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The mediating role of emotional intelligence in the adoption of technologies used in occupational health and safety

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ABSTRACT

Objectives. This study evaluated occupational health and safety prevention and control technologies (OHS-PCTs) within the scope of the unified theory of acceptance and use of technology-2 in the context of preventing occupational accidents and diseases and supporting safe behavior changes. *Methods*. The data collected from this study using OHS-PCT tools, which included 607 employees, were analyzed using descriptive statistics, normality tests, item analyses, correlation analyses, confirmatory factor analysis, reliability analysis and mediation methods. *Results*. The findings revealed that emotional intelligence (EQ) partially mediated the effects of the sub-dimensions of the OHS-PCT tool acceptance and use models, such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habituation, on behavioral intention. The effective adoption and use of OHS-PCT tools in reducing workplace risks depended on their technical features and employees' attitudes, intentions and behaviors. *Conclusions*. The study reveals the role of EQ, which interacts with psychological and emotional processes in the workplace, in enhancing OHS-PCT acceptance and safety performance. This study fills an important gap in the existing literature on the role of EQ in adopting OHS-PCT to prevent occupational accidents and diseases. This provides a new and holistic perspective to this field.

KEYWORDS

occupational health and safety; emotional intelligence; occupational health and safety prevention and control technologies

1. Introduction

Recently, the use of technology to improve health and safety in the work environment has attracted considerable interest. While most people think of information and communication technologies that increase employee productivity when they hear the word 'technology', several different technologies are used in the occupational health and safety (OHS) field. Businesses have begun to focus on OHS technologies to comply with new laws and standards. These technological developments not only prevent worker deaths and injuries but also offer new opportunities to improve workplace health and safety. Rapidly developing countries such as Turkey, with their progress in digital infrastructure and technology adoption, have entered a significant transformation process in line with industrial growth and energy efficiency targets [1,2]. These developments have changed various areas such as robotic applications, new occupational groups, technological terms and management approaches. Occupational accidents and diseases experienced in the past are evolving with current technological developments. The use of these technological developments in the OHS field has substantially contributed to the prevention and control of occupational accidents and diseases. Various prevention and control technologies have been developed and implemented to manage risks proactively. These technologies are generally referred to as 'occupational health and safety prevention and control technologies' (OHS-PCTs). While adopting Industry 4.0 brings out the requirements of workforce mismatches and new business models, emotional intelligence (EQ) and OHS-PCT integration are gaining more importance [3,4]. In this context, the rapid growth of the entrepreneurship and innovation ecosystem in Turkey, new risks and adaptation in the workplace environment, new types of risks and adaptation requirements, and approaches based on holistic human–technology compatibility are needed. Studies conducted to understand the relationship between EQ and OHS-PCT integration provide significant theoretical and practical contributions to the literature. Research in this area will pave the way for improving OHS policies and for developing new strategies to improve workplace health and safety. Therefore, studies in the field of OHS should aim to understand the effects of human factors on injuries and develop strategies to minimize these factors [5].

According to Heinrich's theory, 88% of workplace injuries are caused by unsafe behaviors. This has led developed countries to focus on strategies to control unsafe behaviors in the field of OHS in recent years. This approach paved the way for the emergence of behavior-based safety science. This branch of science aims to reduce work accidents and occupational diseases by encouraging safe behavior among employees [6]. According to the latest Statistical Yearbook of the Turkish Social Security Institution (SGK) [7], as of 2023 the number of insured people who experienced an occupational accident in all economic activity classes was 681,401; of these, 77.7% were men ($n = 529{,}770$) and 22.3% were women ($n = 151{,}631$). Furthermore, the number of insured people who developed an occupational disease during the same period was 945; of these, 76.0% were men ($n = 718$) and 24.0% were women ($n = 227$). These findings provide an important basis for comprehensive

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studies examining the causes and consequences of occupational accidents and diseases [7]. These data indicate that a stronger safety culture and comprehensive strategies to prevent occupational accidents and diseases should be developed to increase the effectiveness of Turkey's OSH policies [8]. Integrating EQ into OHS policies enables employees to adopt a safety culture and use technological tools more effectively [9–12], and training and leadership programs that support EQ development play important roles in reducing occupational accidents and illnesses [12–14]. Furthermore, regular measurement and development of EQ has the potential to increase workplace safety by contributing to the creation of human-centered and sustainable OHS strategies [14,15]. Consequently, informing OHS policies with EQ offers a concrete way to strengthen safety culture and reduce occupational accidents.

The literature emphasizes that EQ can improve employees' job performance in different workplaces and challenges [16]. EQ is defined as the ability of employees to recognize, understand and manage their own emotions and those of others. It also plays a major role in encouraging safe behaviors. In this context, developing EQ in the workplace contributes to the strengthening of safety culture and the effective implementation of OHS [17]. It has been determined that employees with high EQ are more successful in evaluating and regulating their emotions than those with low EQ and, therefore, are more likely to exhibit higher job performance [18]. The EQ is a cognitive and emotional mediator that significantly shapes individuals' behavioral intention to use OHS-PCT by influencing their evaluation of perceived usefulness and ease of use [19–21]. This cognitive framework strengthens individuals' behavioral intention to use OHS-PCT. Therefore, understanding the role of EQ in OHS practices is important for improving workplace safety. Strategies to increase employee EQ levels can significantly improve workplace safety culture and reduce occupational accidents and diseases. Understanding the role of EQ in accepting and using OHS-PCT is expected to enable the development of more effective policies and practices and to contribute to the proactive management of hazards and risks that employees may encounter in the workplace. Although the early integration of artificial intelligence (AI)-based technologies in the OHS field has made significant contributions to employee health and safety monitoring [22], integration with human factors such as EQ is still limited [23]. In this context, most existing studies address the effects of AI-based technologies and EQ on OHS separately; however, empirical research on the interactive and holistic evaluation of these two areas remains limited. Especially in rapidly developing countries, such as Turkey, studies conducted to understand the relationship between EQ and OHS-PCT integration will provide theoretical and practical contributions. Research in this area will pave the way for improving OHS policies and for developing new strategies to improve workplace health and safety.

2. Literature review and hypothesis development

This study developed an integrated theoretical framework by combining the unified theory of acceptance and use of technology-2 (UTAUT-2) model with the concept of EQ to explain employees' intention to adopt OHS-PCTs.

