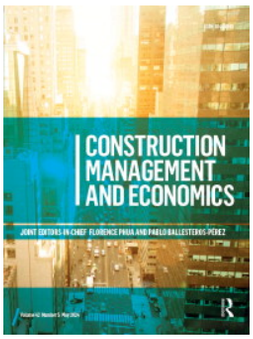

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An analysis of the literature on construction employee turnover: drivers, consequences, and future direction

Goldis Abdolmaleki[a], Nicola Naismith[a], Nariman Ghodrati[b], Mani Poshdar[a] and Mostafa Babaeian Jelodar[c]

[a]Department of Built Environment Engineering, Auckland University of Technology, Auckland, New Zealand; [b]Harrison Grierson, Auckland, New Zealand; [c]School of Built Environment, Massey University, Auckland, New Zealand

ABSTRACT

Employee turnover is a critical factor affecting organizational effectiveness. It is particularly important in the construction sector due to its knowledge and labor-intensive characteristics. Therefore, it is necessary to understand why qualified employees would leave their employers so that effective measures can be taken to retain them. Despite the growing body of knowledge on employee turnover, there is a lack of comprehensive review of this topic in the construction literature. This study adopts a systematic literature review approach to synthesize domain knowledge on employee turnover from two perspectives: its investigated causes, and consequences. In total, 77 relevant papers are extracted. A total of 51 drivers of construction employee turnover are identified and categorized into personal, job-related, organizational, and external influencers. Findings also suggest three major outcomes caused by employee turnover, including individual, project, and organization-related consequences. This review contributes to understanding the turnover phenomenon in construction literature and highlights potential areas for future empirical studies to move forward. By understanding the main factors influencing turnover decisions, construction organizations can develop and implement effective means for managing employee turnover. This study further contributes to construction employee turnover research by emphasizing the importance of studying the consequences of the turnover phenomenon.

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KEYWORDS
Construction industry; employee turnover; turnover consequences; systematic literature review

Introduction

The study of employee turnover has been ongoing for over a century, and it remains a persistent challenge for organizations, as well as a lively fascination for scholars (Hom *et al*. 2017). Employee turnover can have both beneficial and detrimental effects on organizations. On the positive side, it can bring new perspectives and skill sets (Bolt *et al*. 2022). However, substantial evidence indicates the potential of high employee turnover to significantly and adversely impact organizational effectiveness, business growth, service, and product quality (Allen *et al*. 2010, Hee and Ling 2011, Wang *et al*. 2020). The rapid development in turnover research further signifies a growing recognition of the effects that turnover can have on organizational functioning (Hom *et al*. 2017). The extant research on employee turnover in organizational and social science has led to an increased understanding of the underlying causes of turnover and how the process unfolds over time (Hom *et al*. 2017, Bolt *et al*. 2022). Research on turnover has been conducted across different contexts, which is useful for building theory but presents a challenge for comparing and transferring findings (Bolt *et al*. 2022). However, there have been specific areas of focus in the development of research related to the turnover phenomenon (Rubenstein *et al*. 2018, Bolt *et al*. 2022). In terms of sector, the recent meta-analysis by Bolt *et al*. (2022) on voluntary labor turnover reviewing 1357 empirical studies reported that 64% of studies focused on a single sector and 1% of those studies focused on the construction sector. What is considered as an unacceptable high employee turnover, its impacts, as well as the measures to mitigate its impacts can vary significantly across contexts (Allen *et al*. 2010, Hee and Ling 2011, Wang *et al*. 2020, Bolt *et al*. 2022). Employee turnover is costly, particularly for the construction industry, given its

CONTACT Goldis Abdolmaleki Goldis.abdolmaleki@aut.ac.nz School of Future Environments, Auckland University of Technology, Auckland, New Zealand

knowledge and labor-intensive features (Chih *et al*. 2018, Ugural and Giritli 2021). The high turnover rate has been recognized as one of the critical problems affecting construction organizations (Chih *et al*. 2016, Wang *et al*. 2020). Poor performance, high technology loss, and low construction industry competitiveness can be heavily attributed to employee turnover (Jones *et al*. 2010, Uğural *et al*. 2020).

The success of an organization highly relies on skilled and competent staff, particularly in today's competitive world (Dodanwala and San Santoso 2021). But the way in which the construction workforce is managed and developed is impeding its ability to improve performance (Dainty *et al*. 2007). The industry has long faced staff shortages and employee turnover issues (Chih *et al*. 2016, Nawaz Khan *et al*. 2020, Bigelow *et al*. 2021) which have been exacerbated by the global Covid-19 pandemic (Ministry of Business 2021, Jeon *et al*. 2022). At the same time, the industry has not been a favorable destination for job seekers (Song *et al*. 2020) due to the lack of innovation (Wilkinson *et al*. 2017), gender bias, low work-life balance (Morello *et al*. 2018), and harsh working conditions (Ling and Toh 2014).

Taking into account those drawbacks, there is a pressing need for an effective workforce plan to retain skilled staff within the industry to respond to the current and future skill shortages (Simmons *et al*. 2018, Perrenoud *et al*. 2020, Maurer *et al*. 2021). Retaining competent employees with business skills is a fundamental part of human resource practices (Rose and Gordon 2010, Veth *et al*. 2019). However, scant attention has been paid to human resource management (HRM) in the construction context (Brandenburg *et al*. 2006, Dainty and Loosemore 2013, Simmons *et al*. 2018) and people management in the sector is often indicated as a "hard HRM" (Wilkinson *et al*. 2012). Although managing people is a significant part of the construction process (Smithers and Walker 2000), the implementation of HRM practices is more difficult in construction than in other sectors due to its complex, project-based, and unregulated characteristics (Srour *et al*. 2017).

The employee turnover topic in the construction literature has recently received increasing attention (Chih *et al*. 2018, Rezvani *et al*. 2020, Ugural and Giritli 2021). Despite this growing body of knowledge, there have been limited reviews of this research domain in the construction context. For example, Ayodele *et al*. (2020) reviewed 53 studies and identified 26 factors affecting the turnover of the construction workforce. Cross-sectional studies relevant to the construction sector were covered in their review. However, few studies specifically focused on employee turnover sampled from the construction sector. Ayodele *et al*. (2020) reviewed studies published until 2017, and a considerable number of research papers on construction employee turnover have been published since then (Figure 1). Besides, as the authors mentioned, the inclusion of studies was limited to construction literature from countries with "similar social orientation and cultural views". Accordingly, seminal studies from countries other than those particular countries were excluded, which may compromise the generalizability of the findings. This suggests that a more firm conclusion about employee turnover determinants in the construction sector can be drawn to address the call raised for the inclusion of studies from more diverse countries (Ayodele *et al*. 2020). As suggested by Ghapanchi and Aurum (2011), applying a broader systematic review will lend to more comprehensive and generalizable results. Additionally, no review studies have been conducted on the effects of employee turnover in the construction industry. Considering its labor-intensive nature and its prominent role in meeting society's demands, it is crucial to recognize the challenges and impacts associated with high turnover rates. This allows for the development of evidence-based strategies to enhance employee retention. Therefore, to bridge all the aforementioned gaps, this paper seeks to examine the current body of literature on construction employee turnover by identifying two main facets of turnover: antecedents and consequences. Findings from this review will provide a valuable foundation for the growing body of primary research in the field. Reviewing relevant literature helps researchers in understanding the depth of the existing body of knowledge, identifying gaps, testing specific hypothesis, and developing new theories (Xiao and Watson 2019). This approach will contribute to the understanding of employee turnover research, clarify the emphasis placed on these aspects, and highlight areas that require further investigation.

Research method

The systematic literature review provides evidence-based answers to specific research questions by collecting, appraising, and synthesizing the available data related to those questions (Belayutham *et al*. 2016). The well-defined and comprehensive systematic review process suggested by Tranfield *et al*. (2003) was followed, which was also adopted by Khosravi *et al*. (2019) and Gupta *et al*. (2019). It includes planning the review, conducting the review, and reporting the findings, as it is shown in Figure 2.

Step1: Planning the review

The systematic review began by framing the review question and developing of review protocol. This research aims to answer, (1) what are the key antecedents of construction employee turnover? (2) what are the major consequences caused by employee turnover in the construction literature? (3) what are the research trends in terms of research methods and leading sources in the current literature?

Keywords for the literature search were determined based on the initial search of relevant studies and previous employee turnover reviews. Such as the study of Ghapanchi and Aurum (2011) and Nouri and Parker (2020) on employee turnover in information technology (IT) and accounting firms. Accordingly, the following keywords were used ("Construction" OR "construction industry" OR "construction management" OR "construction project*" OR "construction organization*" OR "construction employee*" OR "construction workforce*" OR "construction professional*" OR "built environment") AND TITLE-ABS-KEY ("employee turnover" OR "turnover intention*" OR "intention to leave" OR "turnover" OR "intention to quit" OR "retention" OR "employee retention" OR "intention to stay" OR "intention to remain" OR "withdraw*"). Scopus database was selected as the main database to identify the relevant literature. As Scopus is a complete database widely used for systematic literature reviews (Tijani *et al*. 2022, Zhang *et al*. 2019).

Step2: Conducting the review

To capture the existing and relevant literature, a two-stage literature search was carried out. First, a comprehensive desktop search was conducted in the Scopus search engine. Literature searches based on "article title, abstract, keywords" were undertaken in November 2021. The time span for the literature search was set from 2000 to 2021 since few studies were published before 2005 on employee turnover in the construction industry (Ayodele *et al*. 2020). Besides, a 20-year period of examination is appropriate to consider the development of the research topic.

In the second stage, citations of the most relevant papers and their reference lists were scanned to avoid missing any relevant articles in the review. Then, forward snowballing, identifying articles that had cited the studies selected through the earlier search attempt, and backward snowballing, tracking the references of those selected studies, were conducted. This complementary approach has been widely adopted in systematic literature review studies (Hausknecht and Holwerda 2013, Abdelmegid *et al*. 2020, Asadzadeh *et al*. 2020) to ensure identifying the most relevant studies that would otherwise be missed.

The selection of studies was based on primary and secondary criteria. Primary criteria were applied to the desktop search within the Scopus search engine. Studies only written in English were included. The search was limited to subject areas such as engineering, business, management and accounting, social sciences, decision sciences, multidisciplinary, arts, and humanities with document types of articles. Accordingly, 1065 papers were identified by applying primary search criteria. Articles were further filtered based on secondary criteria. Studies included that (1) investigated construction employees as an empirical sample in their studies. Samples other than the construction workforce, such as students in a construction engineering program, were excluded. Studies that investigated projects other than in the construction sector, such as IT projects, were also excluded. (2) focused on employee turnover and retention. Studies that only focused on other attitudes and behaviors than turnover, such as commitment, job satisfaction, or burnout, were excluded. Studies that investigated those individuals' behaviors and attitudes to either predict turnover or determine their potential impacts on employees' leaving decisions were included. (3) studies that identified employee turnover as a reason for other organizational or individual outcomes through empirical findings were included. Studies that reported employee turnover consequences based on previous studies in contexts other than the construction sector were excluded.

Step 3: Reporting findings

In total, 77 articles were identified from the previous steps and categorized into two groups. The first group involved studies investigating factors affecting employee turnover, and it includes all studies concerning turnover/turnover intention, retention/retention intention, as well as employees' staying or leaving decisions. It is essential to understand contributing factors influencing both decisions to leave and stay as leaving choice represents a situation between evaluating factors affection intention to leave and intention to stay (Rose and Gordon 2010). The second group of articles focused on employee turnover consequences, identified turnover as a cause of subsequent individual or organizational outcomes or examined the relationships between employee turnover and its outcomes. Papers were systematically reviewed for the purpose of content analysis which covers descriptive and

thematic analysis. As it provides in-depth information on the document (Abdelmegid *et al*. 2020). The content analysis identifies patterns and themes using a detailed and systematic exploration of the documents' contents (Mohammadi *et al*. 2018). Data from papers were sorted and examined based on demographic information, research design and data collection method, influencers on employees' leaving/staying decisions, and turnover outcomes.

Descriptive findings

The descriptive analysis summarizes basic information from articles included in the review. It covers publication years, sources, research methods, the prospective sample of the study, and the country of origin of investigated samples. Approximately 61% of the papers on turnover have been published since 2017. Recent growth in publication rates might be attributed to the increased awareness of adverse effects associated with voluntary employee turnover in construction firms and the importance of understanding its antecedents (Park *et al*. 2021, Ugural and Giritli 2021).

Selected papers were reviewed by their publication source to identify the main relevant journals in investigating construction employee turnover. As suggested by Khodabandelu and Park (2021), an indication of how closely a journal's scope aligns with a topic can be found by the number of papers published on that topic which can facilitate the decision-making process for manuscript submissions as well. According to Table 1, 77 studies included in this review were published in 42 different journals. 33 out of 42 journals only published one paper demonstrating the diversity of publications on construction employee turnover research. 40% of papers were published by three journals; Journal of Construction Engineering and Management, followed by Construction Management and Economics, and Journal of Management in Engineering.

