

Workplace e-learning success: Learner characteristics, burnout, and psychological safety

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Abstract

Purpose: This article focuses on learner characteristics as key variables that influence the successful completion of e-learning. The roles of burnout and psychological safety were explored in relation to e-learning success. This study aims to provide insight into human resource development research and issues related to employee persistence in e-learning programmes.

Design/methodology/approach: This structured narrative review compiles previous studies that have addressed the factors influencing the success of e-learning in educational institutions and organisations. To this end, 61 articles were selected within the time frame (2014–2025). The learner characteristics included in the review are motivation, computer self-efficacy, Internet self-efficacy, cognitive engagement, self-regulation, and time management.

Findings: The review identifies motivation, computer and Internet self-efficacy, cognitive engagement, self-regulation, and time management as variables consistently associated with e-learning success. It further suggests that job burnout may deplete the resources on which these characteristics depend, while psychological safety preserves them. The review proposes a conceptual model in which learner characteristics are associated with e-learning success, and burnout and psychological safety are proposed to act as moderating contextual factors.

Originality/Value: Although many studies have examined learner characteristics in educational settings, very little research has addressed their role in the workplace or examined how job burnout and psychological safety interact with them. This review integrates individual and contextual determinants of workplace e-learning success within a unified theoretical framework drawing on SCT and the JD-R model.

Keywords: Workplace e-learning, Burnout, Psychological safety, Learner characteristics

Jel Codes: M53, M54, J24, O15

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1. Introduction

The rapid development of technology has established e-learning as a prominent mode of workplace training (Rosenberg, 2005; Salas et al., 2012). Compared with traditional classrooms, e-learning enables organisations to train large numbers of employees simultaneously, regardless of location, and to support collaborative learning across dispersed teams (Li & Lau, 2006; Zhang & Nunamaker, 2003).

From a human resource development perspective, the success of workplace e-learning directly impacts the organisation's intellectual capital. Employees' competencies, acquired or updated through digital training, constitute a critical component of an organisation's intangible assets, as their skills and expertise are instrumental in enhancing organisational productivity and fostering innovation (Priya & Christopher, 2025). Organisational learning is important precisely because it connects to the process of creating value from these intangible assets, and e-learning has emerged as a key enabler of this process by enhancing organisational learning capabilities (Giannakos et al., 2022; Cavus et al., 2024). Therefore, understanding the individual and contextual factors that determine e-learning success is not only a pedagogical concern but a strategic imperative for knowledge-intensive organisations.

Research consistently identifies learner characteristics as central to e-learning success (Liaw & Huang, 2013; Garavan et al., 2010). Among these, motivation drives engagement and reduces attrition (Bandura, 1986; Chen & Chih, 2011), while computer and Internet self-efficacy shape learners' readiness to adopt and persist with technology-based training (Kerka, 1996; Chien, 2012). Cognitive engagement and self-regulatory abilities determine the extent to which learner-controlled environments are effective (Alkali & Abu-Mansor, 2017; Putra et al., 2019), and time management is particularly critical given the greater self-direction online courses demand (Lynch & Dembo, 2004).

Beyond individual characteristics, contextual factors may moderate these relationships. Burnout, driven primarily by work-setting demands rather than personal attributes (Maslach & Jackson, 1981; Maslach et al., 2001), hinders employees' ability to commit to e-training and has been linked with declined performance and engagement (May et al., 2004). Conversely, psychological safety, the belief that one can take interpersonal risks without negative consequences (Kahn, 1990), supports adaptation to new technologies and processes (Azadmanesh et al., 2024) and may alleviate burnout among employees (Teoh & Kee, 2020).

Most existing studies have examined learner characteristics in educational settings, addressing variables such as motivation (Shabbir et al., 2021; Deshpande et al., 2024), computer and Internet self-efficacy (Zainab et al., 2017; Wolverton et al., 2020; Azizi et al., 2022; Panigrahi et al., 2022; Azis & Leatemia, 2021), cognitive engagement (Soffer & Cohen, 2019; Cheng et al., 2014), self-regulation (Düzgün & Başaran, 2021; Alhazbi & Hasan, 2021; Kashif & Shahid, 2021) and time management (Ahmad et al., 2019). However, very little research has addressed these characteristics in workplace contexts. Moreover, the extent to which job burnout and psychological safety moderate the relationship between learner characteristics and e-learning success in organisational environments remains largely unexplored. Although self-regulation, computer and Internet self-efficacy, cognitive abilities and time management have been associated with student academic achievement in educational institutions, their interplay with job burnout and employee psychological safety in the workplace setting still needs empirical exploration.

The present review addresses a gap in the human resource development literature by focusing on workplace e-learning, an area that remains underexplored compared to educational settings. Specifically, this review is guided by three research questions:

RQ1: What learner characteristics have been identified in the literature as predictors of e-learning success in workplace settings?

RQ2: What does existing research reveal about the role of job burnout and psychological safety in relation to learner characteristics and e-learning success in organisational environments?

RQ3: How might job burnout and psychological safety moderate the relationship between learner characteristics and e-learning success at work?

The overarching aim is to synthesise the available evidence on these questions and to propose a conceptual framework that can inform future empirical research and guide HR managers in designing more effective workplace e-learning programmes.

2. Theoretical Framework

The present review is grounded in two complementary theoretical perspectives that together provide the conceptual foundation for understanding how learner characteristics, job burnout and psychological safety interact to determine e-learning success in workplace settings.

The first theoretical pillar is Bandura's (1986) Social Cognitive Theory (SCT), which posits that human behaviour is shaped by the dynamic interaction between personal, behavioural, and environmental factors. Within this framework, self-efficacy, an individual's belief in their capacity to execute specific tasks, emerges as a central determinant of engagement, effort, and persistence in learning. SCT directly informs the learner characteristics examined in this review: motivation, computer and Internet self-efficacy, cognitive engagement, self-regulation, and time management are all expressions of the agentic, self-directed learner. In workplace e-learning, where autonomy and self-direction place particularly high demands on the individual, these characteristics become critical predictors of success. Motivation is understood here in terms of its quality and source: learners engage more effectively when participation is driven by genuine interest and perceived relevance rather than by external obligation, a distinction especially pertinent in organisational contexts where e-learning is frequently mandated rather than chosen (Ryan & Deci, 2000).