2.1. Emotional intelligence

The concept of EQ was first defined by Salovey and Mayer [24] as 'the ability of a person to observe their own and others' emotions and feelings, distinguish the differences between them, and use this information to guide their thinking, p. 427–428'. Petrides and Furnham [25] made an important contribution to the literature by defining EQ as a set of emotional self-perceptions located at the lower levels of the personality hierarchy. Daniel Goleman [26] defines EQ as 'the ability of a person to take action, to control their impulses and persist despite setbacks, to postpone their predictions, and to organize their thoughts'. EQ, which originated from social intelligence and evolved into multiple intelligences and modern ability/mixed models, is now considered one of the main factors of individual and societal success [27]. Different theoretical methods and models are used to understand and measure EQ. [28–30]. EQ is a person's ability to recognize and understand emotions in themselves and others and to manage relationships and behaviors using this awareness; this skill plays an important role in coping with stressful situations at work and making personal decisions that yield positive results [31]. The development of EQ contributes to the creation of healthier and more harmonious work environments with logical intelligence. It has a strong relationship with work-related variables such as perceptions of stress, satisfaction and job performance [32,33]. EQ appears to exert a protective influence in stressful contexts, enhancing both individual and team effectiveness and ultimately contributing to improved organizational performance [34].

2.2. The UTAUT-2 model

The rapid development of information technology has highlighted the necessity of using these technologies by individuals and organizations. However, differences in users' knowledge and experience levels have changed, affecting technology acceptance processes. To explain the adoption and use of the technology, researchers have proposed numerous theories and models over the decades. This includes popular theories such as the theory of reasoned action (TRA), technology acceptance model (TAM), theory of planned behavior (TPB), diffusion of innovation (DoI) theory and model of personal computer utilization (MPCU), to name a few [35]. Among these models, the TAM stands out in explaining how technological innovations are accepted by individuals and the factors that shape their usage behaviors [36]. This model suggests that user motivation can explain system usage. This suggests that user motivation can explain the system usage [19,37]. Although the TAM has been accepted as a useful model, Davis suggested that improving the underlying structure could positively affect users' approval and support of technological innovation. It has been criticized that the underlying structure should be integrated into a broader model by adopting an innovation model and individual and social adaptation measures. In this context, new models and theories explaining technology acceptance behavior have been developed, and attempts have been made to create a more comprehensive perspective on users' information technologies [38]. Venkatesh et al. [39] developed a UTAUT model by examining various theories and models and selecting appropriate elements to form a more comprehensive aspect of the TAM. Four basic elements within the scope of the

UTAUT model determine usage and intention: performance expectancy, effort expectancy, social influence and facilitating conditions. Venkatesh et al. [39] restructured the UTAUT model by focusing on consumers and developed the UTAUT-2 model. The UTAUT-2 model developed by Venkatesh et al. [39] predicts various determinants to explain individuals' technology acceptance and usage behaviors. According to this model, performance expectation refers to the level of belief that a user can improve job performance by using a particular system; social influence describes the degree to which an individual is influenced by the opinions of important people around them regarding technology use. Facilitating conditions include users' access to the necessary infrastructure and resources that support the use of technology [39]. While hedonic motivation refers to the feeling of pleasure and satisfaction provided by technology, cost value describes the user's assessment of the benefits of technology by comparing them with the costs they must bear. While habit describes the tendency of the individual to use technology regularly, consciously or unconsciously, behavioral intention reveals an individual's willingness to perform a certain behavior [39]. These determinants play a fundamental role in the formation of technology use intention and provide an important theoretical basis for understanding the technology adoption processes of individuals.

2.3. OHS-PCTs

Technological advances make it possible to adopt holistic, proactive and data-driven approaches to preventing and managing risks in OHS applications. In the literature, these technologies are generally classified under OHS-PCTs. These comprise innovative components such as AI, the Internet of Things (IoT), big data analytics, robotic systems, wearable technologies, augmented/virtual reality (AR/VR) applications and ergonomic exoskeleton solutions. It contributes to the early detection, prevention and control of risks in the workplace. These technologies are categorized as engineering controls, administrative controls, personal protective equipment (PPE), monitoring systems and digital solutions. Each category plays an important role in improving workplace safety and reducing risk. These technologies are important for addressing the multifaceted risks associated with modern work environments, which are impacted by globalization, technological advancements and changing workforce demographics.

Innovative OHS software leverages advanced technologies such as AI, the IoT and cloud computing to optimize security processes, especially in high-risk industries. Digital risk assessments and work permits [40] improve hazard management and regulatory compliance [41], and IoT-based systems provide early warning and effective risk management with real-time monitoring of environmental parameters such as temperature, humidity, harmful gases and particle density [42,43]. On the other hand, AI and big data applications enable the development of preventive strategies with accident prediction based on historical data [44], automatic hazard detection and decision support mechanisms [45]. Wearable technologies and smart PPE help to detect fatigue, stress and dangerous exposures in advance by monitoring the physiological data of workers [46]. Data management and analytics improve decision-making processes and support an enterprise security culture [43]. Robotics and automation systems increase safety by reducing human exposure to high-risk tasks [47], while VR/AR-based training applications also support learning safe behaviors by simulating risky scenarios [48]. On the other hand, ergonomic exoskeleton systems reduce the risk of occupational diseases by reducing the burden on the musculoskeletal system [43]. These technologies offer innovative solutions in managing both physical and organizational risks in the field of OHS and contribute to creating safer, healthier and more sustainable working environments in the workplace.

2.4. Hypothesis development

This study developed a multilevel conceptual framework by integrating the UTAUT-2 model with the EQ concept to explain the determinants of behavioral intention to adopt OHS-PCTs. The subdimensions of UTAUT-2, i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit, represent the power of this model in shaping behavioral intention. In this study, the effect of an individual's EQ level on these perceptions was examined. It is predicted that EQ components, especially emotional awareness, empathy and emotion regulation, may affect the performance expectancy that individuals' use of technology will increase their job performance and effort expectancy by reducing anxiety; social influence by positively shaping social relationships; hedonic motivation through positive experiences; and facilitating conditions through the perception of convenience and price value through individual value. Additionally, it is assumed that the habit component, which is the psychological tendency to use technologies regularly, is affected by internal factors related to EQ. This integrated structure emphasizes the importance of integrating EQ as a central psychological structure into the TAM for employees' intentions to adopt OHS-PCT, revealing how individual-centered approaches can be decisive in technology adaptation processes.