The reviewed papers were categorized into three groups based on the origin country of the studied sample. Countries with 0–5 studies were classified as less studied countries, those with 5–10 studies were considered moderately studied, and countries with more than 10 studies were labeled as the most studied. Among the 77 selected papers, employee turnover in the construction industry of a few countries received the most research attention. The United States construction industry had the highest number of studies ($N = 16$), followed by China ($N = 14$). Australia ($N = 9$) followed by United Kingdom and Hong Kong each had 5 studies, classified in the moderately studied category. The remaining countries listed in Figure 1, were classified as less studied countries. The majority of studies on employee turnover in management literature and other sectors have also been conducted in the United States (Ghapanchi and Aurum 2011, Rubenstein *et al*. 2018). Turnover causes and consequences might be different in different cultures and economic conditions (Hom *et al*. 2017). Cultural differences can construct meanings and norms differently (Rubenstein *et al*. 2018) which can influence employees' behavior and their leaving decisions (Chih *et al*. 2018). As Figure 1 shows, a growing number of countries are contributing to this research topic, suggesting that concerns about this phenomenon are attracting more attention worldwide. The increasing contributions of studies from diverse cultures and countries can help to better comprehend and address this issue in the construction industry.

Research methods in the selected studies

Table 2 summarizes the research methods used in selected and reviewed studies. As shown, the majority of studies adopted a quantitative approach. Most data were collected through questionnaire surveys and interviews. 87% of quantitative studies rely on questionnaire instruments as they have been the most preferred tools in construction management research (Xia *et al*. 2018, Tijani *et al*. 2022). The inadequacy of a solely quantitative approach for understanding employees' work attitudes and behavior was acknowledged by several studies (Leung *et al*. 2004, Sang *et al*. 2007, Sang *et al*. 2009). More recently, DiPietro *et al*. (2020) highlighted that most studies on employee turnover utilize quantitative methods to evaluate employees' perceptions of the workplace and the likelihood of staying or leaving. Quantitative methods, however, do not uncover the reasons behind employees' attitudes and perceptions. The need for more qualitative research is evident since qualitative information explains why individuals feel the way they do (Creswell, J. W. and Creswell, D. J. 2018).

Most of the articles reviewed used cross-sectional design with only a few time-lag, and longitudinal studies. Even though cross-sectional designs may not affect studies' main findings, since they lack a time dimension, they cannot establish causal relationships (Ugural and Giritli 2021). In a cross-sectional design, all data are collected at a one-time point. Still, researchers can use a longitudinal design to investigate the relationship between turnover antecedents at particular times and the thoughts and feelings that they have at a later time (Avila *et al*. 2021). Further analysis of quantitative studies classified papers based on their level of analysis. The

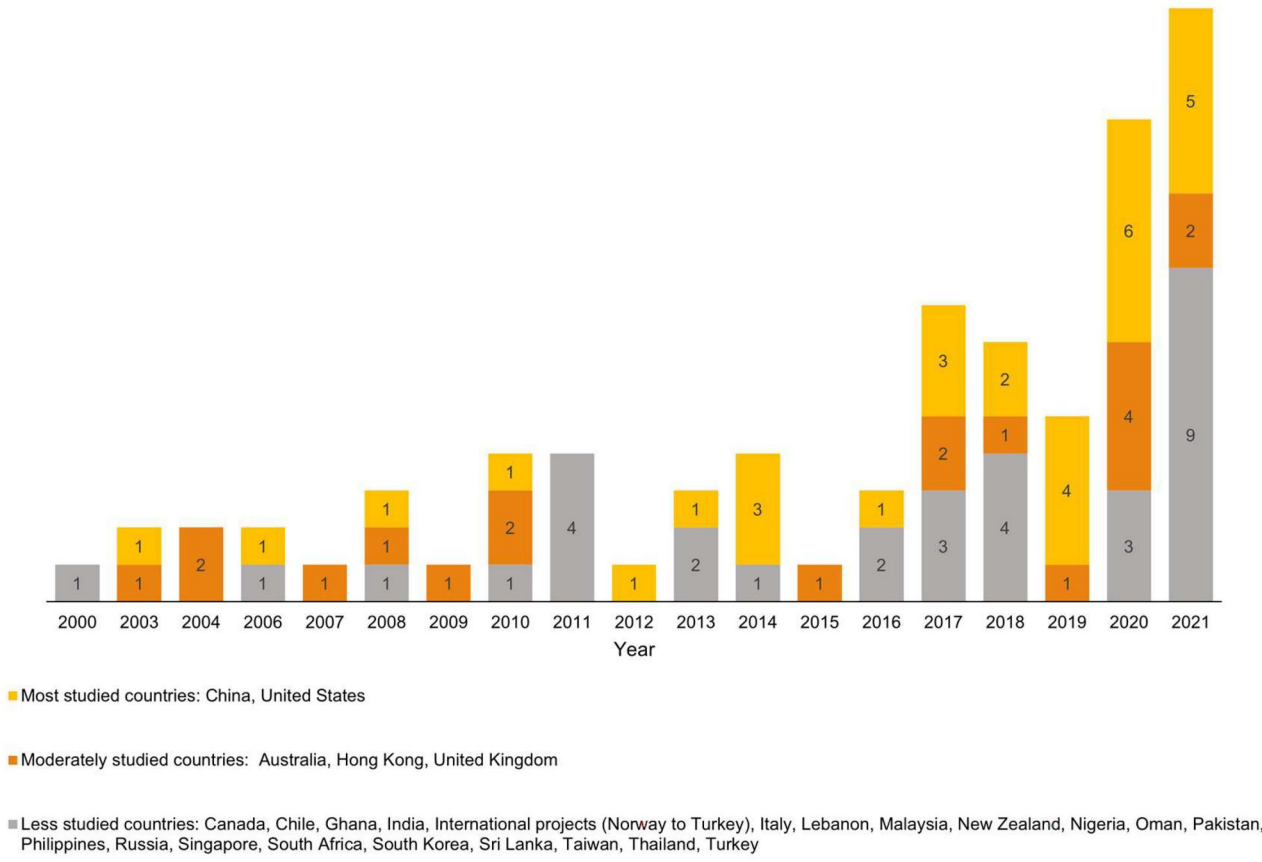

Figure 1. Distribution of origin country of studied samples per year.

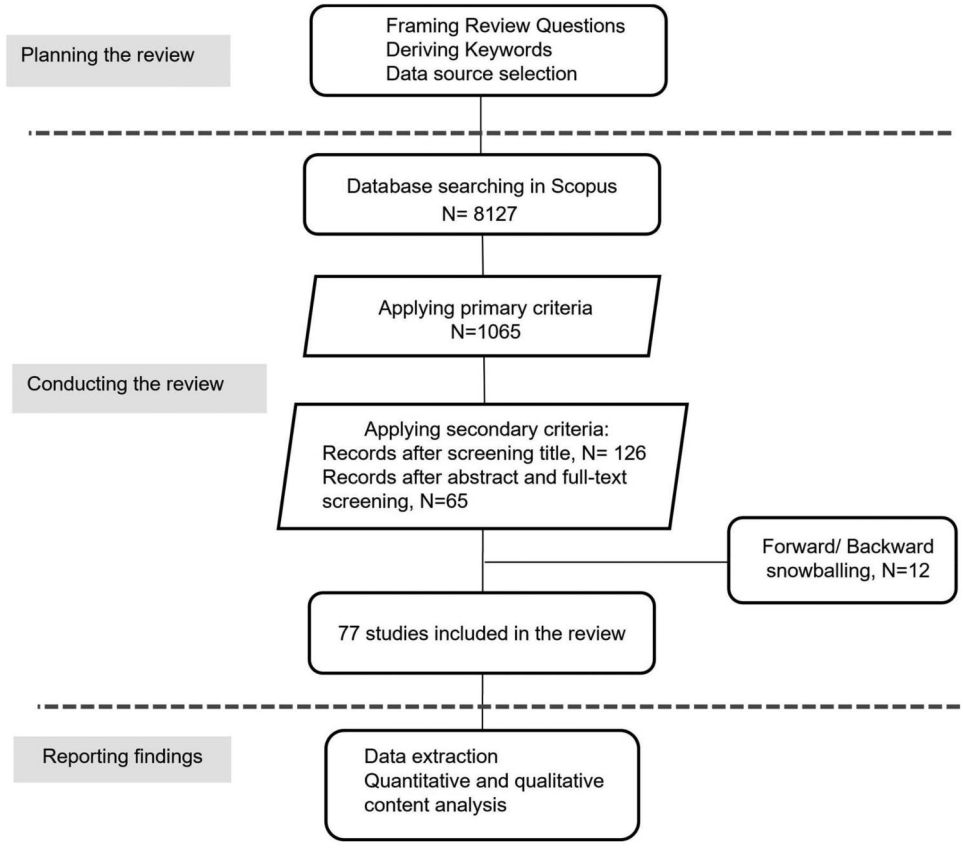

Figure 2. Systematic review process.

Table 1. Journal sources of reviewed studies.

Journal	Number of papers	Journal	Number of papers
Journal of Construction Engineering and Management	12	Economic Research-Ekonomska Istraživanja	1
Construction Management and Economics	11	Humanities and Social Sciences Reviews	1
Journal of Management in Engineering	8	Journal of Engineering, Design and Technology	1
Engineering, Construction and Architectural Management	3	Australian Journal of Public Administration	1
International Journal of Construction Education and Research	2	Built Environment Project and Asset Management	1
Safety Science	2	International Journal of Engineering Business Management	1
Journal of Professional Issues in Engineering Education and Practice	2	Journal of Marine Science and Technology-Taiwan	1
Sustainability	2	International Journal of Manpower	1
International Journal of Project Management	2	Journal of Safety Research	1
Social Behavior and Personality	1	The International Journal of Human Resource Management	1
Academy of Management Journal	1	Leadership & Organization Development Journal	1
Journal of Labor Research	1	International Journal of Manpower	1
European Journal of Training and Development	1	Sa Journal of Human Resource Management	1
Project Management Journal	1	Built Environment Project and Asset Management	1
Evidence-based HRM	1	SAGE Open	1
Facilities	1	Journal of Construction Engineering and Management	1
Frontiers of Engineering Management	1	Studies of Transition States and Societies	1
Journal of the South African Institution of Civil Engineering	1	Journal of Construction in Developing Countries	1
Gender, Work and Organization	1	Australasian Journal of Construction Economics and Building	1
Asia Pacific Management Review	1	Journal of Construction Research	1
human relations	1	International Journal of Technological Learning, Innovation and Development	1

Table 2. Research method used in the reviewed literature.

Research methods	Percentage of papers (%)
Quantitative	78
Qualitative	10
Mixed method	9
Simulation/mathematical modelling	3
Quantitative data collection methods	Percentage of papers (%)
Questionnaire survey	87
Secondary data	6.5
Case study	6.5
Research design of quantitative methods	Percentage of papers (%)
Cross-sectional	82
Longitudinal	10
Time lagged	8
Level of analysis in quantitative studies	Percentage of papers (%)
Individual level	96.7
Multi-level	3.3

majority of quantitative studies (96.7%) have investigated turnover antecedents effects at the individual level, and only two studies investigated the cross-level effects (Qin *et al*. 2019, Li *et al*. 2021).

Sample characteristics

Having defined the research objectives for identifying turnover causes and consequences, selected studies were divided into two groups for further analysis. 64 studies focused on employee turnover antecedents and analyzed factors affecting employee turnover, and only 14 studies have addressed turnover consequences. In the next section studies focusing on turnover antecedents are discussed in greater detail, followed by studies identifying turnover consequences.

Among the studies dealing with turnover antecedents, construction professionals ($N = 30$) and managerial level workforce ($N = 12$) are the most commonly studied samples. This result can be attributed to the essential role of professionals in driving construction projects. Since they provide professional skills to ensure the project objectives are met, their role is largely irreplaceable (Song *et al*. 2020). Turnover of managerial level employees is more costly and more problematic for organizations than non-supervisory staff which may explain the focus of recent studies on this group (Rutherford and Lozano 2018, Maurer *et al*. 2021). Seven studies investigated diverse occupational roles involved in construction projects with different educational levels. Seven studies did not state specific characteristics of the investigated sample in terms of educational level or occupational group. Few scholars focused on the craft workforce ($N = 5$) and blue-collar construction workforce ($N = 4$). Although all investigated subjects of the studies are within the construction sector, findings from a specific sample may not apply to the other occupational groups within the sector (Liu *et al*. 2020). This is due to different career paths and labor market

Figure 3. Theories used in reviewed articles.

conditions of various occupations, creating different opportunities within and across organizations (Saporta and Farjoun 2003). Still, few studies investigated the turnover of construction laborers and craft workers, 14% of publications. This trend seems similar to other employee work outcomes in construction management research; for example, only four studies on the work-life balance of construction employees were based on construction laborers worldwide (Tijani *et al*. 2022).

Theoretical perspective

The theoretical lens adopted in the construction employee turnover research is presented in Figure 3, 33 out of 64 studies dealing with turnover antecedents were not guided by theory regarding the causality and process leading to the turnover decision. The conservation of resource (COR) theory was the dominant theory used to explain the construction workforce turnover (Figure 4). COR, proposed by Hobfoll (1989), was used to provide explanations for the influence of psychological contract breach, emotional exhaustion, and resources such as age, supportive and ethical leadership, and family embeddedness on construction workforce turnover (Chih *et al*. 2016, Chih *et al*. 2018, Li *et al*. 2019, Liu *et al*. 2020, Nawaz Khan *et al*. 2020). However, there is a lack of theory behind a significant number of studies (52% of studies), prompting researchers to conduct theory-based investigations to gain a clearer understanding of factors affecting employee turnover in the construction context. Xia *et al*. (2020) and Khosravi *et al*. (2019) also noted the absence of theoretical guidance for a large portion of studies in construction management literature. The use of a theoretical grounding can help scholars to develop a systematic approach and clearly articulate hypotheses relations (Khosravi *et al*. 2019). Because the likely complexity of relationships cannot be captured by studying only a collection of predictors (Rubenstein *et al*. 2018). Studies lacking a theoretical framework cannot fully explain why, how, and when different antecedents influence employees' work outcomes (Xia *et al*. 2020).