The second theoretical pillar is the Job Demands-Resources model (JD-R) based on Demerouti et al. (2001) and Bakker and Demerouti (2007), which proposes that workplace outcomes are shaped by the balance between job demands, such as workload, role conflict, and emotional exhaustion, and job resources, such as autonomy, social support, and organisational climate. When demands chronically exceed resources, employees experience burnout (Maslach et al., 2001), which may deplete the cognitive and emotional resources needed to engage in and complete e-training programmes. The JD-R model thus provides the theoretical basis for examining burnout as a moderating contextual factor that weakens the translation of learner characteristics into e-learning success. Within the same demand-resource logic, psychological safety, defined as the shared belief that the work environment is safe for interpersonal risk-taking, so that employees can ask questions, acknowledge mistakes, and engage openly without fear of negative consequences (Edmondson, 1999), functions as a key job resource that buffers against demand-driven depletion. When psychological safety is present, it preserves the motivational and cognitive resources on which learning depends; when absent, resource depletion is accelerated and the conditions for effective learning deteriorate.

Together, these two frameworks suggest that e-learning success in the workplace cannot be explained by individual learner characteristics alone. It is shaped by the interplay between those characteristics and the organisational conditions in which learning occurs, specifically, the degree to which job demands and available resources, including psychological safety, either deplete or preserve the capacities that learners bring to the training environment. This theoretical lens guided both the selection of variables and the organisation of the literature reviewed in the following sections.

3. Methodology

This study was developed through a structured narrative review (Snyder, 2019) to identify the individual factors that contribute to workplace e-learning success, as well as the contextual factors that may shape these relationships. At the outset, three broad categories of determinants were considered: (i) individual characteristics, (ii) programme-related elements, and (iii) environmental elements. Given the extensiveness of this framework, the scope was subsequently delimited to individual factors and to two contextual factors (job burnout and

psychological safety), as these were found to be the most directly relevant to employees' participation and outcomes in workplace e-learning, and to the research questions guiding this review.

A structured narrative review was selected because the literature spans multiple disciplines (educational psychology, organisational behaviour, human resource development) and the aim is to propose a conceptual framework rather than estimate a pooled effect. To enhance transparency, the search and selection process followed PRISMA-inspired principles and is summarised in a flow diagram (Figure 1).

3.1. Eligibility Criteria

Articles were selected based on the following inclusion and exclusion criteria.

Inclusion criteria: (i) peer-reviewed journal articles published in English between 2014 and 2025; (ii) studies addressing at least one of the focal learner characteristics (motivation, computer self-efficacy, Internet self-efficacy, cognitive engagement, self-regulation, or time management) in relation to e-learning success, satisfaction, achievement, or persistence; (iii) studies addressing job burnout or psychological safety in educational or organisational learning contexts, with explicit or implicit relevance to e-learning environments; (iv) studies set in either educational institutions or workplace contexts.

Exclusion criteria: (i) conference papers, book chapters, dissertations, and other non-peer-reviewed sources; (ii) studies focused exclusively on the technical design or infrastructure of e-learning platforms, without addressing learner-related variables; (iii) articles not aligned with the research questions, regardless of bibliometric eligibility; (iv) duplicates and articles for which the full text could not be retrieved.

3.2. Search Methods

The literature search was conducted in Scopus, complemented by citation snowballing through Google Scholar. Scopus was selected as the primary database because it offers broad coverage of peer-reviewed literature in the social sciences, business, psychology, and educational technology, and is widely recognised as a robust source for structured reviews in these fields (Mongeon & Paul-Hus, 2016; Prancutė, 2021). Google Scholar was used for backward and forward citation tracking following Haddaway et al. (2015), balancing the rigor of an indexed database with the broader coverage needed for specialised workplace e-learning journals.

The search query was applied to the title, abstract, and keyword fields and combined the core concept of e-learning with terms denoting learning success: *TITLE-ABS-KEY ("e-learning" AND (success OR effectiveness OR achievement OR satisfaction OR completion OR persistence))*

The variables of focal interest to this review (learner characteristics, burnout, and psychological safety), together with the workplace setting itself, were not embedded in the Boolean search string but were applied as explicit screening criteria in subsequent stages, in line with the research questions. Given the absence of a single, stable terminology for workplace e-learning (e.g., corporate training, employee training, professional development), this decision allowed for a broad initial retrieval that could then be refined thematically against those criteria, rather than restricting the search to a narrow set of workplace-specific terms that might exclude relevant studies described under different labels.

The search was limited to peer-reviewed journal articles and review articles, published in English between 2014 and 2025. Four subject areas were retained at the database level (Social Sciences, Business, Management and Accounting, Psychology, and Computer Science) to ensure adequate sensitivity across the organisational, psychological, and technological dimensions of workplace e-learning. This breadth was deliberately offset by the eligibility criteria, which admitted studies set in educational institutions only when they engaged with the focal learner characteristics, alongside studies set directly in workplace contexts.

The search was conducted in September and October 2025. The reviewed articles were published in 54 journals, indicating the interdisciplinary nature of the topic, a finding consistent with the cross-cutting position of workplace e-learning research between educational psychology, organisational behaviour, and human resource development.

3.3. Search Outcomes and Screening

The Scopus search returned 8,198 records meeting the database-level filters. An additional 90 records were identified through Google Scholar snowballing, primarily from specialised journals in workplace and distance learning that were not fully indexed in the primary database. After removing duplicates, records were screened by title and abstract against the inclusion criteria and the research questions. Articles whose titles or abstracts indicated focus on technical infrastructure, populations or settings outside the scope of this review, or topics unrelated to learner characteristics, burnout, or psychological safety were excluded at this stage. This large reduction is consistent with the deliberately broad retrieval strategy described in Section 3.2: because the search string targeted e-learning success without restricting by specific learner variables or workplace context, the majority of retrieved records addressed topics outside the scope of this review, such as instructional design, platform usability, or assessment methods, and were identifiable as out of scope from their titles and abstracts alone.

Records that passed the title/abstract screening were retrieved in full text. Full-text assessment was conducted independently by two of the authors, who evaluated each article against the eligibility criteria and the research questions; borderline cases were discussed until consensus was reached.

3.4. Analysis Phase

A total of 61 articles were retained for the qualitative synthesis. Most of the studies used a quantitative approach. The synthesis proceeded thematically, organising the literature around the focal variables: motivation, computer self-efficacy, Internet self-efficacy, cognitive engagement, self-regulation, and time management as learner characteristics; and job burnout and psychological safety as contextual factors. For each variable, the review extracted definitions, measurement instruments, predictive relationships with e-learning success, and reported moderators or mediators. The findings were subsequently integrated to propose a conceptual framework articulating how learner characteristics may interact with job burnout and psychological safety to shape e-learning success in workplace contexts. Where direct evidence linking a variable to e-learning outcomes was limited — particularly for job burnout and psychological safety — the synthesis drew on findings from adjacent literatures (occupational psychology, team research) and constructed integrative interpretations whose inferential nature is made explicit in the Discussion (Sections 5.4–5.6). Although this study did not follow a full systematic review protocol, the simplified PRISMA-style flow diagram in Figure 1 summarises the steps taken to identify and refine the included records.