Research on EQ and workplace behavior has shown a strong positive relationship between EQ and group cohesion ($r = 0.72$) and productivity ($r = 0.70$), suggesting that EQ supports collaborative and productive work environments [49]. Employees with high EQ are more likely to comply with OHS practices because of their ability to regulate their own emotions and understand the emotions of others, thus contributing to a safer work environment [11]. EQ sub-factors such as self-regulation can motivate employees to adopt safety measures, thereby increasing their behavioral intention toward OHS technologies [50]. Individuals with high EQ are better equipped to manage stress because they can effectively monitor and regulate their emotions [51]; they exhibit greater flexibility, allowing them to navigate unpredictable environments and embrace change; and they are more open to technological developments, viewing them as opportunities rather than threats [52]. Studies show that EQ is associated with a proactive approach to learning, adapting to new technologies and fostering a positive attitude toward innovation [53]. Based on these studies, the following hypothesis is developed:

> H_1: EQ positively affects employees' behavioral intention to accept and use OHS-PCTs.

Performance expectancy refers to employees' belief that they will perform well when performing a particular task or

using a tool. According to the TAM developed by Venkatesh et al. [39], employees' performance expectations are an important factor in accepting technology; if employees believe that they can perform their jobs more efficiently and effectively using a particular technology or tool, they are more likely to accept and use this technology. Employees with high EQ can better read the emotional cues of their coworkers and managers, increasing their willingness to accept and use OHS tools [54]. Venkatesh et al. [39] identified key factors in users' acceptance and adoption of technology. Performance expectancy emphasizes the positive effect of believing that technology will be useful for the acceptance of technologies [55]. The effect of EQ as a mediator of safety performance is that high EQ enables employees to cope with safety-related challenges, leading to improved safety performance and reduced workplace accidents [9]. In aligning performance expectancy and behavioral intention expectancy, employees with high EQ are better equipped to align performance expectations with organizational safety goals, leading them to proactively engage with safety technologies [56]. Wang et al. [57] found that EQ affects safety performance through employee development, and that this effect is stronger in individuals with high career adaptability. Carmeli and Josman [58] empirically supported the relationship between EQ and job outcomes, revealing that EQ, assessed using a self-report scale, positively affects task performance and organizational citizenship behaviors in the dimensions of sacrifice and compliance. Studies have shown that when users perceive technology as useful, they are more likely to adopt it, as seen in the context of telemedical applications, where performance expectancy directly affects user satisfaction and continued use [59]. EQ may positively affect performance expectations by strengthening individual perceptions that using OHS-PCTs increases efficiency. The hypotheses developed based on these studies are as follows:

H_2: EQ mediates the relationship between performance expectancy and behavioral intention in employee acceptance and the use of OHS-PCTs.

H_{2a}: Performance expectancy positively affects behavioral intention.

H_{2b}: Performance expectancy positively affects EQ.

Individuals with high EQ have reduced anxiety and effort required to learn new technologies because of their improved emotion regulation skills, which is supported by various studies showing that students with strong emotion regulation skills have higher academic success [60]. Effort expectancy improves the user experience by expressing the ease of use of technology, which leads to more frequent application use [55]. Effort expectancy refers to employees' beliefs about ease of technology use [39]. Individuals with high EQ may have a more positive attitude toward adapting to new technologies and coping better with emotional stress because of their self-awareness and self-regulation skills [26]. High EQ may positively affect both the effort expectancy and behavioral intention of employees to accept OHS tools [61]. Effective emotion regulation strategies such as cognitive reappraisal are associated with lower anxiety levels and improved perceived learning outcomes [62]. Individuals with high EQ generally choose strategies that require less cognitive effort and balance efficiency with effort, thereby facilitating smoother learning experiences [63]. In this context, high EQ levels are predicted to increase individuals' behavioral intention to use these technologies by reducing negative perceptions of effort expectancy. The research hypotheses developed in line with these evaluations are as follows:

H_3: EQ mediates the relationship between employees' effort expectancies and behavioral intention to accept and use OHS-PCTs.

H_{3a}: Effort expectancy positively affects behavioral intention.

H_{3b}: Effort expectancy positively affects EQ.

EQ enhances individuals' ability to act with intrinsic motivation while reducing sensitivity to external social pressures [64]; it supports self-awareness, self-regulation [65] and empathy [66], thus providing individuals with an orientation that supports their intrinsic goal pursuits rather than relying on external approval. Social influence is related to how important users perceive their significant others' interactions with technology to be. These are important factors that affect technology adoption and use [55]. Social influence refers to the perception that significant others believe they should use a particular technology, which reflects an individual's tendency to act according to the opinions, expectations and behaviors of others [20]. Individuals with high EQ are more successful in social interactions and group dynamics, and are more aware of the social influences that shape their behavioral intention [61]. Social influence has significantly affected behavioral intention in studies in which social factors have enhanced the intention to adopt Information and Communication Technology and wireless technologies [67,68]. Therefore, the following hypotheses are proposed:

H_4: EQ mediates employees' social influence and behavioral intention in accepting and using OHS-PCT.

H_{4a}: Social influence positively affects behavioral intention.

H_{4b}: Social influence positively affects EQ.

EQ shapes individuals' perceptions of the facilitating conditions required for technology adoption. Individuals with high EQ are better equipped to evaluate available resources and overcome uncertainties, thereby increasing their self-efficacy and intention to use technology. Facilitating conditions, such as access to resources and support, are important for technology adoption [69]. Facilitating conditions are important elements that reflect the perception of the organizational and technical infrastructure that supports technology use by shaping the user experience of external factors, such as available technology and equipment, and refer to individuals' perceptions of the resources and support needed to use a particular technology or system [55]. These conditions include technological infrastructure, training and support systems [20]. Employees with high EQ are more likely to share knowledge and exhibit positive behavioral intentions toward technological systems, because they can manage their emotions and understand the emotional dynamics of their workplace [70]. Self-efficacy and emotion regulation skills can help individuals produce solutions independently, even under conditions of uncertainty or insufficient support [71]. Therefore, EQ is expected to strengthen behavioral intention by positively affecting the perception of facilitating conditions. In this context, the following hypotheses are formulated:

H_5: EQ has a mediating effect on facilitating conditions and behavioral intention in employee acceptance and use of OHS-PCTs.

H_{5a}: Facilitating conditions positively affect behavioral intention.

H_{5b}: Facilitating conditions positively affect EQ.

In the UTAUT-2 model, hedonic motivation defines an individual's behavior regarding the enjoyment and use of technology [72]. According to the UTAUT-2 model, the user's ability to perform a certain task more effectively by using technology, spending less effort while using technology, people around the user using existing technology and the user enjoying using technology are all effective [73]. Studies have shown that hedonic enjoyment is associated with positive user experiences, reduced negative effects and increased arousal [74]. The emotion regulation aspect of EQ can improve user experience and motivation, leading to greater acceptance of new technologies [75]. While this situation facilitates the adoption of technology by increasing positive emotional reactions toward the use of OHS-PCTs, the ability of EQ to increase positive emotions plays an important role in ensuring that individuals enjoy using technology. The following hypotheses were developed considering this framework:

H_6: EQ mediates employees' hedonic motivation and behavioral intention to accept and use an OHS-PCTS.