Thematic findings

Figure 4 presents a summary of the current literature on construction employee turnover in terms of both turnover antecedents and consequences. As depicted in Figure 4, turnover antecedents are classified into four broad categories: personal, job-related, organizational, and external influencers. The impact of turnover is reported in three major areas: individual, project, and organization-related consequences. Detailed descriptions of those categories are provided in the following sections.

Turnover antecedents

It is the primary goal of the turnover research projects to identify what factors contribute to turnover (Holtom *et al*. 2008). By identifying actual turnover reasons,

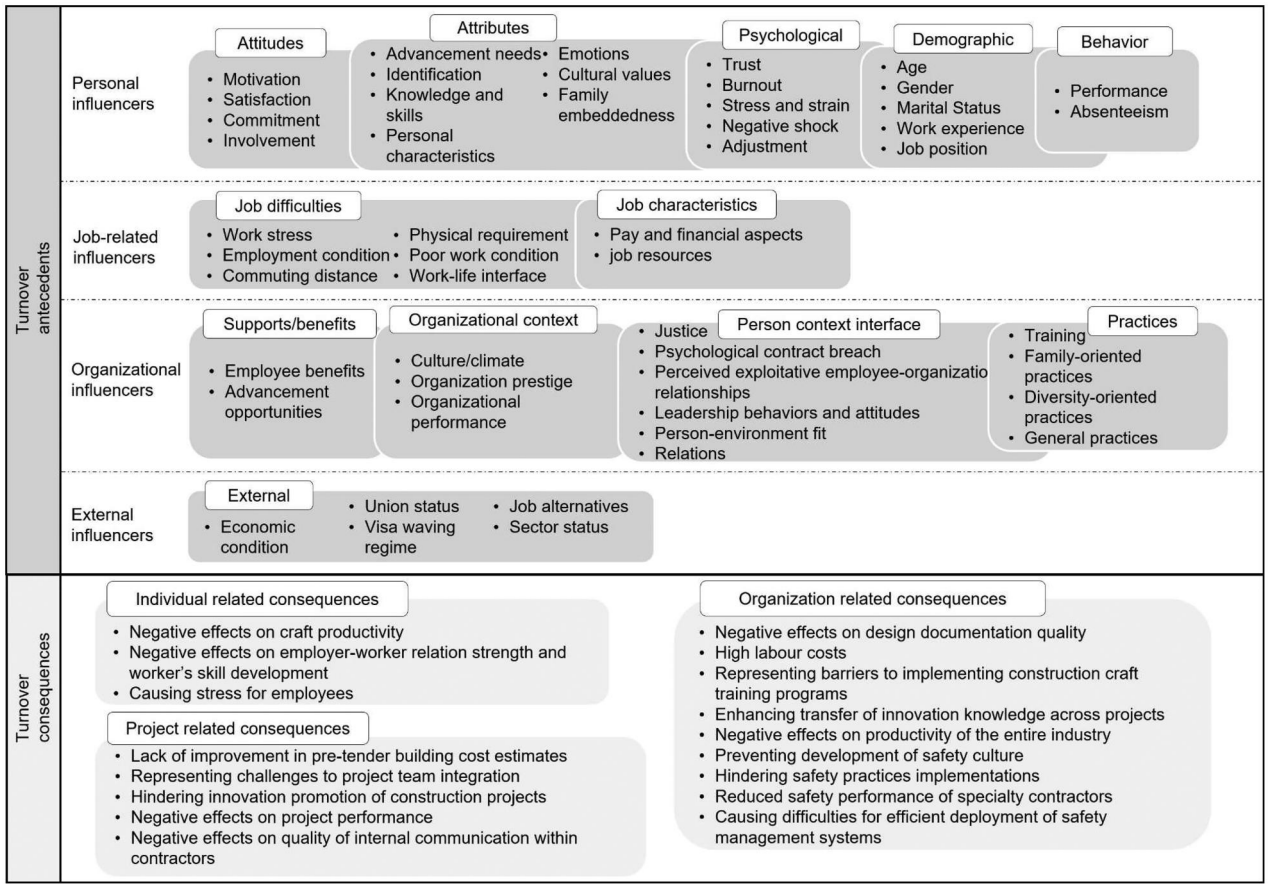

Figure 4. Summary of turnover antecedents and consequences from 77 reviewed paper.

effective retention practices can be developed (Yang *et al*. 2012). A large body of current literature has identified the influencers on construction employee turnover (64 out of 77 studies). There were 51 factors identified as influential on construction employees' decisions to leave or stay with their employers. Appendix Table A1 summarizes the significant groups, main influencers, related sub-factors, and relevant sources.

Personal influencers

A considerable proportion of literature identified personal characteristics as potential influencers on employee turnover. Personal influencers such as attitudes and attributes are most cited in the literature, followed by demographics, psychological conditions, and personal behavior. Satisfaction, commitment, work motivation, and job involvement have been recognized as key attitudinal predictors of employee turnover intentions and behavior (Leung *et al*. 2004, Ju 2020; Mardanov 2020, Rehman *et al*. 2020, Wang *et al*. 2020). Cross-sectional and time-lagged studies have identified construction employees' satisfaction as a critical behavioral indicator, highlighting the need for management attention to this aspect (Chih *et al*. 2018), given its significant negative correlation with the intention to quit both projects and companies (Leung *et al*. 2004, Du *et al*. 2006, Wang *et al*. 2020, Nauman *et al*. 2021). Satisfied employees are more likely to be trustful, affectively committed, and less stressed with their jobs, which can lead to a greater sense of belonging and lower intention to quit (Chow *et al*. 2015, Wang *et al*. 2020, Dodanwala and San Santoso 2021). Multiple studies suggested organizational commitment as another predictor of employee turnover (Leung *et al*. 2004, Du *et al*. 2006, Sun 2011, Malone and Issa 2014, Park *et al*. 2014, Kerdngern and Thanitbenjasith 2017), with low commitment indicating withdrawal behavior (Chow *et al*. 2015). Based on affective event theory (AET) (Weiss and Cropanzano 1996), workplace events invoke employees' affective responses that directly influence their work behaviors and attitudes, such as commitment, satisfaction, and turnover.

Individual skills, emotions, advancement needs, identity, personal characteristics, and cultural values as personal attributes can contribute to the turnover decision. In a cross-sectional sample, employees with sufficient knowledge and skills related to their work

indicated a lower intention to quit voluntarily (Hee and Ling 2011). Additionally, research suggested that employees' needs for advancement and growth play a key role in their decision to quit (Hee and Ling 2011, Ling and Toh 2014, Park *et al*. 2021). These findings can offer insights into the potential impact of clear career progression paths in construction companies (Ling and Toh 2014). When it comes to personal influencers, personality characteristics appeared as a significant influencer on their decisions to stay with their employers (Park *et al*. 2021). A study by Rezvani *et al*. (2020) revealed that project team members' emotional intelligence is negatively associated with their turnover intentions. Employee turnover is also affected by an employee's identity since it develops through interactions with others (Jerez-Jerez *et al*. 2021). In respect to the social identity theory (Tajfel and Turner 1979), individuals who feel they belong to a particular social category, such as an organization or group, are more motivated to achieve collective good. Organizational and project identifications have been observed to have a notable and negative impact on the turnover intention of construction employees (Ding *et al*. 2017, Ugural and Giritli 2021). However, it is important to acknowledge the cross-sectional nature of the data, prompting a cautious interpretation of causal relationships, as such data lacks sufficient criteria for establishing causality (Shadish *et al*. 2002).

Specific demographic characteristics including age, gender, marital/relationship status, work experience, and employees' job position, also can influence construction employees' turnover. Older workers indicated a lower likelihood of quitting (Al-Sadi and Khan, 2018 Kim and Philips 2012). Both longitudinal and cross-sectional studies have indicated that employees' marital status and gender significantly influence their job retention. A shorter retention length was reported by males than female respondents (Huang *et al*. 2006, Maurer *et al*. 2021). Sang *et al*. (2007), on the other hand, reported significantly higher turnover intention, lower levels of job satisfaction, and a higher level of work-family conflict among female architects than their male counterparts. Among personal demographic influencers on turnover, age and gender have also been identified to have moderating effects on predicting turnover (Chih *et al*. 2016, Ugural and Giritli 2021). For example, Ugural and Giritli (2021) examined the impact of gender as a boundary condition on the interaction effects of organizational identification and perceived external prestige on turnover intention. The findings suggested that female turnover intention is more influenced by organizational identification than it is for males in organizations with low perceived organizational prestige.

Psychological conditions of employees have been established as significant predictors of their turnover decisions (Holtom *et al*. 2008), including trust (Chow *et al*. 2015), individuals' adjustment to the new environment (Puck *et al*. 2008, Qin *et al*. 2019), negative shock (Nauman *et al*. 2021), and well-being related variables such as burnout and strain (Lingard 2003, Yang *et al*. 2017). Trust helps project team members establish a better relationship allowing them to put aside their egos to benefit the team (Lewicki *et al*. 2006). As such, project team members in a trusting environment may have less propensity to quit (Chow *et al*. 2015). Negative career shock can drive career dissatisfaction and lead to turnover decisions (Nauman *et al*. 2021) since the psychological analysis of quitting can be triggered by shock (Holtom *et al*. 2008). Construction has a demanding work environment with multiple stressors such as tight time frames, long working hours, and budget constraints (Lingard, 2003, Morello *et al*. 2018, Park *et al*. 2021). Job burnout has been recognized as a major response to job stressors (Lingard 2003, Jugdev *et al*. 2018) which can be defined as "a psychological syndrome of exhaustion, cynicism, and inefficacy experienced in response to chronic job stressors" (Yang *et al*. 2017). This is particularly salient and likely in the construction industry as it has historically been regarded as a high-risk sector in relation to work-related stress (Love *et al*. 2010, Liu *et al*. 2020, Bowen *et al*. 2021). Personality traits, role conflict, pay satisfaction, workload, job stress, and company management systems have been identified as major influencers on construction employees' burnout (Lingard 2003, Yang *et al*. 2017, Avila *et al*. 2021). Employees experiencing higher cynicism and emotional exhaustion indicated more likelihood of quitting and searching for an alternative job (Lingard 2003, Avila *et al*. 2021).

Lastly, on personal influencers, individual behavior such as performance (Leung *et al*. 2017) and absenteeism (Kim and Philips 2012) are identified as employee turnover antecedents. Rubenstein *et al*. (2018) define absenteeism as "missing from work entirely when one is expected to be in attendance". Absenteeism is a serious issue within the construction industry and negatively impacts the industry's productivity (Kim and Philips 2014, Srour *et al*. 2017). Longitudinal research by Kim and Philips (2014) highlighted its importance in predicting craft workers' turnover. Nevertheless, there is a scarcity of research on its role in predicting employee turnover in the construction context. There

was a negative association between employee performance and turnover intentions in Hong Kong's construction industry (Leung *et al*. 2017). However, the longitudinal research by Huang *et al*. (2006) did not report a significant effect of construction workers' performance on their retention length.

Job-related influencers

In this category, job difficulties followed by financial aspects of the job (pay) and job resources are the most frequently cited influencers on construction employee turnover. Job difficulties identified throughout the literature review include work stress, physical requirement, poor work conditions, the work-family interface, commuting distance, and employment conditions (Sang *et al*. 2009, Malone and Issa, 2013 Morrison *et al*. 2013; Liu *et al*. 2020; Ayodele *et al*. 2021, Dodanwala and San Santoso 2021). Stressors such as poor transportation systems, high workloads, and long working hours have been emphasized as the main factors affecting the construction workforce staying decisions (Leung *et al*. 2017, Galea *et al*. 2020). Workplace bullying as another chronic stressor was identified to impair psychological well-being and causes critical organizational outcomes such as turnover intention (Bernstein and Trimm 2016). Jalali *et al*. (2020) highlighted that workplace bullying was primarily attributed to factors such as the leadership style of main contractors, poor work organization, job design, and specific cultural aspects within the construction industry, including its aggressive and macho culture and the use of hostile language by subcontractor managers. Using cross-sectional data, this research found that unrealistic demands can trigger bullying among subcontractors which was significantly and positively associated with their turnover intention (Jalali *et al*. 2020). Work-family conflict has also been recognized as one of the problematic stressors to manage within construction organizations (Liu *et al*. 2020). One notable implication in this regard is its positive association with the intention to quit (Sang *et al*. 2009, Malone and Issa 2013, Li *et al*. 2019, Liu *et al*. 2020). Such findings suggest that organizations concerned about their staff retention may consider reviewing their work-life balance practices (Sang *et al*. 2009).