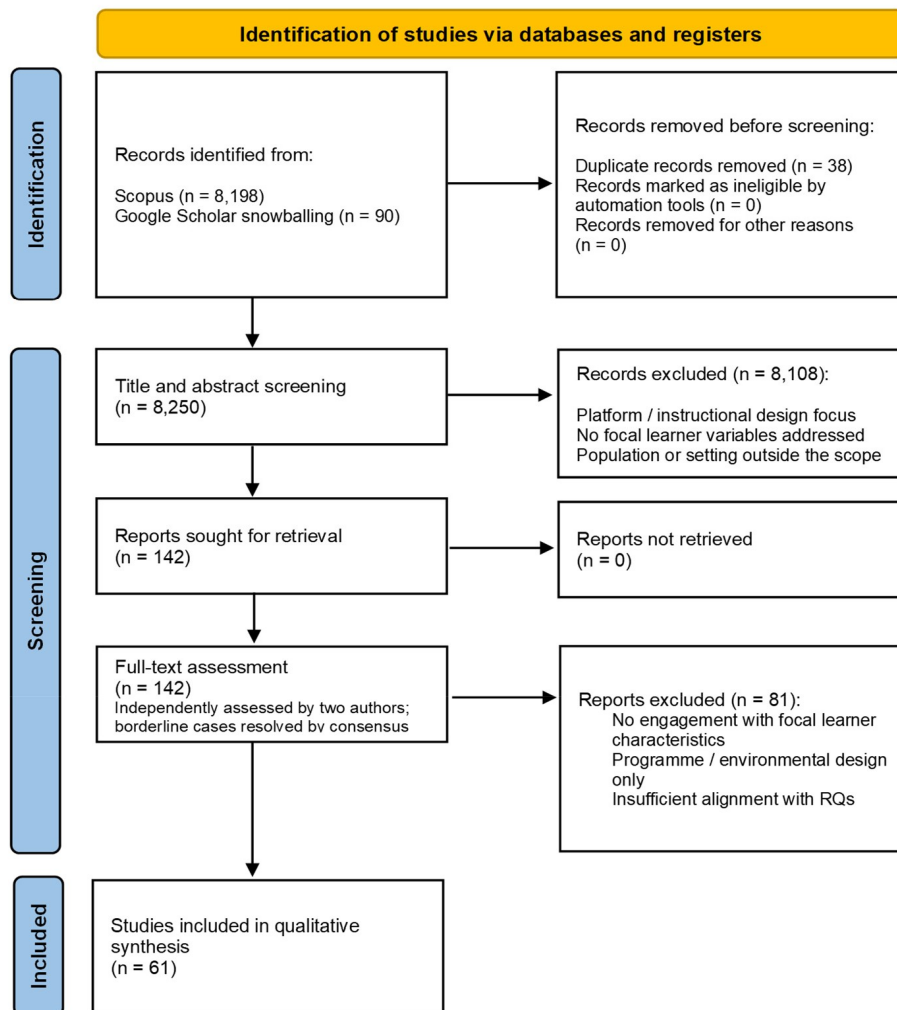


Figure 1. PRISMA flow diagram

4. Findings

The following section presents the findings of the structured narrative review, organised thematically around the key variables identified in the research questions. The review examines each learner characteristic, motivation, cognitive engagement, computer and Internet self-efficacy, self-regulation and time management, before addressing the two contextual factors, job burnout and psychological safety, that may moderate the relationship between individual characteristics and e-learning success.

4.1. Motivation

Within SCT, motivation is both an expression and a product of self-efficacy beliefs: learners who perceive themselves as capable set more challenging goals, invest greater effort, and persist longer in the face of difficulty (Bandura, 1986), making it a decisive predictor of course persistence (Hartnett, 2016). The e-learning literature confirms that engagement and involvement are higher when learners experience their learning environment as meaningful and responsive to their needs (O'Connor & Crowley-Henry, 2019; Meyer & Gagné, 2008; Saks & Gruman, 2021), while motivational deficits translate into reduced performance and well-being. This dynamic appears even stronger in virtual than in traditional settings (Yang, 2004): motivation is significantly associated with MOOC completion and the quality of engagement with programme contents (Semenova, 2020), and the success of online learning depends largely on self-regulated motivation, the capacity to sustain goal-directed effort without continuous external structure (Albelbisi & Yusop, 2019).

4.1.1. Motivation in Literature

The reviewed studies converge on motivation as a strong but contextually embedded predictor of e-learning success. Its influence does not operate in isolation: both motivational orientation and technological proficiency are necessary for effective outcomes (Dantes et al., 2022), and e-learning success more broadly reflects the interaction between organisational, environmental and technological factors and learner motivation (James, 2021). Task value and self-efficacy reinforce motivational engagement, though cognitive strategies such as learner control appear to operate independently of motivational orientation and delivery format (Keskin & Yurdugül, 2019).

The type of motivation matters. Intrinsic orientation and positive attitudes towards virtual learning predict engagement dimensions, whereas amotivation is negatively associated with engagement across its forms (Ferrer et al., 2022), a pattern consistent with SCT's account of how the quality of goal pursuit, not just its presence, determines learning behaviour. Motivational profiles are also malleable: a two-module model targeting short and long-term motivation produced measurable increases in motivational indicators over time (Shabbir et al., 2021).

In workplace contexts specifically, motivation combines with perceived usefulness and satisfaction to predict managers' continuance intentions in online courses (Deshpande et al., 2024), and regulated motivation further influences platform usage alongside technological self-efficacy (Al-Marroof et al., 2020), reinforcing the SCT argument that personal beliefs and environmental conditions operate in mutual interaction to sustain learning behaviour. The studies discussed above are included in Table 1.

Author, year	Contributions
(Deshpande et al., 2024)	Explore employees' ongoing intention to complete e-learning courses.
(Dantes et al., 2022)	What are the elements that influence learners' self-efficacy in the online learning setting?
(Al-Marroof et al., 2020)	Explores the primary elements influencing instructors' and students' intention to adopt technology
(James, 2021)	Investigate the main indicators required for effective online learning.
(Shabbir et al., 2021)	Integrate an inclusive model for motivating employees to engage in short- and long-term learning.
(Ferrer et al., 2022)	Develop a connection between students' motivation and engagement in web-based learning settings
(Keskin & Yurdugül, 2019)	Analyse personal factors that influence learners' preferences for learning delivery approach

Table 1. Studies about the relationship between motivation and the success of e-learning

4.2. Cognitive Engagement

Cognitive engagement reflects learners' active deployment of thinking, mental effort, and learning strategies in the learning process (Fredricks et al., 2004; Lewis et al., 2011), the mechanism through which SCT's agentic learner translates self-efficacy beliefs and motivational orientation into concrete learning outcomes (Bandura, 1986).

