initiatives; strengthening organizational commitment by fostering engagement and leadership support; and addressing burnout with flexible work policies and mental health support. These insights might contribute to HR strategies aimed at improving talent retention and organizational stability in the IT sector.

5. Conclusions

This in-depth review examined 41 studies on knowledge workers' turnover, highlighting the intricate relationship between internal and external factors affecting turnover intentions. To do this, searches were carried out in four repositories: IEEE Xplore, Science Direct, ACM Digital, and Google Scholar, from 2015 to 2024. Initially, 20252 papers were identified, and after applying the inclusion and exclusion criteria based on the PRISMA protocol, 41 papers were cataloged. In this way, the papers were cataloged in terms of the determining factors in the

turnover intention of IT professionals, em uma perspectiva interna e externa, the research method and country of origin.

The findings showed that the factors impacting turnover intention included job satisfaction as the most frequently identified attribute in the cataloged studies among internal factors, and organizational commitment as the most prominent among external factors. Additionally, burnout, another internal factor identified, demonstrated the potential to influence the phenomenon of turnover intention among IT professionals. Regarding the research method, there is a noticeable trend toward a quantitative approach focused on empirical studies addressing the subject of turnover intention. Concerning the countries with the highest recurrence, the United States and India stood out due to their significant influence in the technology sector, along with Pakistan, Sri Lanka, and Brazil, which also featured prominently in the research.

In this sense, understanding these results that influence turnover intention, the methods used, and the experiences from studies conducted in various parts of the world allows for the development of talent retention strategies to mitigate the risk of employee turnover. This is crucial as the present findings highlight that turnover intention can negatively impact the organization by leading to the loss of talent with key skills, reduced productivity, and high replacement costs for rehiring.

This study has a few limitations. Firstly, many potential studies were not freely accessible. However, among those cataloged, it was possible to identify the key factors driving turnover intention, the methods, and global trends. Another limitation was the scope of the databases. The study was limited to four repositories (IEEE Xplore, Science Direct, ACM Digital, and Google Scholar), which, although significant, may not encompass all relevant studies on turnover intention. Expanding the database scope could provide a more comprehensive understanding of the topic and is a possibility for future research. Additionally, focusing on the antecedent factors of the most impactful constructs (job satisfaction, organizational commitment, and burnout) that negatively influence turnover intention. Another future direction would be incorporating mediators actors, such as servant leadership, to evaluate the behavior of these new results stemming from a leadership change, are also future directions.

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APPENDIX B

PROTOCOL FOR THE SYSTEMATIC LITERATURE REVIEW OF STUDIES ON THE FACTORS THAT MOST IMPACT THE TURNOVER INTENTION OF IT PROFESSIONALS

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1. TITLE

They Want to Quit! Why IT Professionals Leave: A Systematic Literature Review on Turnover Intention

2. CONTEXTUALIZATION

Information Technology (IT) is one of the fast-growing industries, standing out as one of the most promising business segments for economic development on a global scale (Farooq *et al.*, 2022). According to Sandhya and Sulphrey (2019), more than 30% of significant growth has witnessed \$150 billion in the IT and software industry in the last few years. This growth is expected to require around 546,100 new jobs over the next few years (Moquin; Riemenschneider; Wakefield, 2019). However, the rapid pace of technological advances, coupled with high expectations of innovation and productivity, creates a work environment full of significant stress and pressure (Ajayi; Udeh, 2024).

Considering that the IT industry has a high-pressure atmosphere in which it is difficult to maintain specialized technical prowess over time (Coombs, 2009; Mergel *et al.*, 2021; Naqvi; Bashir, 2015; Mahindru, Kaur; Gupta, 2023), this leads to the phenomenon of turnover intentions, which is very common in such as the hotel industry Koo (2020), hospital management (Lee; Kim, 2020) and banking sectors (Yukongdi, 2020). Turnover intention is defined as the “last in a sequence of

withdrawals|| that ultimately results in an employee looking for employment elsewhere outside of the organization (Lu; Gursoy, 2016).

Turnover intention can negatively impact an organization, since it results in the loss of key skills, knowledge and abilities and ultimately in high replacement costs and a reduction of revenue (current and/or future) (Scholtz, 2019). Mitigating the pretentiousness of this phenomenon has become the focus of attention for the IT industry in recent years (Kumar, 2022). This concern is legitimate due to the financial repercussions that this phenomenon can have and that an IT industry continuously records high turnover (Lo, 2015), being among one of the top four industries with poor employee retention rates (Rhatigan, 2016).