H_{6a}: Hedonic motivation positively affects behavioral intention.

H_{6b}: Hedonic motivation positively affects EQ.

When the benefits obtained from technology exceed the costs incurred, a person's desire to use the technology is affected [39]. EQ plays an important role in individuals' evaluation of the value of technology by balancing perceived benefits with costs. Moreover, it helps individuals make the costs associated with technology manageable by emphasizing potential gains while encouraging cognitive re-evaluation, which encourages focusing on positive outcomes when the technology is perceived negatively [76]. Strawderman et al. [77] analyzed the factors affecting the adoption of wearable technologies in production environments. They revealed that the current TAM is insufficient at the organizational level and that factors such as uncertainty, comfort, security, cost and culture should be considered [77]. Simultaneously, the price value can positively affect EQ and enable individuals to use the technology more effectively. Therefore, the following hypotheses are proposed:

H_7: EQ mediates the relationship between price value and behavioral intention to accept and use OHS-PCTs.

H_{7a}: Price value positively affects behavioral intention.

H_{7b}: Price value positively affects EQ.

Habit is defined as the degree to which individuals tend to perform behaviors automatically through learning and development over time [39]. It is influenced by the level of interaction and familiarity with technology, which is formed through the repetition of behavior and can directly affect technology use [78]. The relationship between EQ and technological habits is important because individuals with high EQ are more capable of internalizing new technologies and developing positive usage patterns. This ability is largely attributed to the core components of EQ: self-regulation and motivation. Individuals with high EQ are better able to self-regulate and effectively manage their emotions and behaviors, which facilitates the formation of consistent technology-usage habits as users adapt their behaviors according to their previous experiences and satisfaction levels [79]. The motivational aspect of EQ directs individuals to pursue and interact with technology actively. Users with higher motivation are more likely to develop habits that support continued technology use because positive experiences and cognitive beliefs influence them [80]. Habits play an important role in technology continuation, as they are affected by satisfaction and previous experiences [79,80]. In this context, the following hypotheses are proposed:

H_8: EQ mediates employee habits and behavioral intention regarding the acceptance and use of OHS-PCTs.

H_{8a}: Employees' habits positively affect behavioral intention.

H_{8b}: Habits positively affect EQ.

The hypotheses were tested to examine the mediating role of the EQ interaction, which was regarded as the mediator variable, between the independent variables (performance expectancy, effort expectancy social influence, facilitating conditions, hedonic motivation price value, habit) and the dependent variable (behavioral intention) (Figure 1).

3. Methods

3.1. Research model

This research used a relational screening model to examine the relationships between the EQ levels of employees using OHS-PCT and their acceptance and use behaviors. The independent variables are performance expectancy, effort expectancy,

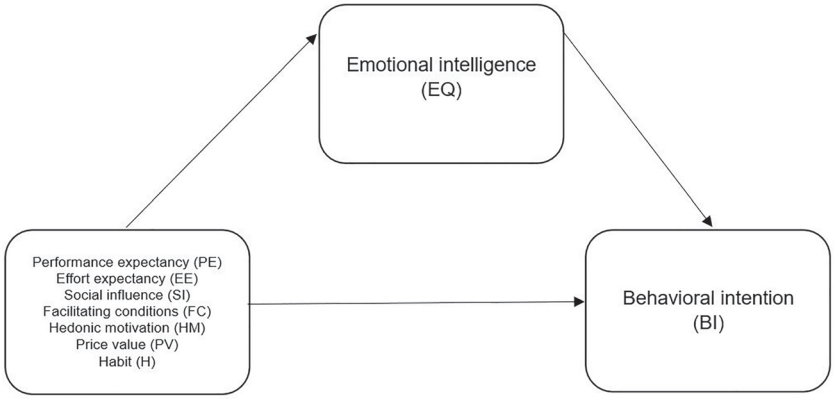


Figure 1. Assumed conceptual framework.

social influence, facilitating conditions, hedonic motivation, cost value and habits. The dependent variable was behavioral intention, and the mediator variable was EQ. Within the framework of this model, data were collected through structured surveys or interviews and analyzed using methods such as relational screening and structural equation modeling.

3.2. Population and sample

This study included employees who used OHS-PCTs to prevent occupational accidents and diseases in Turkey. As it was not practical to reach the research universe, surveys were conducted using the purposive sampling method, and data were collected from 607 participants. Purposive sampling was preferred because it allowed the selection of participants with knowledge and experience in line with the purpose of the research [81], thereby increasing the data quality, reliability and validity of the findings [82]. Although all variables in this study were measured using self-report surveys, Harman's single-factor test was not applied to the risk of CMV. This test is not preferred because of its methodological limitations and empirical inadequacy. Structural validity was evaluated using confirmatory factor analysis (CFA). In addition, voluntary and anonymous participation was provided to the participants during the data collection process, and this risk was reduced using procedural measures by randomly ordering the survey items. Workplaces and employees using OHS-PCTs were identified with the support of OHS professionals. Approximately 50 professionals were contacted, 35 of whom stated that OHS-PCTs were available in their institutions. Data were collected using the emotional intelligence trait scale – short form (EQAS-SF) and UTAUT-2. The data collection process was carried out between December 2023 and March 2024; the survey included 56 questions and took 10–15 min to complete. Scale analyses were then performed using this dataset.

3.3. Data collection tools

The questionnaire used in the study comprised three parts: the demographic information form, which included sex, age, educational level, income level, occupational experience, experience using OHS-PCTs and PPE use; the EQAS-SF [33]; and UTAUT-2 [69].

3.3.1. The UTAUT-2 model

The UTAUT-2 model, developed by Venkatesh et al. [39], was adapted for Turkish by Yılmaz and Kavanoz [69]. The adaptation process was carried out in multiple stages: forward–backward translation; a pre-test with two C1-level English proficiency samples; and retests for linguistic equivalence. In the application conducted with 723 prospective teachers, construct validity was ensured through explanatory factor analysis (EFA) and CFA; Cronbach's α values were between 0.76 and 0.93, and the total internal consistency coefficient was 0.97. Thus, the suitability of the scale for the Turkish culture was demonstrated. The EFA results, Kaiser–Meyer–Olkin (KMO) value of 0.97 and Bartlett sphericity test results were statistically significant [83] ($\chi^2 = 15771.395$, SD 378, $p < 0.000$). The UTAUT-2 model consists of the following dimensions: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habitat and behavioral intention [69].