4.2.1. Cognitive Engagement

The reviewed studies confirm that cognitive engagement is associated with e-learning success: learners who invest strategic mental effort are more likely to complete online courses (Corno & Mandinach, 1983; Lee et al., 2022; Soffer & Cohen, 2019), supporting learners' autonomy and sense of responsibility for their own learning (Hayati et al., 2017). The relationship with motivation is bidirectional: intrinsic and extrinsic motivation are associated with engagement, which in turn is associated with retention in online programmes (Xiong et al., 2015; Husni et al., 2022), and highly motivated learners consistently display higher cognitive engagement (Binali et al., 2021). At the aggregate level, the three dimensions of engagement: emotional, behavioural and cognitive, are jointly associated with academic success (Hasanov et al., 2021).

The evidence is not without complexity, however. While emotional and cognitive engagement positively influence learning outcomes, behavioural engagement shows a negative association, and the overall relationship is moderated by gender and the environment (Xu et al., 2023). This suggests that engagement dimensions are not interchangeable, and that the quality and type of engagement matter as much as its presence, which is consistent with SCT's differentiation between the depth and the form of cognitive investment in learning. The studies discussed above are included in Table 2.

Author, year	Contribution
(Lee et al., 2022)	Explore higher-order thinking through participation in online discussion forums.
(Xiong et al., 2015)	Examines the relations among student motivation, engagement, and retention
(Soffer & Cohen, 2019)	Examine students' engagement characteristics and their impact on academic achievements
(Xu et al., 2023)	Investigate the correlation between behavioural, cognitive, and emotional engagement and learning performance.
(Hasanov et al., 2021)	Examines the relationship between student engagement and academic attainment.
(Husni et al., 2022)	Investigate the effects of the Inquiry-Based Learning pedagogical method on student performance.

Table 2. Studies about the relationship between cognitive engagement and the success of e-learning

4.3. Computer/Internet Self-Efficacy

Computer and Internet self-efficacy, a person's perception of their ability to use computers efficiently (Krause et al., 2017), are direct expressions of SCT's construct of perceived capability applied to technology-based learning environments. According to SCT, individuals with high self-efficacy set challenging goals, exert great effort to achieve them, and strive to fulfil their tasks, influencing their performance (Shoji et al., 2016; Bandura, 1986). When individuals have experience using computers or any other technological device, they are more confident engaging with e-learning programmes; this mastery experience enables them to overcome technical difficulties that may hinder technology-based learning.

4.3.1. Computer Self-Efficacy (CSE)

The reviewed literature converges on CSE as a consistent positive predictor of e-learning outcomes, operating primarily through indirect pathways. The first pathway links CSE to engagement and satisfaction: learners who perceive themselves as competent computer users display higher engagement, predicting greater satisfaction partially mediated by expectations (Wolverton et al., 2020); CSE and intrinsic motivation jointly predict learning engagement, with their combined effect on web-based learning effectiveness largely channelled through engagement (Aboobaker & Muneer, 2022); and cognitive engagement and learning motivation together mediate the relationship between CSE and behavioural intention to adopt new technologies (Li et al., 2024). A second pathway runs through technology adoption and anxiety reduction: CSE positively influences e-learning adoption (Okuonghae et al., 2022), is negatively associated with e-learning anxiety (Azizi et al., 2022), and buffers the negative impact of techno-stress on adoption intentions (Mushtaque et al., 2022).

Not all evidence confirms a straightforward positive effect, however. The direct link between CSE and online engagement was non-significant in one study, where self-efficacy in virtual communication, a more context-specific form, emerged as the stronger predictor (Mensah et al., 2024). This distinction is theoretically important: SCT holds that self-efficacy beliefs are domain-specific (Bandura, 1986), and the evidence confirms that general computer competence is not equivalent to the context-specific digital capabilities that mediate engagement in particular learning environments. The studies discussed above are included in Table 3.

Author, year	Contribution
(Wolverton et al., 2020)	Explore the influence of students' CSE on their engagement and satisfaction in virtual business courses.
(Okuonghae et al., 2022)	Investigate the predictors of online learning adoption within the Nigerian environment.
(Azizi et al., 2022)	Shed light on the role played by CSE in e-learning for high school students in Iran.
(Mensah et al., 2024)	Investigate the influence of CSE and social support on students' engagement and satisfaction in online learning.
(Mushtaque et al., 2022)	Determine the correlation between CSE, technology related stress and readiness to adopt e-learning by medical students.
(Aboobaker & Muneer, 2022)	Examine the role of engagement, CSE, and intrinsic motivation on success of online learning.
(Li et al., 2024)	Investigate the interrelations between cognitive engagement, learning motivation, CSE, and their effect on the behavioural attitude to use translation technologies.

Table 3. Studies about the relationship between computer self-efficacy and the success of e-learning

4.3.2. Internet Self-Efficacy (ISE)

Research on Internet self-efficacy mirrors the CSE pattern: ISE positively influences all three engagement dimensions: behavioural, emotional and cognitive, and engagement mediates the relationship between ISE and perceived learning effectiveness, establishing an indirect rather than purely direct pathway (Panigrahi et al., 2022). Learners with high ISE display greater academic achievement, confidence, persistence and motivation (Chang et al., 2014), and in workplace contexts ISE mediates the effect of psychological hardiness on employees' positive attitudes towards web-based continuing learning (Tu et al., 2021). Online learning readiness, encompassing ISE alongside motivation, positively influences both performance and satisfaction, with ISE mediating the relationship between perceptions and outcomes (Wei & Chou, 2020; Kuo et al., 2020).

The evidence is more conditional than the CSE literature suggests, however. ISE and prior knowledge did not significantly predict learning outcomes in isolation in one study (Azis & Leatemia, 2021), and ISE failed to predict satisfaction or success in an online language programme where motivation and self-directed learning were dominant (Kirmizi, 2015). More strikingly, a negative association between ISE and perceived net benefit, fully mediated by unfavourable attitudes towards online learning, suggests that the expected ISE advantage can reverse when attitudinal barriers are present (Punjani & Mahadevan, 2022). Together, these patterns confirm that Internet self-efficacy is a relevant but contextually contingent resource: its contribution depends on the availability of complementary motivational and attitudinal conditions, consistent with SCT's account of the mutual interaction between personal, behavioural and environmental factors. The studies discussed above are included in Table 4.