In this sense, this systematic literature review (SLR) aims to identify the factors that most impact the turnover intention of IT professionals found in the existing academic literature from 2015 to 2024, based on the original guidelines proposed by Kitchenham (2004).

2.1 TEAM

Name	Education	Role
Wagner Vidal Xavier da Silva	Master's student in business administration	Author
Suzana Candido De Barros Sampaio	PHD in computer Science	Author, Advisor and reviewer
Marcelo Marinho	PHD in computer Science	Author and reviewer

3. RESEARCH QUESTIONS

According to Kitchenham et al. (2007), the research questions should follow the following inquiries: Population, Intervention, Outcomes, Comparison, Objective, and Context. For this research, some of these inquiries have been identified:

- Population: IT professionals.
- Intervention: Mitigation actions for issues that influence the turnover intention of IT professionals.
- Outcomes: Improvement in job satisfaction and reduction in the turnover intention of IT professionals.

RQ1. - What are the key constructs explored in research on turnover intention among IT professionals?

RQ2. - What are the most commonly applied methods in the study of turnover intention?

RQ3. - Which countries or regions have demonstrated a significant focus on researching turnover intention among IT professionals?

RQ4. - In which period has there been a notable increase in studies addressing turnover intention among IT professionals?

4. SEARCH PROCESS

The following databases were selected for the SLR based on the work of Farooq et al. (2022), which conducts research focused on the factors that influence the turnover intention of Pakistan IT professionals and utilizes databases that concentrate on publications in information technology.

- IEEE Xplore (<http://https://ieeexplore.ieee.org/>)
- Science Direct (<https://www.sciencedirect.com/>)
- ACM Digital (<https://dl.acm.org/>)
- Google Scholar (<https://scholar.google.com/>)
- EBSCO (<https://www.ebsco.com/>)

5. SEARCH STRING

According to the proposal by Kitchenham et al. (2007), it is necessary to use search strings as a starting point. In this sense, search strings in English were used in the Title, Abstract, or Keywords sections, applying a chronological cut from 2015 to 2024. Table 1 shows the elements of the string in relation to the databases:

Table 1 Databases and search string

DATABASE	SEARCH STRING
IEEE Xplore	(__turnover intention“ OR __job change“ OR __turn away“ OR __job mobility“ OR __job movement“ OR __job flow“ OR __career change“) AND (__software developer“ OR __IT professional“ OR __IT personnel“ OR __software engineer“ OR __software coder“ OR "developer" OR "tester") AND (__software industry“ OR __IT industry“ OR "software engineering")
Science Direct	(__turnover intention“) AND (__IT professional“ OR __IT personnel“ OR __software engineer OR "developer" OR "tester") AND (__software industry“ OR __IT industry“ OR "software engineering")

ACM Digital	(__turnover intention“ OR __job change“ OR __turn away“ OR __job mobility“ OR __job movement“ OR __job flow“ OR __career change“)
Google Scholar	(__turnover intention“ and "IT Professional" and "IT industry")
EBSCO	(__turnover intention“ OR __job change“ OR __turn away“ OR __job mobility“ OR __job movement“ OR __job flow“ OR __career change“) AND (__software developer“ OR __IT professional“ OR __IT personnel“ OR __software engineer“ OR __software coder“ OR "developer" OR "tester") AND (__software industry“ OR __IT industry“ OR "software engineering")

Source: Author (2024)

6. SELECTION CRITERIA

Study selection criteria are intended to identify those primary studies that provide direct evidence about the research question (Kitchenham, 2004). In this sense, in order to reduce the likelihood of bias, selection criteria should be decided during the protocol definition (Kitchenham, 2004). Thus, inclusion and exclusion criteria should be based on the research question and will be reported below.

6.1 INCLUSION CRITERIA

- The selected studies were published in a conference or journal.
- The selected studies were written in the English language.
- The time duration of selected studies lies between 2015 to 2024.
- Studies that the open access articles were freely available for download.
- The selected study referred to turnover factors in the software or IT industry.

6.2 EXCLUSION CRITERIA

- Those studies were excluded, not written in the English language.
- Blog, slides, technical reports, book chapters, white papers, and workshop papers were excluded.
- Studies that were inaccessible or unavailable online.
- Reluctant or duplicated studies were excluded.
- The studies were not relevant to the turnover intention of IT professionals.

7. STUDY QUALITY ASSESSMENT

Regarding the quality assessment criteria for selecting primary studies, this study was built on the methodology outlined and adapted by Farooq et al. (2022). In this context, eight quality assessment questions presented in Table 2 are used to identify the significance of selected studies. This process also contributes to ensuring the reliability of the results.