3.3.2. The EQAS-SF

The EQAS-SF developed [21] was adapted for Turkish by Deniz et al. [33]. The adaptation process included translation and back-translation, expert evaluation and cultural adaptation after permission was obtained by contacting the developer. In the pilot study conducted with 464 adults, a high correlation ($r = 0.91$) was found between the English and Turkish forms and the validity of the scale was ensured with structural validity (EFA and CFA), internal consistency ($\alpha = 0.81$) and test–retest reliability (0.86) analyses. The KMO sample concordance coefficient was 0.89, and the Bartlett sphericity test result was significant as $\chi^2 = 3139.35$ ($p < 0.001$). In the Turkish adaptation, Cronbach's α coefficients were 0.72 for well-being, 0.70 for self-control, 0.66 for emotionality, 0.70 for sociability and 0.81 for the general scale, and the test–retest reliability coefficient was 0.86. The original form of the scale is a 7-point Likert-type scale consisting of 30 items, whereas the Turkish short form contains 20 items. The subscales are subjective well-being (SWB), self-control (SC), emotionality (E), sociability (SM) and global emotional intelligence (GEQ) [33].

3.4. Data analysis

For this study, descriptive statistics, normality tests, item analyses and correlation analyses were employed using SPSS version 28; furthermore, CFA and structural equation modeling were conducted using SPSS Amos version 28. Demographic data were analyzed using percentages and frequency statistics. CFA was performed to assess the construction validity of the EQAS-SF and UTAUT-2. The mediation effect method based on the bootstrap technique developed by Hayes [84] was applied to examine the mediation effect.

Although Harman's single-factor test is a commonly used diagnostic for assessing common method variance (CMV), it has been widely criticized for its inability to distinguish between method and trait variance [85,86]. In this study, CMV was not formally assessed using either a one-factor model or a latent method factor model, which are recommended CFA-based alternatives. Therefore, the potential for CMV cannot be entirely ruled out, and this is acknowledged as a study limitation.

3.4.1. Correlation analysis of research variables

Pearson's correlation analysis was conducted to determine the relationships between the study variables. Overall, strong positive associations were observed between most of the key variables, especially between performance expectancy, effort expectancy, social influence, facilitating conditions and hedonic motivation. In contrast, EQ consistently showed weaker correlations with other factors, suggesting a relatively more independent or weaker relationship. These findings suggest that while the basic constructions are closely related, EQ may play a more prominent role within the model. Detailed correlation coefficients are presented in Table 1.

3.4.2. Descriptive statistics for UTAUT-2 and the EQAS-SF

The means, standard deviations, number of questions on each scale and scale levels of the variables used in the study are presented as descriptive statistics.

The descriptive characteristics of the variables used in this study, as well as the mean, number of questions, standard deviation and scale level of the scales, are presented in Table 2. The

Table 1. Correlation coefficient between variables.

Variable		PE	EE	SI	FC	HM	PV	H	BI	EQ
PE	Pearson's correlation	1	–	–	–	–	–	–	–	–
	p	–	–	–	–	–	–	–	–	–
EE	Pearson's correlation	0.802**	1	–	–	–	–	–	–	–
	p	<0.001	–	–	–	–	–	–	–	–
SI	Pearson's correlation	0.737**	0.768**	1	–	–	–	–	–	–
	p	<0.001	<0.001	–	–	–	–	–	–	–
FC	Pearson's correlation	0.710**	0.804**	0.792**	1	–	–	–	–	–
	p	<0.001	<0.001	<0.001	–	–	–	–	–	–
HM	Pearson's correlation	0.779**	0.785**	0.764**	0.807**	1	–	–	–	–
	p	<0.001	<0.001	<0.001	<0.001	–	–	–	–	–
PV	Pearson's correlation	0.645**	0.700**	0.691**	0.746**	0.749**	1	–	–	–
	p	<0.001	<0.001	<0.001	<0.001	<0.001	–	–	–	–
H	Pearson's correlation	0.638**	0.679**	0.695**	0.763**	0.695**	0.760**	1	–	–
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–	–	–
BI	Pearson's correlation	0.685**	0.694**	0.614**	0.693**	0.700**	0.714**	0.788**	1	–
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–	–
EQ	Pearson's correlation	0.243**	0.252**	0.267**	0.250**	0.259**	0.209**	0.246**	0.266**	1
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–

**Correlation significant at the 0.01 level ($p < 0.01$), two-tailed.
Note: $N = 607$. BI = behavioral intention; EE = effort expectancy; EQ = emotional intelligence; FC = facilitating conditions; H = habit; HM = hedonic motivation; PE = performance expectancy; PV = price value; SI = social influence.

Table 2. Descriptive statistics for UTAUT-2 and the EQAS-SF.

Variable	Scale sub-dimension	Mean	Number of questions	*SD*	Scale level
UTAUT-2	PE	5.35	4	1.25	7-point Likert scale
	EE	5.19	4	1.22	7-point Likert scale
	SI	5.08	3	1.36	7-point Likert scale
	FC	4.99	4	1.31	7-point Likert scale
	HM	5.03	3	1.33	7-point Likert scale
	PV	4.94	3	1.46	7-point Likert scale
	H	4.85	4	1.30	7-point Likert scale
	BI	5.33	3	1.34	7-point Likert scale
EQAS-SF	SWB	5.36	4	1.18	7-point Likert scale
	SC	4.56	4	1.13	7-point Likert scale
	E	4.17	4	1.34	7-point Likert scale
	SM	4.78	4	0.91	7-point Likert scale
	GEQ	4.98	4	0.92	7-point Likert scale
EQAS-SF (total)		4.77	20	0.74	7-point Likert scale

Note: BI = behavioral intention; E = emotionality; EQAS-SF = emotional intelligence trait scale – short form; EE = effort expectancy; FC = facilitating conditions; GEQ = global emotional intelligence; H = habit; HM = hedonic motivation; PE = performance expectancy; PV = price value; SC = self-control; SI = social influence; SM = social management; SWB = subject well-being; UTAUT-2 = unified theory of acceptance and use of technology-2.

highest mean scores were found for performance expectancy (5.35) and behavioral intention (5.33), suggesting that users had high expectations regarding the performance of these technologies and were considering using them. Medium and low mean scores were observed for habit (4.94) and price value (4.85), respectively, indicating that users had fewer positive attitudes toward these factors. On the EQ scale, SWB (5.36) had the highest meaning whereas E (4.17) had the lowest meaning, indicating that participants generally had moderate EQ but scored lower on emotionality. The standard deviations on the scales were generally > 1, indicating some variation in participants' responses.