Author, year	Contribution
(Panigrahi et al., 2022)	Investigate the influence of ISE on dimensions of engagement.
(Azis & Leatemia, 2021)	Analyse the effectiveness of online learning correlated with learning types, ISE, and prior knowledge in Business Mathematics.
(Punjani & Mahadevan, 2022)	Examine the effect of COVID-19 awareness, online communication SE and CSE & ISE on students' perception of net benefits and attitudes towards online learning.
(Kirmizi, 2015)	Measure the learners' perception of distance learning due to their readiness and predictors of success and satisfaction in remote education.
(Chang et al., 2014)	Explore how ISE assists students to switch motivation into learning activity and affects performance.
(Wei & Chou, 2020)	Clarify whether online learning readiness and perceptions influence achievement and satisfaction.
(Kuo et al., 2020)	Explore the association between performance, self-regulation and ISE in online learning.
(Tu et al., 2021)	Investigate the effects of ISE and hardiness on employees' attitudes towards online learning.

Table 4. Studies about the relationship between Internet self-efficacy and the success of e-learning

4.4. Self-Regulation and Time Management

Self-regulation, the capacity to plan, monitor and adjust learning activities in pursuit of goals, is among the most direct expressions of the agentic learner described by SCT (Bandura, 1986; Zimmerman & Schunk, 2001). Time management is closely related: it refers to learners' deliberate effort to allocate time effectively in accordance with their learning objectives, and is treated in the literature as both a component and an outcome of self-regulated learning (Ahmad-Uzir et al., 2019). In e-learning environments, where external structure is reduced, both capacities become critical: their absence exposes learners to drift, disengagement and failure to meet learning goals.

4.4.1. Self-Regulation and Time Management

The evidence consistently positions self-regulation as a multidimensional predictor of online learning success, with planning emerging as the strongest of its components (Inan et al., 2017; Kashif & Shahid, 2021). Self-regulation is among the strongest predictors of online success even when controlling for prior academic performance (Düzgün & Başaran, 2021), and jointly with learner-content interaction, ISE and course design it

contributes to learner satisfaction in distance education (Hamdan et al., 2021). At the strategy level, effort regulation, meta-cognitive self-regulation and self-evaluation each independently predict academic performance (Xu et al., 2022); self-evaluation plays a particularly important role, as individuals with strong self-evaluation capacities display greater confidence, motivation and engagement in e-learning (Diep et al., 2017). In asynchronous settings, high-achieving learners demonstrate greater autonomy and outperform peers specifically in time management, environment structuring and self-evaluation (Alhazbi & Hasan, 2021), while in blended synchronous learning, self-regulation, social presence and teaching presence jointly predict persistence through their effect on engagement (Zhong et al., 2022). From an SCT perspective, these patterns are consistent with the account of self-regulation as the mechanism through which self-efficacy beliefs translate into goal-directed behaviour, the capacity to plan, monitor and adjust performance in light of feedback (Bandura, 1986). The studies discussed above are included in Table 5.

Author, year	Contribution
(Inan et al., 2017)	Investigate the influence of students' self-regulation on satisfaction and success in online learning.
(Düzgün & Başaran, 2021)	Highlight the role of self-regulation skills in primary school during COVID-19.
(Kashif & Shahid, 2021)	Explore students' self-regulation impact on their academic performance.
(Xu et al., 2022)	Investigate the impact of students' self-regulation strategies on academic performances.
(Hamdan et al., 2021)	Explore students' self-regulation, Internet self-efficacy, and satisfaction with distance education during the Pandemic.
(Diep et al., 2017)	Examine the impact of distance interaction quality and core self-assessment on adults' learning achievement.
(Alhazbi & Hasan, 2021)	Investigate the influence of self-regulation on learners' achievement in synchronous and asynchronous learning.
(Zhong et al., 2022)	Examine learners' engagement and persistence in Blended synchronous learning.

Table 5. Studies about the relationship between self-regulation and the success of e-learning

4.4.2. Time Management

The reviewed studies consistently identify time management as a significant predictor of academic achievement across educational levels and contexts (Cyril, 2015; Rashid et al., 2020; Ahmad et al., 2019), with benefits extending to reduced stress levels among online learners (Nasrullah & Khan, 2015). Its predictive value is not independent of other variables: self-regulation mediates the relationship between time management and academic achievement (Ahmad-Uzir et al., 2019), and time management amplifies the effect of motivation on persistence, with its moderating role particularly pronounced in synchronous settings (Zeng & Xin, 2025). Combined with motivation, time management is associated with academic success in distance learning (Basila, 2014). Together, these findings position time management as a behavioural mechanism that translates motivational and self-efficacy resources into sustained performance, consistent with SCT's account of how personal characteristics must be enacted through specific, goal-directed behaviours to yield learning outcomes.

Author, year	Contribution
(Zeng & Xin, 2025)	Examine the difference in persistence and engagement in learning between synchronous and asynchronous
(Basila, 2014)	Investigate students' academic success according to motivation, organisation and time management.
(Cyril, 2015)	Examine the association between time management and learning performance in high schools.
(Nasrullah & Khan, 2015)	Determine the correlation between time management students' skills and academic achievement.
(Ahmad et al., 2019)	Examine association between students' academic performance and time management in virtual learning institutions
(Ahmad Uzir et al., 2019)	Examine effective time management approaches through combining techniques of operation
(Rashid et al., 2020)	Establish the correlation between students' time management skills and academic performance.

Table 6. Studies about the relationship between time management and the success of e-learning

4.5. Contextual Factors as Moderators

While learner characteristics directly influence e-learning success, the JD-R model (Bakker & Demerouti, 2007) predicts that their translation into outcomes is contingent on the organisational conditions under which learning occurs. When job demands chronically exceed available resources, employees' cognitive and motivational capacities, the foundations of the learner characteristics described above, are depleted, weakening their ability to engage with and complete e-learning programmes. Conversely, when key job resources are present, they preserve and strengthen those same capacities. Job burnout and psychological safety represent opposite ends of this demand-resource spectrum and are examined in turn below.

4.5.1. Job Burnout

Burnout, characterised by emotional exhaustion, depersonalisation and reduced personal achievement (Maslach & Jackson, 1981; Maslach et al., 2001), emerges within the JD-R framework as the outcome of chronic demand-resource imbalance, and undermines employees' professional confidence and task orientation.

The burnout literature in e-learning clusters around three interrelated themes that map directly onto the JD-R model's demand-resource logic. The first concerns the relationship between burnout and motivational resources: lower self-efficacy increases the risk of academic burnout (Compuesto et al., 2022), learning motivation is negatively associated with burnout and positively with engagement and achievement (Cazan, 2015; Madigan & Curran, 2021), and burnout is significantly associated with dropout intention when engagement is already low (Fynn, 2022). Critically, the relationship is not linear: high motivation can itself precipitate burnout and dropout when learners encounter sustained difficulties in virtual environments (Yusof et al., 2023), pointing to a feedback loop in which depleted resources accelerate disengagement.