Reviewed literature highlighted the important roles of high pay and monetary benefits in retaining the construction workforce (Huang *et al*. 2006, Hee and Ling 2011, Malone and Issa 2013, Chinyio *et al*. 2018, Perrenoud *et al*. 2020). In a longitudinal investigation, retention length was reported longer in a firm offering higher pay than internal or external rates (Huang *et al*. 2006). Hee *et al*. (2011) further proposed that satisfaction with monetary benefits can significantly affect their intention to stay within the firm and profession. These findings suggest that construction companies might be able to retain qualified workers by having a merit-based compensation system and competitive compensation packages (Huang *et al*. 2006, Hee and Ling 2011). However, findings from a cross-sectional study did not support an association between financial compensation and women's desire to stay in the industry (Morello *et al*. 2018). Perrenoud *et al*. (2020) also noted that higher salaries are more important to men than to women in deciding to leave an employer. Few studies investigated the association between job resources (skill variety, task identity, task significance, autonomy, and feedback) and turnover intention in a construction setting (Hee and Ling 2011, Ling and Toh 2014). Task significance, autonomy, and feedback from the job have been reported as significant contributors to quantity surveyors' intention to remain in their firms (Hee and Ling 2011). Considering these findings on the potential impact of job characteristics on turnover, the implementation of organizational measures may effectively reduce the likelihood of undesirable work outcomes (Lingard 2003).

Organizational influencers

A considerable body of empirical evidence, using cross-sectional and longitudinal data, support the role of organizational influencers in construction employee turnover, including organizational support, context, and practices. Employee benefits such as non-monetary awards and recognition, employer-provided health insurance, and retirement benefits emerged as significant contributors to employees' quitting decisions (Kim and Philips 2010, Hee and Ling 2011, Kaewsri and Tongthong 2011, Malone and Issa 2014, Bigelow *et al*. 2021). Employees recognized as honored indicated fewer reasons to end their employment relationship and therefore reported a stronger desire to stay than employees who didn't receive this recognition (Huang *et al*. 2006). As with benefits offered by organizations, advancement opportunities such as clear career progression paths within construction firms, and promotion opportunities have been found crucial to employee retention (Malone and Issa 2013, Ling and Toh 2014, Ayodele *et al*. 2021, Park *et al*. 2021).

As proposed by Holtom *et al*. (2008), contextual factors can be classified into two categories, an organizational context that deals with macro-level organizational variables, and a person-context interface, which

investigates employees' relations with their environment. Contextual factors such as culture and climate affect how individuals interpret their work situation, highlighting the significant role of others' attitudes (Rubenstein *et al*. 2018). Positive gender culture within the company and companies receiving and incorporating employees' feedback are found to be effective on female intention to stay with their employers (Perrenoud *et al*. 2020, Zhang *et al*. 2021). Cross-sectional evidence from construction professionals has indicated that perceived organizational prestige can reduce turnover intention (Uğural *et al*. 2020). Ayodele *et al*. (2021) suggested the impact of workplace ethics on employee turnover. An unethical work environment can lead to antisocial behavior and turnover intention among employees (Nawaz Khan *et al*. 2020).

The way employees view their relationships with their employers can impact their turnover decisions (Livne-Ofer *et al*. 2019). Employees' perception of the exploitative relationship with their organization can cause outward emotions like anger and hostility, which influence their turnover intention (Livne-Ofer *et al*. 2019). Psychological contract breaches (Chih *et al*. 2016, Wang *et al*., 2019), the perception of procedural justice and distributive justice (Nawaz Khan *et al*. 2020, Li *et al*. 2021) identified as significant antecedents of construction employee turnover. The critical role of leadership on employee turnover has been suggested by empirical findings (Liu *et al*. 2020, Rehman *et al*. 2020, Li *et al*. 2021). Using conservation resource theory, Nawaz Khan *et al*. (2020) showed that ethical leadership affects turnover intention directly and indirectly through trust and perceptions of procedural justice. Chih *et al*. (2018) observed that construction workers whose supervisors are perceived as supportive were more satisfied, resulting in increased retention intentions and actual retention. Furthermore, adaptive styles of leadership, transformational, and contemporary leadership styles were found to relate negatively to construction workforce turnover (Ding *et al*. 2017, Kerdngern and Thanitbenjasith 2017, Silverthorne 2000).

In this vein, employment relationships have been identified as contributors to the construction workforce turnover (Perrenoud *et al*. 2020, Ayodele *et al*. 2021, Li *et al*. 2021). Perrenoud *et al*. (2020) suggested that relationships with managers and co-workers can significantly impact employee retention within the industry. Additional studies have emphasized the importance of construction firms enhancing their understanding of employees and fostering positive interpersonal relationships with them using practices such as organizing non-work-related events (Ayodele *et al*. 2021, Bowen *et al*. 2021). Human resource management practices like training were also identified as significant influencers on employee retention (Al-Sadi and Khan 2018, Naoum *et al*. 2020, Ayodele *et al*. 2021), particularly for the early career workforce (Bigelow *et al*. 2021). Return to work training and family-oriented practices including outreach programs to the school, improved counseling services, and better maternity/paternity leave reported as effective measures for retaining women in construction companies (Naoum *et al*. 2020). Personality profile assessment, flexible working arrangement, inclusion management programs, and corporate social responsibility practices are among the suggested practices for improving construction workforce retention (Childs *et al*. 2017, Loosemore and Lim 2017, Galea *et al*. 2020, Naoum *et al*. 2020, Francis and Michielsens 2021).

External influencers

Influential factors that are external to the workplace fall into this category. These factors include alternative job opportunities, economic conditions, union status, the type of sector (public/private) as well as visa waving regimes that can impact turnover decisions (Huang *et al*. 2006, Kim and Philips 2010, Morrison *et al*. 2013). There is a strong connection between the national economy and the construction industry, which suggests that economic conditions can affect employee retention by the availability of job alternatives (Chih *et al*. 2018). As proposed by human capital theory and supported by the longitudinal data, individuals are more likely to quit their jobs, if getting a new job is relatively easy (Huang *et al*. 2006). One of the major challenges faced by the industry is when employees intend to leave, but no acceptable alternatives exist, resulting in them staying at the job involuntarily, thereby negatively affecting their attitudes and performance. Ultimately, it leads to disenchantment and leaving their jobs and professions altogether (Lingard 2003). The longitudinal study of Huang *et al*. (2006) reported longer retention lengths for construction workers during recessions than during prosperous times. Using weekly payroll and monthly labor-market data, Kim and Philips (2012) indicated that the growth of the monthly state construction employment rate increases the likelihood of quitting, emphasizing the role of local labor markets in determining labor turnover. The impact of union status, in a longitudinal sense was suggested by Kim and Philips (2010), in which union blue-collar construction workers indicated

a relatively lower probability of quitting the industry than non-union workers.

Similarly, a lack of union support was pointed out to contribute to migrant construction workers' turnover (Morrison *et al*. 2013). However, the study of Park *et al*. (2014) found no significant effect of union status on turnover intention. In terms of the impact of working in the private or public sector, longitudinal survey data indicated that turnover could also be influenced by sector, in which civil engineers working in the private sector had higher turnover (leaving the industry) rates than civil engineers working on public projects (Maurer *et al*. 2021). The differences between the two sectors can be attributed to different working environments and cultural norms (Maurer *et al*. 2021). The costs associated with voluntary employee turnover nonetheless emphasize the importance of establishing retention policies by employers in both sectors (Maurer *et al*. 2021).

Turnover consequences

Table 3 lists the reviewed studies addressing employee turnover consequences. According to Table 3, the reviewed studies relate turnover consequences to three broad categories: individual, project, and organizational. Understanding turnover consequences is as essential as studying turnover antecedents (Hancock *et al*. 2013). However, most attention was given to the investigation of turnover drivers, and few studies focused on turnover consequences, these studies identified employee turnover as a prominent-leading cause of other organizational and individuals' outcomes.

Individual-related consequences

The first category of turnover consequences relates to individuals. Staff shortages and a high rate of employee turnover were identified as workplace stressors (Loosemore and Waters 2004), particularly for women compared with men. This may be explained by the greater dependence of females on their colleagues for support (Loosemore and Waters 2004). Quitting decisions may be driven by dissatisfaction and stress. For many people, it can also be a source of stress and anxiety, as this decision involves not only ending a contractual relationship with the organization but also means breaking ties with existing social networks (Morrell *et al*. 2004). The other study examined the effects of construction workers' job-hopping, defined as a situation where construction workers change employers plausibly within the industry in China, and revealed its negative impacts on workers' skills development, employment, and labor relations (Sun *et al*. 2019). Employee turnover was identified as one of the main factors affecting crafts productivity (Rivas *et al*. 2011). Turnover of experienced employees can negatively affect the morale of remaining employees, which can reduce their productivity (Memon *et al*. 2021).

Project-related consequences

Project team members' turnover intention is negatively and significantly associated with project performance (Rezvani *et al*. 2020). The construction workforce experiences both a physically and mentally challenging workplace due to the heavy workload (Langdon and Sawang 2018). These challenges increase turnover intention, which negatively affects their performance and well-being (Leung *et al*. 2016, Rezvani and Khosravi 2018). Environmental pressure reduces team members' capability to control workplace conditions and depletes their resources, resulting in withdrawal intentions, and consequently reducing their performance (Rezvani *et al*. 2020). The high rate of employee turnover poses challenges to team integration, which impedes innovation promotion of construction projects (Dansoh *et al*. 2017). High turnover among quantity surveyors and cost engineers has diminished the quality and the accuracy of cost estimation in the pre-tendering stage of building projects in Australia (Aibinu and Pasco 2008). Estimation of a project cost during the stage of planning and design is critical since underestimated costs result in project failure, whereas overestimated cost can cause a viable project to be dropped or re-tendered if no bid is close enough to award the project (Aibinu and Pasco 2008). As a result of employee turnover, estimating knowledge and skills developed through past experiences will be lost, and it takes time for newly hired employees, if hired, to reach that point of efficiency (Aibinu and Pasco 2008). A recent study by Safapour *et al*. (2020) noted the impact of craft labor turnover on the quality of internal communication among contractors. As the loss of valuable skills and knowledge is disruptive to established patterns of interaction and results in flux in communications (Heavey *et al*. 2013). Effective internal communication among parties minimizes the distortion of data, delays, and projects cost overruns (Safapour *et al*. 2020).

Organization-related consequences

Turnover impacts organizations on various levels including cost, quality, challenges to training, and

Table 3. List of studies on employee turnover consequences.

		Study characteristics	
Category	Turnover consequence	Reference/Country	Research design
Individual-related	Negative effects on craft productivity	(Rivas *et al*. 2011) United States	Case study using questionnaire survey and interviews
	Negative effects on employer-worker relation strength and worker's skill development	(Sun *et al*. 2019) China	Field investigation
	Causing stress for employees	(Loosemore and Waters 2004) Australia	Quantitative using questionnaire survey
Project-related	Lack of improvement in pre-tender building cost estimates	(Aibinu and Pasco 2008) Australia	Quantitative using quantitative secondary data
	Representing challenges to project team integration/hindering innovation promotion of construction projects	(Dansoh *et al*. 2017) Ghana	Case studies using semi-structured interviews and archival data
	Negative effects on project performance	(Rezvani *et al*. 2020) Australia	Quantitative using questionnaire survey
	Negative effects on quality of internal communication within contractors	(Safapour *et al*. 2020) United States (75% of case studies)	Literature review, case studies, and questionnaire survey
Organization-related	Negative effects on design documentation quality	(Akampurira and Windapo 2018) South Africa	Quantitative using questionnaire survey
	High labor costs	(Sun *et al*. 2019) China	Field investigation
	Representing barriers to implementing construction craft training programs	(Wang *et al*. 2008) United States	Questionnaire survey and case studies
	Enhancing transfer of innovation knowledge across projects	(Dansoh *et al*. 2017) Ghana	Case studies using semi-structured interviews and archival data
	Negative effects on productivity of the entire industry	(Assaad and El-adaway 2021) United States	Quantitative using secondary longitudinal data
	Preventing development of safety culture	(Kulchartchai and Hadikusumo 2010) Thailand	Qualitative using semi-structured interviews
	Hindering safety practices implementations	(Gao *et al*. 2018) International markets	Mixed methods using document analysis, interviews, questionnaire survey
	Reduced safety performance of specialty contractors	(Hinze and Gambatese 2003) United States	Qualitative using questionnaire survey
	Causing difficulties for efficient deployment of safety management systems	(Yiu *et al*. 2018) Hong Kong	Qualitative using literature review and interviews

safety outcomes. High employee turnover represents high employer labor costs (Sun *et al*. 2019). It also adversely affects the quality of design documentation (Akampurira and Windapo 2018). According to Wang *et al*. (2008), craft training is linked with improved productivity and reduced voluntary turnover, but one of the barriers to effective craft training programs is that once employees have gone through the training program, they leave the organization. There was also an indication from the New Zealand construction industry that high employee turnover makes construction companies reluctant to invest in training (Chang-Richards *et al*. 2014, Wilkinson *et al*. 2017). Assaad and El-adaway (2021) examined variables affecting the construction industry's productivity and found a significant statistical causality between labor turnover and the industry's productivity. Since workers' replacement can deteriorate the learning curve and result in knowledge loss (Allen *et al*. 2010, Assaad and El-adaway 2021). It represents the losses of firm-specific human capital, which is an essential contributor to firms' competitive advantages and productivity (De Winne *et al*. 2019).

Prior studies have mostly noted employee turnover effects on organizations, especially safety-related outcomes. Worldwide, safety remains a key challenge for the construction industry (Gao *et al*. 2018, Xia *et al*. 2020). A firm's safety performance can be improved when employee turnover is minimized because in a workplace with a higher turnover rate, new workers are more susceptible to injury (Hinze and Gambatese 2003), while workers who have worked repeatedly for the same firm have more tendency for awareness development (Gao *et al*. 2018). The study by Hinze and Gambatese (2003) indicated that specialty contractors with low employee turnover rates had lower injury rates than those with a higher turnover rate. High employee turnover also means that employees with improved safety performance might be replaced with new employees, causing the overall safety performance to degrade inevitably without ongoing and effective management (Gao *et al*. 2018). The low

retention length of construction workers poses difficulties in training and hinders the development of a safety culture in the workplace (Kulchartchai and Hadikusumo 2010). The high turnover rate of frontline workers has been considered one of the main difficulties for safety practices implementation in international construction projects (Gao *et al*. 2018). It can prevent project team members from developing a shared goal and also results in a tight work timeline, which in turn causes difficulties for the implementation of a safety management system (Yiu *et al*. 2018).