3.4.3. Normality analysis

The normality of data was examined with the arithmetic mean, mode, median, skewness and kurtosis values; these values (Table 3) met the normal distribution assumptions as being between −1.5 and +1.5 [87] or between −2.0 and +2.0 [88]. Detailed information on the normality of the data is presented in Table 3, which shows that there are no missing values and that the skewness and kurtosis coefficients exhibit a normal distribution.

3.4.4. Confirmatory factor analysis

An eight-factor structure was examined using UTAUT-2. In this structure, there are four items each for performance expectancy, four for effort expectancy, three for social influence, four for facilitating conditions, three for hedonic motivation, three for price value, four for habit and three for behavioral intention. According to the CFA results, the model fit criteria were as Chi-Square Minimum (CMIN) follows: CMIN = 1339.457, $df = 322$, CMIN / $df = 4.160$, $p < 0.001$, root mean square error of approximation (rmsea) = 0.072, comparative fit index (CFI) = 0.947 and goodness-of-fit index (GFI) = 0.864. Because these criteria were not within the desired limits, the modification indices were examined, and the goodness-of-fit indices were corrected by matching the error pairs with high values. Based on the modification indices, the correlation of some error terms was allowed to improve model fit. As a result, it was seen that the model that emerged fit well according to generally accepted criteria.

The CFA results for the UTAUT-2 model were consistent with the goodness-of-fit values after final adjustments according to the excellent and acceptable fit criteria [89,90] (Table 4).

The five-factor structure was examined using the EQAS-SF scale. In this structure, there were four items for SWB, four for SC, four for E, four for SM and four for GEQ. The CFA results showed that the model fit criteria were CMIN = 1513.388, $df = 160$, CMIN / $df = 9.459$, $p < 0.001$,

Table 3. Skewness and kurtosis values of the variables used in this study.

Scale sub-dimension	Arithmetic mean	Mode	Median	*SD*	Skewness	Skewness standard error	Kurtosis	Kurtosis standard error
PE	5.35	5.45	5.75	1.25	−0.92	0.09	0.67	0.19
EE	5.19	5.29	5.50	1.22	−0.78	0.09	0.52	0.19
SI	5.08	5.18	5.33	1.36	−0.75	0.09	0.22	0.19
FC	4.99	5.09	5.00	1.31	−0.059	0.09	0.00	0.19
HM	5.03	5.14	5.33	1.33	−0.66	0.09	0.13	0.19
PV	4.85	4.95	5.00	1.30	−0.45	0.09	−0.22	0.19
H	4.94	5.02	5.25	1.46	−0.72	0.09	−0.06	0.19
BI	5,33	5,44	5,66	1,34	−1.01	0.09	0.78	0.19
SWB	5,36	5,45	5,75	1,18	−1.01	0.09	0.94	0.19
SC	4,50	4,60	4,50	1,13	−0.77	0.09	−0.03	0.19
E	4,17	4,24	4,50	1,34	−0.82	0.09	−0.14	0.19
SM	4,78	4,85	4,75	0,91	−0.54	0.09	0.22	0.19
GEQ	4,98	5,05	5,25	0,92	−0.70	0.09	0.67	0.19

Note: BI = behavioral intention; E = emotionality; EE = effort expectancy; FC = facilitating conditions; GEQ = global emotional intelligence; H = habit; HM = hedonic motivation; PE = performance expectancy; PV = price value; SC = self-control; SI = social influence; SM = social management; SWB = subject well-being.

Table 4. Goodness-of-fit results for the UTAUT-2 CFA model.

Compliance criterion	Perfect fit criteria	Acceptable fit criteria	First model	Latest model	Result
χ^2/df	$\chi^2/df \leq 3$	$\chi^2/df \leq 5$	4.163	3.079	Acceptable fit
GFI	$0.90 \leq GFI \leq 1$	$0.85 \leq GFI < 0.90$	0.865	0.901	Perfect fit
rmsea	$0 < rmsea \leq 0.05$	$0.05 < rmsea \leq 0.08$	0.072	0.059	Acceptable fit
CFI	$0.95 \leq CFI \leq 1$	$0.90 \leq CFI < 0.95$	0.947	0.966	Perfect fit
TLI	$0.95 \leq TLI \leq 1$	$0.90 \leq TLI < 0.95$	0.938	0.959	Perfect fit
IFI	$0.95 \leq IFI \leq 1$	$0.90 \leq IFI \leq 0.95$	0.947	0.966	Perfect fit

Note: CFA = confirmatory factor analysis; CFI = comparative fit index; GFI = goodness-of-fit index; IFI = incremental fit index; rmsea = root mean square error of approximation; TLI = Tucker–Lewis index; UTAUT-2 = unified theory of acceptance and use of technology-2.

rmsea = 0.118, CFI = 0.728 and GFI = 0.742. Since these criteria were not within the desired limits, items with factor loadings below 0.50 (GEQ item 3, GEQ item 2, SC item 3, SM item 1, SM item 3 and E item 3) were removed from the analysis, and the analysis was repeated. The Turkish adaptation process of the EQAS-SF was carried out by considering expert opinions and statistical indicators together. As a result of the evaluations made by the three experts, it was determined that the removed items preserved the conceptual integrity of the model and improved the fit criteria. Experts examined the articles for conceptual consistency and cultural relevance; they suggested that items which were found to contain conceptual repetition or did not sufficiently overlap with the theoretical structure should be removed from the scale. Despite this elimination process, expert opinions have confirmed that the remaining substances retain their power to represent the structure. In addition, correlation between some error terms was allowed in line with the modification indices, and when the model was re-estimated it was found that the fit indices were acceptable or good [89,90] (Table 5).

3.4.5. Reliability analysis

Cronbach's α coefficients were calculated to assess the reliability of UTAUT-2 and the EQAS-SF. The total reliability of the questionnaire (42 items) was $\alpha = 0.94$, indicating very high internal consistency. Cronbach's α for the UTAUT-2 model (28 items) was 0.97, while the α value for the EQAS-SF (14 items) was 0.74.

In addition to total scores, reliability coefficients were also calculated for the subscales of both instruments. The subscale α values for the UTAUT-2 model and the EQAS-SF, which demonstrate acceptable to high internal consistency, are reported in Tables 6 and 7.

4. Analysis and results

4.1. Demographic findings

Of the participants, 262 (43.2%) were female and 345 (56.8%) were male. The age group with the highest percentage of participants in this study is 18–24 years, with 204 participants

Table 5. Goodness-of-fit results for the EQAS-SF CFA model.