The second theme concerns techno-stress as a demand-side antecedent of burnout. Both techno-stress and burnout negatively affect teachers' continuance intentions in online instruction, with self-efficacy serving as a partial counterweight (Panisoara et al., 2020). In the workplace, burnout mediates the negative effect of techno-stress on task performance, and this relationship is attenuated by time management skills (Yener et al., 2021), underscoring the protective role of personal resources within the JD-R framework.

The third theme addresses cognitive resource depletion. Cognitive ability can reduce burnout when it increases job resources, but may paradoxically heighten it when resources are insufficient (Kulikowski, 2021). E-learning success partially mediates the relationship between cognitive flow and learning burnout, though this mediation does not extend to all flow dimensions (Im & Lee, 2021). Together, these three themes confirm burnout as a depleting force that operates through motivational, technological and cognitive channels, consistent with the JD-R prediction that chronic resource depletion generates cascading impairments in learning capacity. A list of the above studies is shown in the table 7.

Author, year	Purpose
(Yusof et al., 2023)	Evaluate motivation level towards a learner's perception of burnout and causes of dropout.
(Fynn, 2022)	Investigate the relationship between burnout, engagement and students' intention to drop out
(Compuesto et al., 2022)	Find out the association between academic burnout and self-efficacy among high school students
(Madigan & Curran, 2021)	Investigate the relationship between burnout and academic outcomes through a meta-analysis.
(Im & Lee, 2021)	Examine the association between effectiveness, learning cognitive and defined flow and learning burnout.
(Panisoara et al., 2020)	Explore the relationship between (TPK) intrinsic and extrinsic motivation, self-efficacy, techno-stress and burnout to influence teachers' intention to continue online learning.
(Yener et al., 2021)	Investigate the moderating effect of computer and technological SE on the techno-stress and employee performance relationship through burnout.
(Kulikowski, 2021)	Explore the role played by cognition in burnout
(Cazan, 2015)	Investigate the relationship between engagement burnout and academic performance

Table 7. Studies about the relationship between burnout and the success of e-learning

4.5.2. Psychological Safety

Consistent with its positioning as a job resource, psychological safety operates as a contextual enabler of learning at both team and individual levels. At the team level, it is positively associated with learning behaviour, knowledge sharing and team effectiveness, with members of psychologically safe teams achieving higher work quality (Patil et al., 2023) and displaying greater innovation, cooperation and adaptive performance under uncertainty (Moffett et al., 2024). At the individual level, psychological safety positively influences academic performance in digital environments (Tatiana et al., 2022), and learners with higher psychological capital translate their achievement goals into deeper engagement more effectively (Xie et al., 2022).

A second strand examines the antecedents and amplifiers of psychological safety. Peer cooperation, lecturer support and computer self-efficacy each contribute to students' sense of psychological safety in e-learning (Choi & Fang, 2022), while inclusive leadership and perceived organisational support further enhance satisfaction with online learning (Atuahene et al., 2024). Psychological capital itself operates as a direct resource: it is linked to the perceived effectiveness of e-learning systems (Azadmanesh et al., 2024) and influences academic performance in blended settings through emotional engagement and learning motivation (Liu et al., 2024).

Finally, psychological safety connects directly to the burnout-engagement axis. Psychological safety is positively associated with work engagement and negatively with academic burnout; critically, the direct burnout-engagement path is non-significant, suggesting that psychological safety functions as the mechanism through which reduced burnout translates into higher engagement (Yazıcı & Mecsek, 2023). Within JD-R logic, this positions psychological safety not merely as a resource that supplements learner characteristics, but as the organisational condition that determines whether the demand-resource balance allows those characteristics to operate effectively. Table 8 below lists the studies mentioned.

Taken together, the reviewed studies paint a consistent but incomplete picture. Motivation, self-efficacy, cognitive engagement, self-regulation and time management emerge as robust individual predictors of e-learning success, yet they are almost always examined in isolation from the organisational context in which workplace learning occurs. Job burnout and psychological safety are discussed in adjacent literatures as forces that shape the conditions for learning, but their interactions with learner characteristics have rarely been tested directly in e-learning settings. This gap between what is known about individuals and their context calls for an integrative discussion that draws on the theoretical framework to connect the two levels of analysis.

Author, year	Purpose
(Azadmanesh et al., 2024)	Explore the influence of psychological capital in supporting the effectiveness of e-learning systems.
(Liu et al., 2024)	Investigate the influence of psychological capital, emotional engagement, learning motivation on academic performance in blended learning.
(Moffett et al., 2024)	Examine the role of psychological safety in virtual design-thinking learning settings.
(Tatiana et al., 2022)	Explore the association between learner psychological safety and academic engagement and achievement.
(Choi & Fang, 2022)	Investigate the influence of learners' psychological safety in virtual learning of hospitality and tourism.
(Atuahene et al., 2024)	Explore the influence of psychological safety and inclusive leadership on students' satisfaction with online learning.
(Yazıcı & Mecsek, 2023)	Reveal the impacts of academic burnout and psychological safety on instructors' engagement in Turkish universities.
(Patil et al., 2023)	Examine the relationship between learning behaviour, both team efficacy and productivity and the impact of psychological safety
(Xie et al., 2022)	Examine the relationship between social mobility beliefs of teens and learning engagement and achievement goal orientation as mediator and psychological capital as moderator.

Table 8. *Studies about the relationship between psychological safety and the success of e-learning*

5. Discussion

The findings confirm that e-learning success in the workplace depends on the joint action of individual learner characteristics and the organisational context in which learning occurs. Drawing on the two theoretical pillars introduced in Section 2, this section argues that the learner characteristics identified through SCT are necessary but insufficient, that job burnout weakens their translation into outcomes through the demand-resource dynamics described by the JD-R model, and that psychological safety strengthens this translation through resource-preservation mechanisms. A shared resource-based mechanism links both contextual factors, and the section closes by examining empirical tensions and presenting the proposed conceptual model.

5.1. Learner Characteristics as a Necessary but Insufficient Condition

Learner characteristics are consistently associated with e-learning success, yet they do not on their own determine outcomes. Motivation, self-efficacy, cognitive engagement, self-regulation and time management are best understood as capacities whose activation depends on the conditions under which learning takes place, consistent with Bandura's (1986) Social Cognitive Theory and the conditional patterns reported in the Findings. The self-efficacy literature illustrates the point: self-efficacy functions as a personal resource for managing demands (Halbesleben & Buckley, 2004), but its protective effect weakens under chronic strain (Lim et al., 2022; Bakker et al., 2005; Salanova et al., 2002). A similar pattern holds for motivation: research on motivational quality indicates that need satisfaction fosters engagement and persistence (Ryan & Deci, 2000), yet high motivation can itself precipitate burnout when virtual-learning difficulties are sustained (Yusof et al., 2023), and burnout is associated with dropout intention when engagement is low (Fynn, 2022). These patterns indicate that individual characteristics are necessary but context-dependent, a contingency the following subsections examine.