Discussion and future research direction

This study sought to assess the extent of research on employee turnover in the construction literature, including its antecedents, consequences, and research trends. The studied factors influencing employee turnover were identified and classified. This classification can provide clarity on the allocation of resources to deal with turnover based on their relative importance and their underlying mechanism leading to the turnover decision (Lee *et al*. 2020). This is particularly important for the construction sector, where most companies operate on tight margins leaving little space for errors (Brockman 2014, Engineering New Zealand, 2020, Tijani *et al*. 2022). A better understanding of influential factors on turnover allows organizations to invest effectively in workforce retention practices. However, as mentioned earlier and depicted in Table 4, a substantial portion of investigated influencers on turnover is reported from cross-sectional analysis, precluding us from conclusive inferences about the causal connections between employee turnover and its underlying factors.

Organizational and individual factors are dominating drivers of construction employee turnover, followed by job-related, and external drivers. 23% of reviewed papers reported the role of job-related factors on employee turnover. Few studies investigated the role of external influencers on employees' decision to quit, with only five reporting external drivers of turnover. Regardless of the increasing attention to this research domain in recent years, this review highlights multiple areas that can be addressed in future studies.

Table 4 shows that a high portion of the current literature identified personal influencers as turnover antecedents, mostly stemming from the cross-sectional analysis with only a few longitudinal studies. Two longitudinal investigations on employee behavior, and three studies on demographic influencers are available to provide a greater ability to infer causation (Huang *et al*. 2006, Kim and Philips 2012, Kim and Philips 2014, Maurer *et al*. 2021). This emphasizes the need for more rigorous studies to further examine the effect of personal influencers on turnover. However, it is important to note that although these findings originate from cross-sectional studies, they still contribute to the advancement of knowledge and provide valuable insights. Cross-sectional data can establish the essential baseline information that justifies the necessity for further research on the investigated topic. These findings can be used as a foundation for further investigations and assist in the development of a potential hypotheses (Maier *et al*. 2023).

Among individual factors, the impacts of attitudes such as job satisfaction and organizational commitment were identified as strong predictors by most studies as independent variables or through their underlying effects as mediators. Within this category, other work attitudes have been neglected, such as job involvement; which has been found to, directly and indirectly, impact turnover (Karatepe and Olugbade 2017, Chhabra 2020, Zimmerman *et al*. 2020). Whereas only one study investigated the relationship between job involvement and respondents' turnover in a construction setting (Rehman *et al*. 2020).

Table 4. Distribution of publications and research design on turnover antecedents per category.

Leading influencers		Distribution of influencers in reviewed literature (%)	Research design		
			Cross-sectional (%)	Time lagged (%)	Longitudinal (%)
Personal influencers	Attitude	11	86	14	0
	Attribute	10	92	8	0
	Behaviour	2	100	0	0
	Demographic	8	70	0	30
	Psychological	7	67	33	0
Job-related influencers	Job characteristics	3	50	25	25
	Job characteristics-pay	8	91	0	9
	Job difficulties	12	94	0	6
Organizational influencers	Organizational context	5	100	0	0
	Person-context-interface	14	83	17	0
	Practices	8	91	9	0
	Supports/benefits	9	83	0	17
External influencers	External factors	4	20	0	80

Moreover, this summary sheds light on the scarcity of studies focusing on personality traits and employee behavior, as antecedents of turnover. Personality traits can play a crucial role in the development of employee turnover decisions (Zimmerman 2008). Kim and Philips (2014) and Leung *et al*. (2017) supported the impact of absenteeism and individual performance, respectively, on employees' quitting decisions through the analysis of longitudinal and cross-sectional data. However, the longitudinal study of Huang *et al*. (2006) found no significant effect of individuals' performance on their retention length. This finding suggests that these influencers deserve further primary attention.

Despite the rich support for employee behavior, such as performance (Biron and Boon 2013), and organizational citizenship behavior (Podsakoff *et al*. 2009), as key points for understanding turnover, very little is known about those effects on construction employee turnover. Therefore, future studies could examine the influence of employees' behavior, such as citizenship behavior, extra-role performance, and in-role performance, on predicting their quitting decisions in a construction setting. While some of the antecedents discussed are culturally influenced and also applicable to general HRM studies, it's worth noting that the construction industry's unique cultural dynamics and situational factors can play a significant role in shaping various work-related outcomes (Stewart and Nandkeolyar 2006). Therefore, exploring these aspects within the context of the construction industry can provide insights into how industry-specific cultural factors interact with broader personality traits and behaviors to influence turnover.

Literature on turnover in construction has identified a variety of factors related to the job and organizations that can influence employee turnover, however, research on the measurable relationships between those influencers and turnover is limited and indicates conflicting effects on employee turnover. For example, organizational support and benefits such as promotion, and advancement opportunities were suggested as instrumental tools for employee retention. On the other hand, Dodanwala and San Santoso (2021) found no significant effect of promotion on turnover intention. The longitudinal study of Huang *et al*. (2006) also revealed higher promotion speed is associated with shorter retention length. In a similar vein, multiple organizational practices have been found to be effective in reducing employee turnover using exploratory studies (Morello *et al*. 2018, Ayodele *et al*. 2021, Bigelow *et al*. 2021), but there is little empirical evidence to support the relationship between such practices and turnover. Employees' work outcomes may not be improved by solely implementing HRM practices (Tremblay *et al*. 2010), and these practices might not be perceived by employees as being intended by their employers (Oluwatayo 2015). Therefore, it is suggested that future research investigates how different human resource practices within construction companies influence employee turnover. Employees' perspectives on such practices can provide more understanding regarding those antecedents' roles in their turnover. While employee-centered human resource practices are being favored, the way those practices are implemented matters (Basnyat and Lao 2019).

As evident from Table 4, few prior studies have explored the relationship between organizational context and employee turnover. The meta-analysis by Rubenstein *et al*. (2018) on antecedents of voluntary employee turnover, also highlighted a particular need for in-depth research on the role of organizational context on employee turnover. Organizational culture and climate are critical contextual factors to understand and manage as they can shape employees' attitudes and behavior (Sunindijo and Kamardeen, 2017 Quelhas *et al*. 2019). For instance, when an employee finds the organization's climate unfavorable, it may be perceived that the organization does not value the employee's contribution, which increases turnover intention (Lee *et al*. 2020). Despite recent studies on organizational culture and climate effects on different organizational and individual outcomes in construction literature (Quelhas *et al*. 2019, Koolwijk *et al*. 2020, Lijauco *et al*. 2020), this review revealed the lack of studies on the effect of those integral aspects of the workplace on employee turnover. Future studies may further explore how organizational climate and culture and through which mechanism influence construction employee turnover.

As Table 4 shows, few studies have investigated the effects of factors outside construction organizations such as union status, economic conditions, and job alternatives on employee turnover. However, the influence of external contributors on turnover has been supported by longitudinal data. Therefore, it is important to further investigate the role of these influencers on employee turnover to establish the generalizability of these findings across diverse organizational and cultural contexts. This becomes more crucial considering the strong link between the national economy and the construction industry (Chih *et al*. 2018). Under this category, the impact of external shock on turnover can also be investigated, as little is known about its impact on the

construction industry regarding capacity and skills profile (Chang-Richards *et al*. 2011, Chang-Richards *et al*. 2017). As external shocks including natural disasters, conflict, economic crises, and pandemics substantially impact the labor market (Marzo and Mori 2012), which affects workforce turnover (DiPietro *et al*. 2020, Nguyen *et al*. 2020). External crises, like the Covid-19 pandemic, pose serious threats to organizational performance and cause high uncertainty for the workforce (Carnevale and Hatak 2020, Jeon *et al*. 2022). The Covid-19 pandemic represents the socio-economic system to fundamental challenges globally (Katz *et al*. 2020). Carnevale and Hatak (2020) also highlighted particular issues in terms of human resource management raised by the Covid-19 pandemic, as managers have to help employees adapt to and cope with fundamental changes. Therefore, it is imperative to identify how employees' experiences of changes caused by the pandemic affected their intention to leave or stay within their organizations. The findings will benefit human resource managers with valuable recommendations to handle the changing ecosystem of construction human resources. It further provides organizations means to gain a better workforce functioning during crises. Future studies might thus consider examining the effects of those external influencers on construction employee turnover.

Regarding other potential research directions, the current literature on construction employee turnover has identified various factors influencing employees' quitting decisions. However, there is a lack of understanding about how turnover affects employees and construction organizations. The effect of employee turnover can be positive or negative, depending on the human capital of an organization (Maurer *et al*. 2021). Although most turnover literature generally supports its negative consequences, it also has been argued to have positive outcomes for organizations in certain circumstances (Hausknecht and Holwerda 2013, Nouri and Parker 2020). Many retention measures require investment in different resources such as time and money; therefore, a clear understanding of turnover effects is required for the development of effective measures (Allen *et al*. 2010). Additionally, turnover consequences at the individual level such as strain at the new job and satisfaction at the new job (Holtom *et al*. 2008) have not been closely examined in a construction context. Future studies on construction employee turnover are therefore recommended to investigate turnover consequences at individual and organizational levels. They can capture the perspective of the construction workforce and construction companies towards an in-depth understanding of turnover effects.

In terms of future research method considerations, the systematic review highlighted the need for researchers to establish their investigations based on available theories in this domain. However, the unique characteristics of the industry would warrant a new framework to explain the relationships among constructs influencing construction employee turnover. Furthermore, studies in this domain mostly examined the individual-level associations of effective factors with turnover intention or behavior, and only two studies employed multi-level analysis (Qin *et al*. 2019, Li *et al*. 2021). There is ample room for further research embracing a multi-level analytic framework to improve the understanding of turnover causes and consequences, as it considers the contexts within which people live and work (Guest 2017). Most construction employee turnover studies have used quantitative methods (78% of reviewed papers) and studies in this area lack qualitative insights and mixed research methods to investigate turnover causes and consequences. Therefore, more qualitative and mixed research methods are required to provide broad explanations for employees' attitudes and behaviors (Creswell, J.W. and Creswell, D. J. 2018) as a structured questionnaire would not allow respondents to explain the reasons behind their attitudes and behaviors (Leung *et al*. 2004, Sang *et al*. 2009). Finally, the majority of published papers in this field are based on cross-sectional data (82% of all quantitative studies), whereas there has been an ongoing call in both construction management literature (Lingard 2003, Nauman *et al*. 2021) and general management and organizational behavior studies for more longitudinal studies (Rothausen *et al*. 2017, Jerez-Jerez *et al*. 2021) to better understand employee turnover. Despite these advancements in the existing literature, there is a need to investigate turnover causes and consequences over time to achieve a deeper analysis of such progressive and dynamic mechanisms (Yang *et al*. 2017).

Conclusion

This study set out to review the state of research on employee turnover in the construction literature using a quantitative-qualitative analysis of 77 journal papers published between 2000 and 2021. As such, relevant papers identified through the three-step review have been investigated in terms of turnover causes, consequences, and general research trends. The review results indicated various factors contributing to employee turnover decisions, ranging from personal

to external influencers. Identified turnover outcomes throughout the review were classified into individual, project, and organization-related consequences. From this systematic review, some research gaps and recommendations for future studies have been identified. Within the studies focused on understanding turnover influencers, findings suggest further empirical investigations of other important constructs in four categories of influencers. Current studies have paid inadequate attention to the role of employees' personality traits, behavior, organizational practices, organizational contexts as well as external influencers in shaping turnover decisions. Overall, the review indicated that much less attention has been paid to the consequences of turnover in a construction context and 83% of reviewed papers have focused on understanding turnover drivers. Results suggest that future studies can benefit from more empirical investigation of the relationships between turnover and its subsequent impacts at different individual, project, and organizational levels. In terms of general research trends, most studies were conducted in a few countries (e.g. the United States, China, Australia, and the United Kingdom) which may represent difficulties for the generalizability of the findings. A considerable number of reviewed studies adopted a quantitative approach and cross-sectional design. Also notable is the lack of theoretical guidance for explaining the hypothesis relations. Given these findings, several significant implications for future studies are apparent. The current study organizes the body of knowledge on turnover in construction literature which provides initial steps toward further empirical advancement of turnover studies in the construction sector. While a lot of effort was made to develop this paper, it has some limitations. First, since the findings of this study are obtained from previous literature, limitations of reference papers also apply to this research. Second, despite examining turnover causes and consequences, this study did not differentiate between voluntary and involuntary turnover. This limitation can be justified considering that turnover measures in most studies don't differentiate between voluntary and involuntary turnover. Third, this paper identifies turnover antecedents and consequences by reviewing and synthesizing the findings from both cross-sectional and longitudinal studies. Considering that the majority of studies relied on a cross-sectional design, the focus of this literature centers on descriptive and analytical approaches commonly used in such studies. This, however, limits our ability to firmly establish the causal relationships between turnover and its underlying factors. Nevertheless, these findings still contribute to the advancement of knowledge for progressing our understanding. These findings can be used as a foundation for future investigations and assist in the development of a potential hypothesis (Maier *et al*. 2023). Finally, findings from this review are limited to peer-reviewed journals as other document types such as books and conference papers were excluded from the review.