Compliance criterion	Perfect fit criteria	Acceptable fit criteria	First model	Latest model	Result
χ^2/df	$\chi^2/df \leq 3$	$\chi^2/df \leq 5$	9.459	1.753	Perfect fit
GFI	$0.90 \leq GFI \leq 1$	$0.85 \leq GFI < 0.90$	0.742	0.974	Perfect fit
rmsea	$0 < rmsea \leq 0.05$	$0.05 < rmsea \leq 0.08$	0.118	0.035	Perfect fit
CFI	$0.95 \leq CFI \leq 1$	$0.90 \leq CFI < 0.95$	0.728	0.985	Perfect fit
TLI	$0.95 \leq TLI \leq 1$	$0.90 \leq TLI < 0.95$	0.677	0.979	Perfect fit
IFI	$0.95 \leq IFI \leq 1$	$0.90 \leq IFI \leq 0.95$	0.729	0.985	Perfect fit

Note: CFA = confirmatory factor analysis; CFI = comparative fit index; EQAS-SF = emotional intelligence trait scale – short form; GFI = goodness-of-fit index; IFI = incremental fit index; rmsea = root mean square error of approximation; TLI = Tucker – Lewis index;

Table 6. UTAUT-2 reliability test results.

Scale	Cronbach's α	Standardized Cronbach's α coefficient	Number of articles	Reliability level
PE	0.92	0.92	4	Extremely reliable
EE	0.94	0.94	4	Extremely reliable
SI	0.87	0.87	3	Extremely reliable
FC	0.91	0.91	4	Extremely reliable
HM	0.94	0.94	3	Extremely reliable
H	0.93	0.93	4	Extremely reliable
PV	0.86	0.86	3	Extremely reliable
BI	0.94	0.94	3	Extremely reliable
UTAUT-2 (total)	0.97	0.97	28	Extremely reliable

Note: BI = behavioral intention; EE = effort expectancy; FC = facilitating conditions; H = habit; HM = hedonic motivation; PE = performance expectancy; PV = price value; SI = social influence; UTAUT-2 = unified theory of acceptance and use of technology-2.

Table 7. EQAS-SF reliability test results.

Scale	Cronbach's α	Standardized Cronbach's α coefficient	Number of articles	Reliability level
SWB	0.83	0.84	4	Extremely reliable
SC	0.73	0.73	3	Very reliable
E	0.72	0.72	3	Very reliable
SM	0.67	0.67	2	Very reliable
GEQ	0.71	0.72	2	Very reliable
EQAS-SF (total)	0.74	0.73	14	Very reliable

Note: E = emotionality; EQAS-SF = emotional intelligence trait scale – short form; GEQ = global emotional intelligence; SC = self-control; SM = social management; SWB = subject well-being.

(33.6%). The age group of 45 years and over had the lowest number of participants at 88 (14.5%). When the distribution of the employees participating in the study was examined in terms of educational level, it was observed that the lowest was primary school with eight (1.3%) and the highest was the associate degree level with 252 (41.5%). When the hazard group of the sectors in which the participants worked was analyzed, 223 (36.7%) worked in the less hazardous sector, 199 (32.8%) in the very hazardous sector and 185 (30.5%) in the hazardous sector. It is stated that 189 (31.1%) of the research employees have a high monthly income level of minimum wage–TL 19,990 and 33 (5.4%) employees have TL 50,000 and above. When professional experience was analyzed, 231 (38.1%) participants had worked for more than 10 years, 178 (29.3%) for 0–1 years, 127 (20.9%) for 3–10 years and 71 (11.7%) for 1–3 years. When the experience of the participants in the study on the use of OHS-PCTs was examined, 298 (49.1%) had 0–1 years, 123 (20.3%) had 3–10 years, 103 (17.0%) had more than 10 years and 83 (13.7%) had 1–3 years. Regarding the PPE usage status of employees participating in this study, 434 (71.5%) stated that they used PPE at a high rate, while 173 (28.5%) stated that they did not use PPE.

4.2. Results of mediation analysis

The bootstrap technique-based mediation effect method developed by Hayes [84] was used to study the mediation effect. In the analysis using the boot technique, 5000 resampling options were preferred. This method indicates whether an indirect effect is significant across confidence intervals (CIs). The lower and upper limit values of the 95% CIs for the path coefficients were also examined [91]. The results suggest that EQ partially mediates various associations between UTAUT-2 predictors and behavioral intent.

According to the results of the analysis, performance and effort expectations had strong and direct positive effects on behavior intention, and EQ partially mediated these relationships. Similarly, the variables of social influence, facilitating conditions, hedonic motivation, price value and habit positively affected behavior intention directly and indirectly through EQ, and partial mediation was determined in these variables. The mediating role of EQ was more limited compared to other variables, especially in the variables of habit and facilitating conditions. These findings suggest that EQ partially mediates the relationships between key determinants and behavioral intentions. Detailed path coefficients, significance levels and described variance values are presented in Table 8.

5. Discussion

This study shows that EQ positively and significantly affects employees' behavioral intention to accept and use OHS-PCTs. Statistical analyses show that the effect of EQ on behavioral intention is significant but has limited explanatory power. This suggests that EQ is not a determining factor in employees' acceptance of OHS-PCTs but is a significant contributor to psychosocial factors. These findings suggest that EQ may play an indirect but strategic role in shaping behavioral intention toward technology. Enhancing EQ can increase an individual's success in social relationships and job performance by promoting positive behaviors. Empirical findings on the effects of EQ on managerial effectiveness [92], employee engagement, job satisfaction [93], turnover intention [94] and improving safety management practices and safety climate in the construction industry [95] suggest that strategic management of people's skills at the individual and organizational levels is an important element for sustainable performance and workforce continuity.

The findings suggest that EQ partially mediates the relationship between performance expectancy and behavioral intention and indirectly affects behavioral intention by shaping individuals' perceptions of finding technology useful. Statistical analyses revealed significant relationships between performance expectancy and behavioral intention, between performance expectancy and EQ, and between EQ and behavioral intention. These findings emphasize the interaction between affective and cognitive components and suggest that performance expectancy positively affects EQ and strengthens individuals' beliefs about using the OHS-PCT. It has been stated that high EQ strengthens this effect and helps individuals to manage their emotional states at work better [96] Recognizing the efforts of individuals with a high need for achievement can positively affect their commitment and performance [97]. Studies on the impact of EQ on OHS have shown that EQ plays an important role in improving the safety performance of employees in the oil and gas industry [9,11]. It is emphasized that the effect of EQ on job performance and safety behaviors is related to employees' social interactions and their reactions to job stress [98]. In addition, it has been stated that EQ is of great importance for the success of accident prevention and safety management strategies, because employees' EQ levels interact with performance expectations and safety management [99].

Table 8. Coefficients of associations in the mediation analysis.