5.2. Job Burnout as a Moderator of Learner Characteristics

The JD-R model (Bakker & Demerouti, 2007) predicts that when job demands chronically exceed resources, employees experience burnout, characterised by exhaustion, cynicism and reduced efficacy (Maslach et al., 2001), which depletes the very resources on which e-learning depends. Three channels link burnout to the learner characteristics identified above.

First, burnout erodes motivational quality. Burnout is associated with amotivation and controlled extrinsic motivation, reflecting the frustration of basic psychological needs such as autonomy, competence and relatedness (Lonsdale & Hodge, 2011; Cresswell & Eklund, 2005; Lemyre et al., 2006). Organisational stressors such as excessive workload and limited autonomy further heighten burnout in technology-supported learning environments (Parker et al., 2022; Stephani et al., 2023), eroding enthusiasm and persistence.

Second, burnout undermines self-efficacy's protective function. Self-efficacy ordinarily buffers strain (Blecharz et al., 2014; Hahn et al., 2011) and aids adaptation to turbulent environments (Jimmieson et al., 2004; Unsworth & Mason, 2012), but this buffer weakens as burnout rises: high-self-efficacy nurses maintained performance only until burnout reached critical levels (Lim et al., 2022), and low computer self-efficacy itself predisposes individuals to burnout (Salanova et al., 2002). The mutual reinforcement between self-efficacy and burnout (Shoji et al., 2016; Bakker et al., 2005) suggests a feedback loop in which declining efficacy accelerates exhaustion.

Third, burnout diverts cognitive resources from self-regulated learning. Under high strain, cognitive capacity shifts from goal-setting, strategy use and progress monitoring to emotional coping, increasing cognitive load (Plass & Kalyuga, 2019) and disrupting self-regulation (Stephani et al., 2023). Burnout also deteriorates executive functions, attention and memory (Deligkaris et al., 2014), the very capacities that cognitive engagement in e-learning requires (Soffer & Cohen, 2019; Schindler et al., 2017). Im and Lee (2021) further showed that e-learning success partially mediates the link between cognitive flow and learning burnout, confirming a bidirectional relationship.

5.3. Psychological Safety as an Enabling Contextual Resource

If burnout represents the depleting end of the contextual spectrum, psychological safety represents the enabling end: it provides the interpersonal climate within which learner characteristics can be fully activated. Drawing on the JD-R model's account of psychological safety as a job resource (Edmondson, 1999; Bakker & Demerouti, 2007), two complementary mechanisms can be identified.

The first is motivational sustenance. In psychologically safe environments, communication improves, participation rises and psychological comfort increases (Tatiana et al., 2022). Psychological safety creates conditions under which basic psychological needs such as autonomy, competence and relatedness can be met, because employees can voice questions, acknowledge mistakes and engage without fear of negative consequences (Ryan & Deci, 2000; Gallo, 2023; Joseph & Seshadri, 2025). Conversely, low psychological safety frustrates these needs, diminishing motivation and engagement (Joseph & Seshadri, 2025).

The second mechanism concerns self-efficacy and self-regulation. Psychological safety does not substitute for self-efficacy but amplifies its effects: employees with high self-efficacy find it easier to implement new ideas in a safe climate (Wang et al., 2022), while those with low self-efficacy are less likely to exert effort even in a supportive environment. Kahn (1990) proposed that employees invest energy into their roles to the extent that they feel psychologically safe; Tatiana et al. (2022) confirmed that psychological safety mediates the link between perceived organisational support and work engagement. This engagement supports self-regulated learning: students who feel comfortable voicing their ideas adopt more self-regulated strategies (Inan et al., 2017; Bubnovskaia et al., 2020; Mornata & Cassar, 2018).

5.4. A Shared Resource-Based Mechanism

Job burnout and psychological safety, both understood within the JD-R demand-resource framework, operate through a shared mechanism: both alter the cognitive, emotional and motivational resources available for learning. Burnout emerges when demands chronically exceed resources, depleting the capacity for engagement (Bakker & Demerouti, 2007); psychological safety preserves that capacity by satisfying basic psychological needs and reducing interpersonal risk (Ryan & Deci, 2000; Edmondson, 1999). Together, the two literatures suggest opposite ends of a single continuum of contextual support. However, this integrative reading results from connecting two bodies of research that have developed largely in parallel: occupational burnout studies have not typically examined e-learning outcomes, and the e-learning literature has rarely incorporated burnout or psychological safety measures. The continuum proposed here is therefore an interpretive synthesis by the authors, intended to generate testable relationships rather than to report empirically established ones.

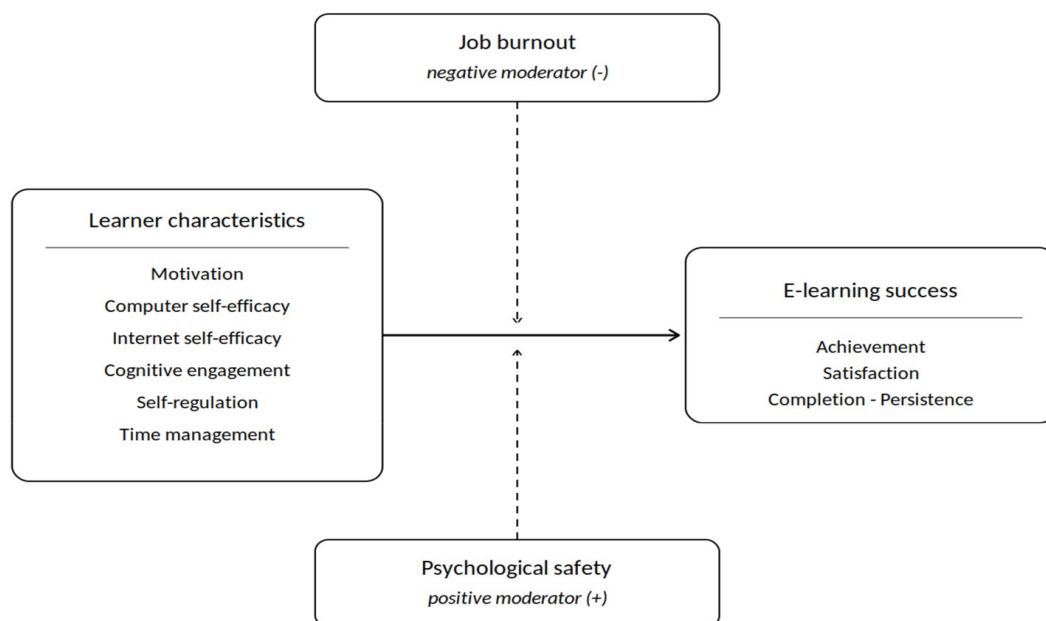
5.5. Tensions in Literature

Three tensions in the empirical literature warrant attention. First, motivation is consistently a positive predictor, yet its strength varies considerably. This may reflect differences between autonomous and controlled motivation (Ryan & Deci, 2000), a distinction rarely explicit in e-learning research. Second, cognitive engagement is operationalised heterogeneously: some studies measure sustained mental effort and strategic learning (Schindler