Table 2: Quality assessment criteria

SR No.	Quality Assessment Questions
QA1	Are the proposed study states objectives?
QA2	Does the selected study meet the inclusion and exclusion criteria?
QA3	Does the proposed research examine the factors that influence job turnover intention?
QA4	Is the study relevant to the research question?
QA5	Is the proposed solution validating by an empirical study?
QA6	Are the stated research questions well answered?
QA7	Does the conclusion of the study clearly define the aim and objectives?

The preliminary studies will be selected based on a quality evaluation process. A score of 1 indicates that the study fully addressed the quality assessment questions. A score of 0.5 reflects a partial response to these questions. A score of 0 means that the study did not address the quality assessment questions at all.

8. DATA COLLECTION

The data extracted from each study will be:

- The source (journal or conference) and full reference.
- Main topic area.
- Quality evaluation.
- Whether the study proposed practitioner-based guidelines.

9. DATA ANALYSIS

The data will be tabulated to show:

- The key constructors are addressed in each publication approach.

10. DATA EXTRACTION STRATEGY

Systematic reviews must be undertaken in accordance with a predefined search strategy (Kitchenham, 2004). Thus, after searching the databases, all desired information will be extracted, entered, and tabulated in an Excel spreadsheet for better organization and visualization. The strategy that will be used to search for primary studies including search terms and resources to be searched, resources include databases, specific journals, and conference proceedings. The guidelines from Kitchenham (2009) will be followed in this SLR, subdivided into three review phases: planning, reporting, and conducting as noted in the work of Farooq et al., (2022).

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APPENDIX C

PROTOCOLO DE COLETA DE DADOS

1. Identificação do Estudo

Título do Estudo: **Exploring Predictors of Turnover Intention among IT Workers**

Pesquisador Responsável: Wagner Vidal Xavier da Silva

Instituição: UFRPE

Orientador: Suzana Candido De Barros Sampaio

Período da Coleta: Junho a Julho de 2025.

2. Objetivo da Coleta de Dados

A coleta de dados tem como objetivo principal analisar os fatores identificados e sua influência na intenção de rotatividade entre profissionais de TI em empresas de Pernambuco. Para isso, foi desenvolvido um questionário, subdividido em um eixo demográfico, adaptado do trabalho de Farooq (2022), e outro eixo focado nos constructos que impactam na intenção de turnover, do trabalho de Kanchana e Jayathilaka (2023), buscando garantir uma abordagem abrangente e embasada na literatura para a análise dos fatores determinantes desse fenômeno.

3. Método de Coleta de Dados

Tipo de Estudo: Quantitativo

Instrumento: Questionário estruturado (online via Google Forms), utilizando, na primeira seção, acerca de dados demográficos dos funcionários e das empresas, com perguntas de múltipla escolha para facilitar a padronização e a análise dos dados. Em particular, a questão do tamanho da empresa, utilizou-se classificação descrita pelo Sebrae (2018), subdividindo em microempresa, pequena empresa, média empresa e grande empresa, a partir da quantidade de funcionários, refletindo a realidade organizacional do país. Já em relação à segunda seção, será utilizado a Escala Likert de 1 a 5, equivalente 1 = "raramente", 2 = "às vezes", 3 = "de vez em quando", 4 = "frequentemente" e 5 = "sempre". A escolha por essa escala se deve ao fato de que, além dos estudos de Farooq (2022) e Kanchana e Jayathilaka (2023) atenderem aos objetivos da pesquisa, também foi uma estratégia eficaz em trabalhos como os de Serenko *et al.*, (2022) e Sasaki *et al.*, (2019).

População-alvo: Profissionais que trabalham em empresas privadas ou públicas na área de TI em Pernambuco.

4. Estrutura do Instrumento de Coleta

O questionário será dividido em duas seções principais:

Seção 1: Eixo Demográfico Pessoal e Organizacional

- **Gênero**

1 - Qual gênero você se identifica?

- A. Masculino
- B. Feminino
- C. Outros

- **Faixa Etária**

2 - Qual é a sua faixa etária?

- A. 18 - 20 anos
- B. 21 - 29 anos
- C. 30 - 39 anos
- D. 40 - 49 anos
- E. 50 - 59 anos
- F. 59 - mais

- **Escolaridade**

3 - Qual é a sua escolaridade?

- A. Ensino médio
- B. Graduado(a)
- C. Especialização/MBA
- D. Mestre
- E. Doutor(a)

- **Cargo atual**

4 - Qual é o seu cargo?