Although this review fills the gap in the construction literature, which is missing an inclusive review of prior studies of turnover and provides a solid foundation for future research in this area, there are still noteworthy opportunities for future review studies to explore. As an example, such studies could focus on practical implications by identifying concrete HRM strategies derived from the existing literature, offering valuable insights for construction firms to effectively tackle turnover challenges. Furthermore, future reviews could incorporate a cultural lens, considering the cultural nuances within the literature and how they impact the synthesis of findings. Exploring these cultural dimensions could shed light on how turnover dynamics differ across diverse contexts. Future reviews can reflect on cultural differences between countries studied construction employee turnover. Moreover, avenues for future review studies could extend to contrasting the outcomes of the construction industry with those of other sectors. By doing so, specific challenges unique to the construction realm could be pinpointed and examined in more depth. These potential avenues not only enrich the field but also contribute to a more holistic understanding of turnover dynamics in construction and its broader implications.

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ORCID

Goldis Abdolmaleki http://orcid.org/0000-0003-2485-8071
Nicola Naismith http://orcid.org/0000-0002-3230-2949
Nariman Ghodrati http://orcid.org/0000-0001-8409-8014
Mani Poshdar http://orcid.org/0000-0001-9132-2985
Mostafa Babaeian Jelodar http://orcid.org/0000-0003-1956-7384

Data availability statement

The data that support the findings of this study are available from the corresponding author, [G.A], upon reasonable request.

References

Abdelmegid, M.A., *et al.* 2020. Barriers to adopting simulation modelling in construction industry. *Automation in construction*, 111, 103046.

Aibinu, A.A., and Pasco, T., 2008. The accuracy of pre-tender building cost estimates in Australia. *Construction management and economics*, 26 (12), 1257–1269.

Akampurira, E., and Windapo, A., 2018. Factors influencing the quality of design documentation on South African civil engineering projects. *Journal of the South African institution of civil engineering*, 60 (3), 41–48.

Al-Sadi, B.A.S., and Khan, M.F.R., 2018. Examining turnover issue in the construction companies of Oman: Employees' perspective. *Humanities and social sciences reviews*, 6 (2), 52–63.

Allen, D.G., Bryant, P.C., and Vardaman, J.M., 2010. Retaining talent: replacing misconceptions with evidence-based strategies. *Academy of management perspectives*, 24 (2), 48–64.

Asadzadeh, A., *et al.* 2020. Sensor-based safety management. *Automation in construction*, 113, 103128.

Assaad, R., and El-adaway, I.H., 2021. Impact of dynamic workforce and workplace variables on the productivity of the construction industry: new gross construction productivity indicator. *Journal of management in engineering*, 37 (1), 04020092.

Avila, J., *et al.* 2021. Burnout and worklife in disaster restoration: Maslach Burnout Inventory and areas of worklife survey. *journal of construction engineering and management*, 147 (2), 04020171.

Ayodele, O.A., Chang-Richards, A., and González, V., 2020. Factors affecting workforce turnover in the construction sector: a systematic review. *Journal of construction engineering and management*, 146 (2), 03119010.

Ayodele, O.A., Chang-Richards, Y., and González, V.A., 2021. A framework for addressing construction labour turnover in New Zealand. *Engineering, construction and architectural management*, 20 (2), 601–618.

Basnyat, S., and Lao, C.S.C., 2019. Employees' perceptions on the relationship between human resource management practices and employee turnover. *Employee relations*, 42 (2), 453–470.

Belayutham, S., Gonzalez, V.A., and Yiu, T.W., 2016. A cleaner production-pollution prevention based framework for construction site induced water pollution. *Journal of cleaner production*, 135, 1363–1378.

Bernstein, C., and Trimm, L., 2016. The impact of workplace bullying on individual wellbeing: The moderating role of coping. *SA journal of human resource management*, 14 (1), 1–12.

Bigelow, B.F., *et al.* 2021. An exploration of age on attraction and retention of managerial workforce in the electrical construction industry in the United States. *International journal of construction education and research*, 17 (1), 3–17.

Biron, M., and Boon, C., 2013. Performance and turnover intentions: a social exchange perspective. *Journal of managerial psychology*, 28 (5), 511–531.

Bolt, E.E.T., Winterton, J., and Cafferkey, K., 2022. A century of labour turnover research: A systematic literature review. *International journal of management reviews*, 24 (4), 555–576.

Bowen, P., Peihua Zhang, R., and Edwards, P., 2021. An investigation of work-related strain effects and coping mechanisms among South African construction professionals. *Construction management and economics*, 39 (4), 298–322.

Brandenburg, S.G., Haas, C.T., and Byrom, K., 2006. Strategic management of human resources in construction. *Journal of management in engineering*, 22 (2), 89–96.

Brockman, J.L., 2014. Interpersonal conflict in construction: cost, cause, and consequence. *Journal of construction engineering and management*, 140 (2), 04013050.

Carnevale, J.B., and Hatak, I., 2020. Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of business research*, 116, 183–187.

Chang-Richards, A.Y., *et al.* 2011. Identifying factors affecting resource availability for post-disaster reconstruction: a case study in China. *Construction management and economics*, 29 (1), 37–48.

Chang-Richards, A. Y., *et al.* 2014. *Workforce behaviour and business responses: case studies of construction organisations. Resilient organisations research report*. Canterbury, New Zealand: Resilient Organizations Research.

Chang-Richards, A.Y., *et al.* 2017. Effects of a major disaster on skills shortages in the construction industry. *Engineering, Construction and Architectural Management*, 24 (1), 2–20.

Chhabra, B., 2020. Revisiting the relationship between work role stress and employee outcomes in Indian organizations: moderating role of core self-evaluation. *Global business review*, 21 (1), 219–240.

Chih, Y.Y., *et al.* 2018. Interactive effects of supportive leadership and top management team's charismatic vision in predicting worker retention in the Philippines. *Journal of construction engineering and management*, 144 (10), 04018095.

Chih, Y.Y., *et al.* 2016. Investigating employee turnover in the construction industry: a psychological contract perspective. *Journal of Construction Engineering and Management*, 142 (6), 04016006.

Childs, B.R., *et al.* 2017. Use of personality profile assessments in the U.S. commercial construction industry. *International journal of construction education and research*, 13 (4), 267–283.

Chinyio, E., Suresh, S., and Salisu, J.B., 2018. The impacts of monetary rewards on public sector employees in construction: a case of Jigawa state in Nigeria. *Journal of engineering, design and technology*, 16 (1), 125–142.

Chow, P.T., Cheung, S.O., and Wa, Y.K., 2015. Impact of trust and satisfaction on the commitment-withdrawal relationship. *Journal of management in engineering*, 31 (5), 04014087.

Creswell, J. W., and Creswell, D. J., 2018. *Research design: qualitative, quantitative, and mixed methods approaches* (Fifth ed.). Los Angeles: Sage publications.

Dainty, A., Green, S., and Bagilhole, B., 2007. *People and culture in construction: A reader*. Oxon: Taylor and Francis.

Dainty, A., and Loosemore, M., 2013. *Human resource management in construction projects*. Second ed. London: Routledge.

Dansoh, A., Frimpong, S., and Oteng, D., 2017. Industry environment features influencing construction innovation in a developing country: a case study of four projects in Ghana. *International journal of technological learning, innovation and development*, 9 (1), 65–95.

De Winne, S., *et al*. 2019. The impact of employee turnover and turnover volatility on labor productivity: a flexible non-linear approach. *The international journal of human resource management*, 30 (21), 3049–3079.

Ding, X., *et al*. 2017. Linking transformational leadership and work outcomes in temporary organizations: A social identity approach. *International journal of project management*, 35 (4), 543–556.

DiPietro, R.B., Moreo, A., and Cain, L., 2020. Well-being, affective commitment and job satisfaction: influences on turnover intentions in casual dining employees. *Journal of hospitality marketing & management*, 29 (2), 139–163.

Dodanwala, T.C., and San Santoso, D., 2021. The mediating role of job stress on the relationship between job satisfaction facets and turnover intention of the construction professionals. *Engineering, construction and architectural management*, 29 (4), 1777–1796.

Du, J.J., *et al*. 2006. Exploring turnover intention of construction managers in China. *Journal of construction research*, 7 (1–2), 191–205.

Engineering New Zealand. (2020). *Construction sector transformation plan*. Available from: https://www.engineeringnz.org/news-insights/government-plan-tackle-industry-issues/

Francis, V., and Michielsens, E., 2021. Exclusion and inclusion in the Australian AEC industry and its significance for women and their organizations. *Journal of management in engineering*, 37 (5), 04021051.

Galea, N., *et al*. 2020. The gendered dimensions of informal institutions in the Australian construction industry. *Gender, work & organization*, 27 (6), 1214–1231.

Gao, R., *et al*. 2018. Investigating the difficulties of implementing safety practices in international construction projects. *Safety science*, 108, 39–47.

Ghapanchi, A.H., and Aurum, A., 2011. Antecedents to IT personnel's intentions to leave: a systematic literature review. *Journal of systems and software*, 84 (2), 238–249.

Guest, D.E., 2017. Human resource management and employee well-being: towards a new analytic framework. *Human resource management journal*, 27 (1), 22–38.

Gupta, S.K., *et al*. 2019. Systematic literature review of project failures: current trends and scope for future research. *Computers & industrial engineering*, 127, 274–285.

Hancock, J.I., *et al*. 2013. Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of management*, 39 (3), 573–603.

Hausknecht, J.P., and Holwerda, J.A., 2013. When does employee turnover matter? Dynamic member configurations, productive capacity, and collective performance. *Organization Science*, 24 (1), 210–225.

Heavey, A.L., Holwerda, J.A., and Hausknecht, J.P., 2013. Causes and consequences of collective turnover: A meta-analytic review. *Journal of applied psychology*, 98 (3), 412–453.

Hee, C.H., and Ling, F.Y.Y., 2011. Strategies for reducing employee turnover and increasing retention rates of quantity surveyors. *Construction management and economics*, 29 (10), 1059–1072.

Hinze, J., and Gambatese, J., 2003. Factors that influence safety performance of specialty contractors. *Journal of construction engineering and management*, 129 (2), 159–164.

Hobfoll, S.E., 1989. Conservation of resources: a new attempt at conceptualizing stress. *American psychologist*, 44 (3), 513–524.

Holtom, B.C., *et al*. 2008. 5 turnover and retention research: a glance at the past, a closer review of the present, and a venture into the future. *The academy of management annals*, 2 (1), 231–274.

Hom, P.W., *et al*. 2017. One hundred years of employee turnover theory and research. *Journal of Applied psychology*, 102 (3), 530–545.

Huang, C., Lin, H.C., and Chuang, C.H., 2006. Constructing factors related to worker retention. *International journal of manpower*, 27 (5), 491–508.

Jalali, A., *et al*. 2020. Factors that trigger bullying amongst subcontractors toward intention to quit in the construction projects. *Built environment project and asset management*, 10 (1), 140–152.

Jeon, J., *et al*. 2022. Impact of COVID-19 on the US construction industry as revealed in the purdue index for construction. *Journal of management in engineering*, 38 (1), 04021082.

Jerez-Jerez, M.J., Melewar, T., and Foroudi, P., 2021. Exploring waiters' occupational identity and turnover intention: a qualitative study focusing on Michelin-starred restaurants in London. *Journal of hospitality and tourism management*, 47, 22–34.

Jones, S.M., Ross, A., and Sertyesilisik, B., 2010. Testing the unfolding model of voluntary turnover on construction professionals. *Construction management and economics*, 28 (3), 271–285.

Ju, C.J., 2020. Work motivation of safety professionals: a person-centred approach. *Safety science*, 127, 104697.

Jugdev, K., Mathur, G., and Cook, C., 2018. Linking workplace burnout theories to the project management discipline. *International journal of managing projects in business*, 11 (1), 198–221.

Kaewsri, N., and Tongthong, T., 2011. An investigation of women engineers in non-traditional occupations in the Thai construction industry. Australasian *journal* of *Construction economics and building*, 11 (2), 1–21.

Karatepe, O.M., and Olugbade, O.A., 2017. The effects of work social support and career adaptability on career satisfaction and turnover intentions. *Journal of management and organization*, 23 (3), 337–355.

Katz, R., Jung, J., and Callorda, F., 2020. Can digitization mitigate the economic damage of a pandemic? Evidence from SARS. *Telecommunications policy*, 44 (10), 102044.

Kerdngern, N., and Thanitbenjasith, P., 2017. Influence of contemporary leadership on job satisfaction, organizational commitment, and turnover intention: a case study of the construction industry in Thailand. *International journal of engineering business management*.

Khodabandelu, A., and Park, J., 2021. Agent-based modeling and simulation in construction. *Automation in construction*, 131, 103882.