et al., 2017), others conflate it with behavioural indicators such as time-on-task (Xiong et al., 2015), limiting comparability. Third, the evidence linking burnout and psychological safety to e-learning outcomes is indirect: the burnout literature addresses occupational well-being without an e-learning component, while the psychological safety literature draws predominantly on collocated team contexts (Edmondson, 1999). In both cases, the connection to e-learning success was constructed through interpretive synthesis across non-overlapping research streams rather than derived from studies that measured these variables jointly. The propositions advanced in this review should therefore be read as informed conjectures rather than well-established empirical regularities.

5.6. Proposed Conceptual Model

The arguments developed in the preceding subsections, each anchored in one of the two theoretical pillars, converge in the conceptual model proposed in this review (Figure 2). An important epistemic distinction should be noted: the direct associations between learner characteristics and e-learning success are derived from empirical evidence on e-learning, whereas the proposed moderating effects of burnout and psychological safety represent a conceptual extension grounded in the JD-R literature and in studies from adjacent fields, rather than in direct evidence from workplace e-learning. This asymmetry reflects the current state of the field: research on occupational burnout and psychological safety has not yet incorporated e-learning outcomes, and conversely, the e-learning literature has rarely included measures of burnout or psychological safety. Bridging this gap is a central purpose of the present model, which identifies these moderating relationships as the most pressing avenue for future empirical research. In this model, learner characteristics are associated with e-learning success, while job burnout and psychological safety are proposed to act as moderating contextual factors that respectively deplete and preserve the resources on which those characteristics depend.



Note: Continuous arrows = direct associations derived from e-learning evidence; dashed arrows = proposed moderating effects, theoretically grounded in adjacent literatures (see Section 5.6).

Figure 2. Conceptual model of workplace e-learning success

6. Conclusion

This structured narrative review set out to answer three research questions about workplace e-learning success. Regarding RQ1, the synthesis identifies motivation, computer and Internet self-efficacy, cognitive engagement, self-regulation, and time management as the learner characteristics most consistently associated with e-learning outcomes in organisational settings. These characteristics reflect the agentic, self-directed learner described by Social Cognitive Theory and are necessary conditions for successful learning, yet the evidence reviewed shows

they are not sufficient on their own. Regarding RQ2, the review reveals that job burnout and psychological safety operate as opposing contextual forces: burnout depletes the motivational, self-efficacy, and cognitive resources on which learner characteristics depend, while psychological safety preserves and strengthens those resources by reducing interpersonal risk and sustaining intrinsic motivation. Regarding RQ3, the review develops a theoretically grounded argument, anchored in SCT and the JD-R model, for how burnout and psychological safety may moderate the translation of learner characteristics into e-learning success; however, direct empirical tests of these moderating effects in workplace e-learning remain scarce, making this the most pressing gap for future research. The main contribution of this review is the conceptual model (Figure 2) that integrates individual and contextual determinants within a unified two-pillar theoretical architecture and offers testable propositions for empirical investigation.

6.1. Practical Implications

The conceptual model points to three complementary levers for Human Resource Management professionals designing workplace e-learning programmes. The first lever targets learner characteristics (pillar 1, SCT): organisations should assess employees' self-efficacy and self-regulation profiles before enrolment and provide onboarding modules that build confidence with the learning platform. The second lever addresses the depleting force (pillar 2, JD-R): HR units should monitor burnout using validated instruments such as the Maslach Burnout Inventory (Maslach et al., 2001) and intervene when exhaustion exceeds warning thresholds by adjusting workloads, distributing training over longer windows, or providing protected learning time. In addition, managers should foster psychological safety by soliciting questions, framing mistakes as learning opportunities, and avoiding punitive responses to errors (Edmondson, 1999). Adopting a systemic perspective that simultaneously cultivates learner capabilities, prevents chronic burnout, and develops a psychologically safe climate is essential to translate investment in e-learning into durable gains in organisational knowledge and innovation capacity (Priya & Christopher, 2025; Giannakos et al., 2022); when any of these conditions fails, the loss extends beyond direct training cost to foregone organisational learning capacity.

6.2. Limitations and Future Research

Limitations for the conclusions above have been identified. First, this is a structured narrative review rather than a full systematic review; although guided by explicit inclusion criteria, the selection of articles may introduce some selection bias. Second, and most critically for RQ3, the literature on the moderating role of job burnout and psychological safety in workplace e-learning remains scarce: the moderation arguments developed in the Discussion draw primarily on evidence from adjacent fields (occupational psychology, higher education) rather than from direct empirical tests in organisational e-learning settings. These two gaps differ in degree: the evidence on learner characteristics, although drawn largely from educational settings, addresses e-learning directly; the evidence supporting the proposed moderating roles of burnout and psychological safety comes predominantly from occupational and team research that does not include an e-learning component, requiring a greater inferential step. The proposed moderating relationships therefore constitute the dimension of the model most in need of direct empirical testing. Third, the review is restricted to peer-reviewed journal articles published in English, which may limit cultural and geographical representativeness.

These limitations suggest a focused research agenda. Empirical studies should prioritise the moderating pathways, where direct evidence is most needed. Cross-cultural comparisons across organisations with contrasting burnout profiles and safety climates would establish the model's boundary conditions, while intervention research should examine whether programmes designed to reduce burnout and strengthen psychological safety produce measurable improvements in e-learning completion and learning transfer.

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Authors' contributions

Najwa Baqer Yakoob: conceptualisation, methodology, investigation, formal analysis, writing — original draft.

Sofia Estelles-Miguel: conceptualisation, supervision, formal analysis, writing — review and editing.

Maria Alejandra Millán-Franco: investigation, formal analysis, validation, writing — review and editing.

Sofia Aparisi-Torrijo: supervision, formal analysis, validation, writing — review and editing.

Data availability

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Use of Artificial Intelligence

The authors used generative AI tools (large language models) to support stylistic and structural refinement of the manuscript. All conceptual content, literature analysis, and scientific interpretation are entirely the work of the authors, who reviewed and validated every section of the final text and assumed full responsibility for its content.

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