- A. Desenvolvedor
- B. Tester
- C. Designer
- D. Líder Técnico (Tech leader)
- E. Engenheiro de Software
- F. Gerente de Projetos
- G. Cientista de Dados
- H. Analista de Suporte
- I. Scrum Master

J. Analista de Redes

- **Tamanho da Organização**

5 - Quantos funcionários, aproximadamente, têm dentro da organização que você trabalha?

- A. 1 - 10 funcionários
- B. 11- 50 funcionários
- C. 51 - 100 funcionários
- D. 101 - 200 funcionários
- E. 201 - 500 funcionários
- F. Mais de 500 funcionários

Seção 2: Eixo dos Fatores da Intenção de *turnover*

As possibilidades de respostas estarão atribuídas na Escala Likert de 1 a 5, sendo: 1 = "raramente", 2 = "às vezes", 3 = "de vez em quando", 4 = "frequentemente" e 5 = "sempre".

- **Satisfação no Trabalho**

- A. Eu recebo os equipamentos e suporte necessários para fazer meu trabalho.
- B. Estou satisfeito com os recursos e benefícios oferecidos pelo meu trabalho.
- C. Eu recomendaria fortemente esta empresa para amigos e familiares trabalharem aqui.
- D. Considero meu local de trabalho um ambiente fisicamente seguro.
- E. Eu não me sinto motivado com as minhas tarefas diárias.
- F. Meu trabalho tem um significado especial: não é "apenas um emprego".
- G. Meu trabalho tem um significado especial: isso não é "apenas um emprego".
- H. As instalações da empresa contribuem para um bom ambiente de trabalho.
- I. Estou satisfeito com as oportunidades de crescimento e desenvolvimento na empresa..

- **Equilíbrio entre trabalho e vida pessoal**

- A. Sinto que meu bem-estar pessoal é uma prioridade na cultura organizacional da empresa.

- B. Consigo equilibrar bem minhas responsabilidades profissionais e pessoais.
- C. Estou satisfeito com a carga horária de trabalho.
- D. A empresa respeita meu tempo fora do expediente.
- E. Meus horários de trabalho são flexíveis o suficiente para lidar com demandas pessoais quando necessário.

- **Apoio da gestão**

- A. Recebo orientações claras e objetivas da gestão para realizar minhas tarefas.
- B. A gestão incentiva a aprendizagem contínua e o desenvolvimento de novas habilidades.
- C. A gestão está comprometida em resolver problemas que afetam o bem-estar da equipe.
- D. Os gestores promovem um ambiente de trabalho justo e respeitoso.
- E. A gestão respeita as diferenças individuais e promove a inclusão no ambiente de trabalho.

- **Comportamento Inovador no Trabalho**

- A. Costumo pensar em ideias fora do padrão para resolver desafios.
- B. A minha liderança não estimula a busca por soluções inovadoras para os desafios do trabalho.
- C. Busco aplicar novas tecnologias, métodos ou abordagens no meu trabalho.
- D. Sinto-me motivado a experimentar formas inovadoras de realizar minhas tarefas.

- **Troca Líder-Membro**

- A. A minha liderança não reconhece meu esforço e minhas conquistas no trabalho.
- B. Sinto que posso contar com a minha liderança quando enfrento dificuldades no trabalho.
- C. Meus supervisores têm uma atitude positiva.
- D. Sinto-me confortável para conversar com meu supervisor sobre os desafios que enfrento no trabalho.

- **Apoio dos Colegas de Trabalho**

- A. Posso contar com os meus colegas quando preciso de ajuda para

realizar minhas tarefas.

- B. Recebo incentivo dos meus colegas para enfrentar desafios no trabalho.
- C. Existe um clima de colaboração e cooperação entre os membros da minha equipe.
- D. Meus colegas me ajudam a aprender e me desenvolver profissionalmente.

- **Rotatividade de Funcionários**

- A. Tenho considerado a possibilidade de buscar outra oportunidade fora desta empresa.
- B. A rotatividade de pessoas na minha equipe prejudica o desempenho do grupo.
- C. Ao receber uma proposta de outra empresa, penso seriamente em aceitá-la.
- D. Sair da empresa hoje teria pouco impacto na minha vida pessoal ou profissional.

5. Procedimentos Éticos

O questionário assegurará sigilo dos dados e a liberdade para desistência sem prejuízo. Nenhuma informação identificável será coletada. O estudo seguirá as diretrizes do Comitê de Ética da instituição.

6. Análise dos Dados

Os dados coletados serão analisados por meio de estatística descritiva e análise de regressão para identificar os principais fatores que impactam a intenção de turnover. O software de análise estatística a ser utilizado será o SPSS.

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