Khosravi, P., Newton, C., and Rezvani, A., 2019. Management innovation: A systematic review and meta-analysis of past

decades of research. *European management journal*, 37 (6), 694–707.
Kim, J., and Philips, P., 2010. Health insurance and worker retention in the construction industry. *Journal of labor research*, 31 (1), 20–38.
Kim, J., and Philips, P., 2012. Determinants of quits and dismissals on a long-lasting unionized industrial construction project. *Journal of construction engineering and management*, 138 (5), 661–669.
Kim, J., and Philips, P., 2014. Remuneration and absenteeism on a large construction site. *Construction management and economics*, 32 (10), 983–999.
Koolwijk, J.S.J., van Oel, C.J., and Gaviria Moreno, J.C., 2020. No-blame culture and the effectiveness of project-based design teams in the construction industry: the mediating role of teamwork. *Journal of management in engineering*, 36 (4), 04020033.
Kulchartchai, O., and Hadikusumo, B.H., 2010. Exploratory study of obstacles in safety culture development in the construction industry: A grounded theory approach. *Journal of construction in developing countries*, 15 (1), 45–66.
Langdon, R.R., and Sawang, S., 2018. Construction workers' well-being: what leads to depression, anxiety, and stress? *Journal of construction engineering and management*, 144 (2), 04017100.
Lee, J., Kim, S., and Kim, Y., 2020. Diversity climate on turnover intentions: a sequential mediating effect of personal diversity value and affective commitment. *Personnel review*, 50 (5), 1397–1408.
Lee, J.Y., Rocco, T.S., and Shuck, B., 2020. What is a resource: toward a taxonomy of resources for employee engagement. *Human resource development review*, 19 (1), 5–38.
Leung, M.Y., *et al.* 2004. Demystifying stakeholders' commitment and its impacts on construction projects. *Construction management and economics*, 22 (7), 701–715.
Leung, M.Y., Liang, Q., and Chan, I.Y., 2017. Development of a stressors–stress–performance–outcome model for expatriate construction professionals. *Journal of construction engineering and management*, 143 (5), 04016121.
Leung, M.Y., Yu, J., and Chong, M.L.A., 2016. Effects of stress and commitment on the performance of construction estimation participants in Hong Kong. *Journal of construction engineering and management*, 142 (2), 04015081.
Lewicki, R.J., Tomlinson, E.C., and Gillespie, N., 2006. Models of interpersonal trust development: Theoretical approaches, empirical evidence, and future directions. *Journal of management*, 32 (6), 991–1022.
Li, D., *et al.* 2019. Work–family conflict influences the relationship between family embeddedness and turnover intention. *Social behavior and personality*, 47 (4), 1–13.
Li, L., *et al.* 2021. Horizontal-leader identification in construction project teams in China: How Guanxi impacts coworkers' perceived justice and turnover intentions. *Project management journal*, 52 (6), 577–591.
Lijauco, F., *et al.* 2020. Impacts of culture on innovation propensity in small to medium enterprises in construction. *Journal of construction engineering and management*, 146 (3), 04019116.
Ling, F.Y.Y., and Toh, W., 2014. Boosting facility managers' personal and work outcomes through job design. *Facilities*, 32, 825–844.
Lingard, H., 2003. The impact of individual and job characteristics on 'burnout' among civil engineers in Australia and the implications for employee turnover. *Construction management & economics*, 21 (1), 69–80.
Liu, B., *et al.* 2020. How family-supportive supervisor affect Chinese construction workers' work-family conflict and turnover intention: investigating the moderating role of work and family identity salience. *Construction management and economics*, 38 (9), 807–823.
Livne-Ofer, E., Coyle-Shapiro, J.A., and Pearce, J.L., 2019. Eyes wide open: perceived exploitation and its consequences. *Academy of management journal*, 62 (6), 1989–2018.
Loosemore, M., and Lim, B.T.H., 2017. Linking corporate social responsibility and organizational performance in the construction industry. *Construction management and economics*, 35 (3), 90–105.
Loosemore, M., and Waters, T., 2004. Gender differences in occupational stress among professionals in the construction industry. *Journal of management in engineering*, 20 (3), 126–132.
Love, P.E., Edwards, D.J., and Irani, Z., 2010. Work stress, support, and mental health in construction. *Journal of construction engineering and management*, 136 (6), 650–658.
Maier, C., *et al.* 2023. Cross-sectional research: A critical perspective, use cases, and recommendations for IS research. *International journal of information managemen*, 70, 102625.
Malone, E.K., and Issa, R.R., 2013. Work-life balance and organizational commitment of women in the US construction industry. *Journal of professional issues in engineering education and practice*, 139 (2), 87–98.
Malone, E.K., and Issa, R.R.A., 2014. Predictive models for work-life balance and organizational commitment of women in the U.S. construction industry. *Journal of construction engineering and management*, 140 (3), 04013064.
Mardanov, I., 2020. Intrinsic and extrinsic motivation, organizational context, employee contentment, job satisfaction, performance and intention to stay. *Evidence-based HRM*, 9 (3), 223–240.
Marzo, F., and Mori, H., 2012. Crisis response in social protection (Discussion Paper No. 1205). Washington, DC: The World Bank.
Maurer, J.A., Choi, D., and Hur, H., 2021. Building a diverse engineering and construction industry: public and private sector retention of women in the civil engineering workforce. *Journal of management in engineering*, 37 (4), 04021028.
Memon, M.A., *et al.* 2021. Satisfaction matters: the relationships between HRM practices, work engagement and turnover intention. *International journal of manpower*, 42 (1), 21–50.
Ministry of Business, I. a. E. M. (2021). The COVID-19 pandemic and its impact on building system actors. Available from: https://www.mbie.govt.nz/dmsdocument/17754-summary-report-covid-19-pandemic-and-its-impact-on-building-system-actors-research.
Mohammadi, A., Tavakolan, M., and Khosravi, Y., 2018. Factors influencing safety performance on construction projects: a review. *Safety science*, 109, 382–397.
Morello, A., Issa, R.R., and Franz, B., 2018. Exploratory study of recruitment and retention of women in the construction industry. *Journal of professional issues in engineering education and practice*, 144 (2), 04018001.

Morrell, K., Loan-Clarke, J., and Wilkinson, A., 2004. The role of shocks in employee turnover. *British journal of management*, 15 (4), 335–349.

Morrison, C., Sacchetto, D., and Cretu, O., 2013. International migration and labour turnover: workers' agency in the construction sector of Russia and Italy. *Studies of transition states and societies*, 5 (2), 7–20.

Naoum, S.G., *et al.* 2020. Gender in the construction industry: literature review and comparative survey of men's and women's perceptions in UK construction consultancies. *Journal of management in engineering*, 36 (2), 04019042.

Nauman, S., Zheng, C., and Ahmad, R., 2021. Employee career outlook and turnover: unleashing the roles of career adaptability and career satisfaction in international construction projects. *Journal of construction engineering and management*, 147 (11), 04021150.

Nawaz Khan, A., Khan, N.A., and Soomro, M.A., 2020. Influence of ethical leadership in managing human resources in construction companies. *Journal of construction engineering and management*, 146 (11), 04020125.

Nguyen, T.D., *et al.* 2020. The correlates of teacher turnover: an updated and expanded meta-analysis of the literature. *Educational research review*, 31, 100355.

Nouri, H., and Parker, R.J., 2020. Turnover in public accounting firms: a literature review. *Managerial auditing journal*, 35 (2), 294–321.

Oluwatayo, A.A., 2015. Employee architect's perception of human resource practices and their job satisfaction. *Built environment project and asset management*, 5 (1), 89–102.

Park, C.-J., Kim, S.-Y., and Nguyen, M.V., 2021. Fuzzy TOPSIS application to rank determinants of employee retention in construction companies: South Korean case. *Sustainability*, 13 (11), 5787.

Park, H.Y., Christie, R.L., and Sype, G.E., 2014. Organizational commitment and turnover intention in union and non-union firms. *SAGE Open*, 4 (1), 1–11.

Perrenoud, A.J., Bigelow, B.F., and Perkins, E.M., 2020. Advancing women in construction: Gender differences in attraction and retention factors with managers in the electrical construction industry. *Journal of management in engineering*, 36 (5), 04020043.

Podsakoff, N.P., *et al.* 2009. Individual-and organizational-level consequences of organizational citizenship behaviors: a meta-analysis. *Journal of applied psychology*, 94 (1), 122–141.

Puck, J.F., Mohr, A.T., and Rygl, D., 2008. An empirical analysis of managers' adjustment to working in multi-national project teams in the pipeline and plant construction sector. *The International journal of human resource management*, 19 (12), 2252–2267.

Qin, X., Hom, P.W., and Xu, M., 2019. Am I a peasant or a worker? An identity strain perspective on turnover among developing-world migrants. *Human relations*, 72 (4), 801–833.

Quelhas, A.D., *et al.* 2019. Model to measure adherence of culture, climate, and organizational behavior in a construction company. *Journal of management in engineering*, 35 (4), 05019003.

Rehman, S.U.R., *et al.* 2020. Impact of leadership behavior of a project manager on his/her subordinate's job-attitudes and job-outcomes. *Asia Pacific management review*, 25 (1), 38–47.

Rezvani, A., Ashkanasy, N., and Khosravi, P., 2020. Key attitudes: unlocking the relationships between emotional intelligence and performance in construction projects. *Journal of construction engineering and management*, 146 (4), 04020025.

Rezvani, A., and Khosravi, P., 2018. A comprehensive assessment of project success within various large projects. *The Journal of Modern Project Management*, 6 (1), 114–122.

Rivas, R.A., *et al.* 2011. Analysis of factors influencing productivity using craftsmen questionnaires: case study in a Chilean construction company. *Journal of construction engineering and management*, 137 (4), 312–320.

Rose, D.M., and Gordon, R., 2010. Retention practices for engineering and technical professionals in an Australian Public Agency. *Australian journal of public administration*, 69 (3), 314–325.

Rothausen, T.J., *et al.* 2017. Should I stay or should I go? Identity and well-being in sensemaking about retention and turnover. *Journal of management*, 43 (7), 2357–2385.

Rubenstein, A.L., *et al.* 2018. Surveying the forest: a meta-analysis, moderator investigation, and future-oriented discussion of the antecedents of voluntary employee turnover. *Personnel psychology*, 71 (1), 23–65.

Rutherford, A., and Lozano, J., 2018. Top management turnover: the role of governing board structures. *Public Administration Review*, 78 (1), 104–115.

Safapour, E., Kermanshachi, S., and Kamalirad, S., 2020. Analysis of effective project-based communication components within primary stakeholders in construction industry. *Built environment project and asset management*, 11 (2), 157–173.

Sang, K.J.C., Dainty, A.R.J., and Ison, S.G., 2007. Gender: a risk factor for occupational stress in the architectural profession? *Construction management and economics*, 25 (12), 1305–1317.

Sang, K.J.C., Ison, S.G., and Dainty, A.R.J., 2009. The job satisfaction of UK architects and relationships with work-life balance and turnover intentions. *Engineering, construction and architectural management*, 16 (3), 288–300.

Saporta, I., and Farjoun, M., 2003. The relationship between actual promotion and turnover among professional and managerial-administrative occupational groups. *Work and occupations*, 30 (3), 255–280.

Shadish, W., Cook, T. D., and Campbell, D. T., 2002. *Experimental and quasi-experimental designs for generalized causal inference*. Vol. 1195. Boston, MA: Houghton Mifflin.

Silverthorne, C., 2000. Situational leadership theory in Taiwan: a different culture perspective. *Leadership & organization development journal*, 21 (2), 68–74.

Simmons, D.R., *et al.* 2018. Work values across generations among construction professionals in the United States. *Journal of construction engineering and management*, 144 (10), 04018096.

Smithers, G.L., and Walker, D.H., 2000. The effect of the workplace on motivation and demotivation of construction professionals. *Construction management and economics*, 18 (7), 833–841.

Song, Z., *et al.* 2020. Do new-generation construction professionals be provided what they desire at work? A study on work values and supplies–values fit. *Engineering, construction and architectural management*, 27 (10), 2835–2858.

Srour, F.J., Srour, I., and Lattouf, M.G., 2017. A survey of absenteeism on construction sites. *International journal of manpower*, 38 (4), 533–547.

Stewart, G.L., and Nandkeolyar, A.K., 2006. Adaptation and intraindividual variation in sales outcomes: exploring the interactive effects of personality and environmental opportunity. *Personnel psychology*, 59 (2), 307–332.

Sun, J., *et al.* 2019. Industry effect of job hopping: an agent-based simulation of Chinese construction workers. *Frontiers of engineering management*, 6 (2), 249–261.

Sun, K.S., 2011. The turnover intentions for construction engineers. *Journal of marine science and technology*, 19 (5), 550–556.

Sunindijo, R.Y., and Kamardeen, I., 2017. Work stress is a threat to gender diversity in the construction industry. *Journal of construction engineering and management*, 143 (10), 04017073.

Tajfel, H., and Turner, J. C., 1979. *An integrative theory of intergroup conflict*. Monterey, CA: Brooks-Cole.

Tijani, B., Osei-Kyei, R., and Feng, Y., 2022. A review of work-life balance in the construction industry. *International journal of construction management*, 22 (14), 2671–2686.

Tranfield, D., Denyer, D., and Smart, P., 2003. Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British journal of management*, 14 (3), 207–222.

Tremblay, M., *et al.* 2010. The role of HRM practices, procedural justice, organizational support and trust in organizational commitment and in-role and extra-role performance. *The international journal of human resource management*, 21 (3), 405–433.

Ugural, M., and Giritli, H., 2021. Three-way interaction model for turnover intention of construction professionals: some evidence from Turkey. *Journal of construction engineering and management*, 147 (4), 04021008.

Uğural, M.N., Giritli, H., and Urbański, M., 2020. Determinants of the turnover intention of construction professionals: a mediation analysis. *Sustainability*, 12 (3), 954.

Veth, K.N., *et al.* 2019. Which HRM practices enhance employee outcomes at work across the life-span? *The international journal of human resource management*, 30 (19), 2777–2808.

Wang, X., *et al.* 2019. Psychological contract's effect on job mobility: evidence from Chinese construction worker. *Ekonomska Istrazivanja* [Economic research], 32 (1), 1476–1497.

Wang, Y., *et al.* 2008. Craft training issues in American industrial and commercial construction. *Journal of construction engineering and management*, 134 (10), 795–803.

Wang, Y.P., *et al.* 2020. Project management personnel turnover in public sector construction organizations in China. *Journal of management in engineering*, 36 (2), 0501900.

Weiss, H.M., and Cropanzano, R., 1996. Affective events theory. *Research in organizational behavior*, 18 (1), 1–74.

Wilkinson, A., Johnstone, S., and Townsend, K., 2012. Changing patterns of human resource management in construction. *Construction management and economics*, 30 (7), 507–512.

Wilkinson, S., Tookey, J., Potangaroa, R., MacGregor, C., Milicich, M., Ghodrati, N., … Bayne, K. (2017). Transforming *the building industry*: *state of nation knowledge* report. Available from: https://www.buildingbetter.nz/publications/homes_spaces/transforming/SRA6_NSC11_State_of_Nation_knowledge_report_2017.pdf.

Xia, N., *et al.* 2020. Antecedents of safety behavior in construction: a literature review and an integrated conceptual framework. *Accident analysis & prevention*, 148, 105834.

Xia, N., *et al.* 2018. Towards integrating construction risk management and stakeholder management: a systematic literature review and future research agendas. *International journal of project management*, 36 (5), 701–715.

Xiao, Y., and Watson, M., 2019. Guidance on conducting a systematic literature review. *Journal of planning education and research*, 39 (1), 93–112.

Yang, F., *et al.* 2017. Job burnout of construction project managers in China: a cross-sectional analysis. *International journal of project management*, 35 (7), 1272–1287.

Yang, J.-T., Wan, C.-S., and Fu, Y.-J., 2012. Qualitative examination of employee turnover and retention strategies in international tourist hotels in Taiwan. *International journal of hospitality management*, 31 (3), 837–848.

Yiu, N.S.N., Sze, N.N., and Chan, D.W.M., 2018. Implementation of safety management systems in Hong Kong construction industry – a safety practitioner's perspective. *Journal of safety research*, 64, 1–9.

Zhang, F., *et al.* 2019. A systematic review of recent developments in disaster waste management. *Journal of cleaner production*, 235, 822–840.

Zhang, R.P., *et al.* 2021. Does gender really matter? A closer look at early career women in construction. *Construction management and economics*, 39 (8), 669–686.

Zimmerman, R.D., 2008. Understanding the impact of personality traits on individuals' turnover decisions: a meta-analytic path model. *Personnel psychology*, 61 (2), 309–348.

Zimmerman, R.D., Swider, B.W., and Arthur, J.B., 2020. Does turnover destination matter? Differentiating antecedents of occupational change versus organizational change. *Journal of vocational behavior*, 121, 103470.

Appendix

Table A1. Identified factors affecting construction employee turnover.

Category	Sub-category	Key antecedent	Terms within the reviewed papers
Personal factors	Attitude	Motivation	work motivations (Ju 2020)
		Satisfaction	• Job satisfaction (Leung *et al*. 2004, Du *et al*. 2006, Sun 2011, Park *et al*. 2014, Chow *et al*. 2015, Kerdngern and Thanitbenjasith 2017, Chih *et al*. 2018, Mardanov 2020, Rehman *et al*. 2020, Wang *et al*. 2020) • Intrinsic and extrinsic job satisfaction (Sang *et al*. 2009), career satisfaction (Nauman *et al*. 2021) • Job satisfaction (with pay, co-worker, supervision and job security), (Dodanwala and San Santoso 2021)
		Commitment	• Organizational commitment (Leung *et al*. 2004, Du *et al*. 2006, Sun 2011, Park *et al*. 2014, Chow *et al*. 2015, Kerdngern and Thanitbenjasith 2017)
		Involvement	• Job involvement (Rehman *et al*. 2020)
	Attribute	Advancement needs	• Growth need strength (Hee and Ling 2011, Ling and Toh 2014), personal development (Park *et al*. 2021) • Professional growth consideration (Zhang *et al*. 2021) • Desire to pursue higher education, slow progress in the acquisition of knowledge, slow work progress, • Desire for experience in supervising a workforce (Kaewsri *et al*. 2011)
		Identification	• Project identification (Ding *et al*. 2017), organizational identification (Ugural *et al*. 2021), (Uğural *et al*. 2020)
		Knowledge and skill	• Knowledge and skill (Hee and Ling 2011)
		Personal characteristics	• Emotional intelligence (Rezvani *et al*. 2020) • Personal characteristics (Park *et al*. 2021)
		Emotion	• Anger & hostility (Livne-Ofer *et al*. 2019)
		Cultural values	• Individual self (Uğural *et al*. 2020)
		Family embeddedness	• (Li *et al*. 2019)
	Psychological	Trust	• Trust (Chow *et al*. 2015), trust in leaders (Nawaz Khan *et al*. 2020)
		Burnout	• Emotional exhaustion (Chih *et al*. 2016), cynicism and emotional exhaustion (Lingard 2003, Avila *et al*. 2021) • Burnout (Yang *et al*. 2017)
		Stress and strain	• Identity strain (Qin *et al*. 2019)
		Negative shock	• (Nauman *et al*. 2021)
		Adjustment	• Adjustment in MCPT (multi-cultural project teams) (Puck *et al*. 2008), urban adjustment (Qin *et al*. 2019)
	Demographic	Age	• (Rose and Gordon 2010, Kim and Philips 2012, Al-Sadi and Khan 2018, Morello *et al*. 2018)
		Gender	• (Huang *et al*. 2006, Sang *et al*. 2007, Maurer *et al*. 2021)
		Marital status	• (Huang *et al*. 2006, Malone and Issa 2014, Morello *et al*. 2018, Ayodele *et al*. 2021)
		Work experience	• Number of firms worked (Park *et al*. 2014) • Apprentice or journey worker (Kim and Philips 2012)
		Job position	• Supervisory status (being supervisor or not) (Maurer *et al*. 2021), job designation (Al-Sadi and Khan 2018)
	Behavior	performance	• Individual performance (Leung *et al*. 2017)
		Absenteeism	• (Kim and Philips 2014)
Job-related factors	Job difficulties	Work stress	• Poor transportation (Leung *et al*. 2017) • Job stress (Dodanwala and San Santoso 2021) • Workload (Avila *et al*. 2021) • Informal rules (high workload and long working hours) (Galea *et al*. 2020) • Workplace strain (Bowen *et al*. 2021) • Perceived bullying (Bernstein and Trimm 2016), bullying of subcontractor managers (Jalali *et al*. 2020)
		Employment condition	• Temporary employment (Morrison *et al*. 2013), completion of fixed contract (Zhang *et al*. 2021)
		Commuting distance	• (Ayodele *et al*. 2021), informal rules (geographical mobility) (Galea *et al*. 2020)
		Physical requirement	• (Ayodele *et al*. 2021)
		Poor work condition	• High risk work environment (Ayodele *et al*. 2021), poor working and living condition (Morrison *et al*. 2013)
		Work-life interface	• work life conflict (Sang *et al*. 2009), work family conflict (Liu *et al*. 2020), family work conflict (Li *et al*. 2019), (Liu *et al*. 2020) • Work life balance (Malone and Issa, 2013 Park *et al*. 2021)

(*continued*)

Table A1. Continued.

Category	Sub-category	Key antecedent	Terms within the reviewed papers
	Job characteristics	Pay and financial aspects	• Higher pay elsewhere (Malone and Issa 2013), pay (Huang *et al*. 2006), level of pay, (Ayodele *et al*. 2021) • Remuneration (pay higher than market) (Kaewsri and Tongthong 2011, Kim and Philips 2012) • Wage issues (Morrison *et al*. 2013), salary increase (Perrenoud *et al*. 2020, Bigelow *et al*. 2021, Zhang *et al*. 2021) • Monetary benefit (Hee and Ling 2011), monetary rewards (pension and gratuity), (Chinyio *et al*. 2018)
		Job resource	• Fulfilling job profile (Ayodele *et al*. 2021) • Autonomy, task significance, feedback from the job (Hee and Ling 2011) • Feedback (Naoum *et al*. 2020) • Worksite characteristics (overmanning) (Kim and Philips 2012)
Organizational factors	Supports/benefits	Employee benefits	• Employee recognition as honored (Huang *et al*. 2006) • Employer-provided health insurance (Kim and Philips 2010) • Retirement benefit (Malone and Issa 2014), early retirement opportunities (Ayodele *et al*. 2021) • Low employee benefit (Kaewsri and Tongthong 2011) • Nonmonetary awards or recognition (Perrenoud *et al*. 2020, Bigelow *et al*. 2021) • Non-monetary benefits (i.e. holidays) (Hee and Ling 2011)
		Advancement opportunities	• Promotion speed (Huang *et al*. 2006), promotion opportunities (Park *et al*. 2021) • Opportunities for career development (Ayodele *et al*. 2021) • Professional development opportunities (Perrenoud *et al*. 2020, Bigelow *et al*. 2021) • Poor career advancement and slow work progress (Kaewsri and Tongthong 2011) • No advancement opportunity; opportunity elsewhere (Malone and Issa 2013) • Clear career progression path within the organization (Ling and Toh 2014)
	Organizational context	Culture/climate	• Reception and incorporation of employee feedback (Perrenoud *et al*. 2020, Bigelow *et al*. 2021) • Work environment consideration (positive gender culture in the employer company, a supportive and flexible environment in the employer company) (Zhang *et al*. 2021) • Work environment (Al-Sadi and Khan 2018) • Workplace ethics (Ayodele *et al*. 2021)
		Organization prestige	• External prestige, (Uğural *et al*. 2020)
		Organizational performance	• Job performance (time, cost and quality of project) (Leung *et al*. 2004)
	Person-context interface	Justice	• Procedural justice (Nawaz Khan *et al*. 2020), • Distributive justice (Li *et al*. 2021) • Transparent promotion criteria (Naoum *et al*. 2020)
		Psychological contract breach	• (Chih *et al*. 2016, Wang *et al*. 2019)
		Perceived exploitative employee-organization relationships	• (Livne-Ofer *et al*. 2019)
		Leadership behaviors and attitudes	• Leadership style (adaptive vs. traditional leaders) (Silverthorne 2000) • Transformational leadership (Ding *et al*. 2017) • Contemporary leadership (Kerdngern and Thanitbenjasith 2017) • Supervisors' supportive leadership (Chih *et al*. 2018) • Ethical leadership (Nawaz Khan *et al*. 2020) • Leadership style of project managers (task oriented, relations oriented) (Rehman *et al*. 2020) • Family supportive supervisor (Liu *et al*. 2020)
		Person-environment Fit Relations	• (Wang *et al*. 2020), fits between trait and the job (Hee and Ling 2011) • Guanxi with the horizontal leader (HL) (Li *et al*. 2021) • Informal employment relationships (Morrison *et al*. 2013) • employment relationship (Ayodele *et al*. 2021) • Better relationships with manager/supervisor (Perrenoud *et al*. 2020, Bigelow *et al*. 2021) • Relationships with co-workers (Perrenoud *et al*. 2020, Bigelow *et al*. 2021)
	Practices	Training	• Training provided by the company (Perrenoud *et al*. 2020, Bigelow *et al*. 2021) • Training investment (Ayodele *et al*. 2021), Return to work training (Naoum *et al*. 2020) • Company policy: no guidance by HR department on job progression and training for the employees and working environment: The

(*continued*)

Table A1. Continued.

Category	Sub-category	Key antecedent	Terms within the reviewed papers
			company does not provide any training in the present job hands-on (Al-Sadi and Khan 2018)
		Family-oriented practices	• Outreach programs to schools, better maternity or paternity benefits, office-based childcare facilities, improved counselling and advice service, bring your child to work day (Naoum *et al*. 2020)
			• Informal rules around parental leave (Galea *et al*. 2020)
		Diversity-oriented practices	• Informal rules (masculine norms and practice) (Galea *et al*. 2020)
			• Inclusion and diversity management practices (person-organization fit, gender equity, peer support, and supervisor support.) (Francis and Michielsens 2021)
			• Companies' program involving women inclusion (Morello *et al*. 2018)
			• Improved mentoring or sponsorship, better marketing of women in leadership, line management training on gender diversity, behavioral training of staff on gender, gender-targeted development and training (Naoum *et al*. 2020)
		General practices	• Using personality profile assessment (Childs *et al*. 2017)
			• Corporate social responsibility strategies (Loosemore and Waters 2017)
			• Informal rules (practices, narratives and norms including expectations of presenteeism, total availability) (Galea *et al*. 2020)
			• Flexible working arrangement (Naoum *et al*. 2020), inflexibility and rigid work practices (Galea *et al*. 2020)
			• Flexible working hours (Ling and Toh 2014)
			• Greater advertisement of available senior positions (Naoum *et al*. 2020)
			• Company policies (Al-Sadi and Khan 2018)
External factors	External factors	Economic condition	• Economic cycles, prosperity vs recession (Huang *et al*. 2006)
		Union status	• (Kim and Philips 2010, Morrison *et al*. 2013)
		Visa waving regime	• (Morrison *et al*. 2013)
		Job alternatives	• Labor market condition (Kim and Philips 2012), State monthly unemployment rate, State monthly percentage change in construction employment
		Sector status	• Public/private (Maurer *et al*. 2021)