Variable	β_0	β_1	*SE*	CR	*p*	R^2	Result		
BI	←	EQ	0.205	0.069	0.013	5.155	***	0.042	H_1: support
BI	←	PE	0.671	0.538	0.024	22.348	***	0.470	H_{2a}: support
EQ	←	PE	0.197	0.467	0.094	4.949	***	0.039	H_{2b}: support
BI	←	EQ	0.073	0.025	0.01	2.421	0.015	0.475	–
Indirect effect	–	–	0.011 (0.002–0.025)	–	–	H_2: support			
BI	←	EE	0.680	0.559	0.024	22.898	***	0.482	H_{3a}: support
EQ	←	EE	0.200	0.485	0.097	5.017	***	0.04	H_{3b}: support
BI	←	EQ	0.069	0.023	0.010	2.325	0.02	0.486	–
Indirect effect	–	0.011 (0.001–0.025)	H_3: support						
BI	←	SI	0.597	0.59	0.032	18,267	***	0.377	H_{4a}: support
EQ	←	SI	0.215	0.626	0.116	5.41	***	0.046	H_{4b}: support
BI	←	EQ	0.077	0.026	0.011	2.348	0.019	0.382	–
Indirect effect	–	0.016 (0.002–0.035)	H_4: support						
BI	←	FC	0.68	0.521	0.023	22.839	***	0.481	H_{5a}: support
EQ	←	FC	0.201	0.456	0.09	5.061	***	0.041	H_{5b}: support
BI	←	EQ	0.068	0.023	0.01	2.289	0.022	0.485	–
Indirect effect	–	0.011 (0.001–0.023)	H_5: support						
BI	←	HM	0.687	0.691	0.03	23.272	***	0.490	H_{6a}: support
EQ	←	HM	0.208	0.618	0.118	5.244	***	0.043	H_{6b}: support
BI	←	EQ	0.062	0.021	0.01	2.089	0.037	0.494	–
Indirect effect	–	0.013 (0.001–0.029)	H_6: support						
BI	←	PV	0.700	0.721	0.029	24.471	***	0.510	H_{7a}: support
EQ	←	PV	0.164	0.500	0.122	4.095	***	0.027	H_{7b}: support
BI	←	EQ	0.090	0.087	0.01	3.154	0.002	0.518	–
Indirect effect	–	0.015 (0.004–0.031)	H_7: support						
BI	←	H	0.778	0.536	0.018	30.577	***	0.621	H_{8a}: support
EQ	←	H	0.197	0.400	0.081	4.937	***	0.039	$H8_b$: support
BI	←	EQ	0.052	0.018	0.009	2.046	0.041	0.623	–
Indirect effect	–	0.007 (0.000–0.016)	H_8: support						

***$p < 0.001$.

Note: β_0 = standardized path coefficient; β_1 = non-standardized path coefficient; BI = behavioral intention; CR = critical ratio; EE = effort expectancy; EQ = emotional intelligence; FC = facilitating conditions; H = habit; HM = hedonic motivation; PE = performance expectancy; PV = price value; R^2 = coefficient of determination; SI = social influence.

EQ partially mediated the relationship between effort expectancy and behavioral intention in employees' acceptance and use of OHS-PCTs. The findings show that effort expectancy positively and significantly affects both EQ and behavioral intention. This shows that individuals with high EQ have lower perceived effort levels toward cognitive and technical challenges in learning and using health and safety technologies, such as OHS-PCT, and therefore develop higher behavioral intention. These findings support the fundamental role of effort expectancy in technology acceptance, as reported by Venkatesh and Davis [20], while providing a new perspective on how individual and emotional characteristics, such as EQ, regulate this effect. This highlights the importance of integrating emotional competencies into the TAM. This suggests that it is important to consider individual emotional resources in management strategies, particularly in OHS-oriented technological transformation processes that require high stress and rapid adaptation [100,101].

According to this study, EQ partially mediates the relationship between social influence and behavioral intention. Moreover, the effect of social influence on EQ was highly significant, and EQ explained 38.2% of the variance in behavioral intention. These results are consistent with those reported by Venkatesh and Davis [20] suggesting that the sensitivity of individuals to social expectations of their environment affects their intention to use technology. Furthermore, the results offer a new perspective on how EQ shapes the perceptual and behavioral consequences of social influence on individuals. EQ can improve decision-making skills by separating intrinsic motivation from extrinsic social pressures [64]. The findings reveal that EQ can strengthen individuals' behavioral intention by reframing their perceptions of social influence and function as a transformative mechanism for this influence. Individuals with high EQ can positively influence safety culture through empathic communication and effective social interaction skills [17,102], and can contribute to the creation of safe work environments by increasing employees' safety awareness at work [103,104]. Given the effective role of EQ and social interaction in adopting these tools, EQ and leadership skills training for employees can increase the widespread use of the OHS-PCT [95]. Petitta et al. [105] emphasized the effects of emotional contagion in the workplace on cognitive failure and occupational safety, stating that social interactions can have a significant impact on occupational accidents and injuries.

Although the effect of facilitating conditions on EQ is limited, it was confirmed that EQ partially mediates through its positive effect on behavioral intention, and H_5 is supported. Individuals with high EQ have an advantage in evaluating environmental resources and coping with uncertainty [106], which may influence their perceptions of available support opportunities. Sunindijo and Zou [95] showed that EQ enhances and facilitates employee performance in safety management tasks in construction environments. Wang et al. [99]

emphasize that systems thinking helps us understand the complex interactions of factors that support the effective use of technology, whereas EQ plays an important role in managing these interactions and strengthening employees' intentions to accept and use technology. Alkozei et al. [107] emphasized the importance of EQ in the decision-making processes of individuals and organizations. They provide important insights into how they can be used for technology adoption and interactions [107].

This study shows that hedonic motivation significantly and positively affects employees' intention to use OHS-PCTs, both directly and indirectly, through EQ. EQ directly affects this process through the individual's ability to maintain positive emotions and intrinsic motivation. Individuals with high EQ enjoy using technology more [74], thereby contributing to technology adoption. This study highlights the role of hedonic motivation in technology acceptance and offers new theoretical perspectives on how EQ regulates this process. Nkrumah et al. [108] showed that OHS management practices support the mediating role of work motivation and hedonic motivation in improving job performance, whereas EQ positively affects hedonic motivation by improving stress management and satisfaction at work [109]. Employees' ability to regulate their emotional reactions and improve their interpersonal relationships increases their job satisfaction and enjoyment by enhancing their hedonic motivation at work, resulting in greater energy, effort and commitment [110]. Accordingly, the development of habituation and hedonic motivation influence behavior. If people find it fun, enjoyable and beneficial to their physical health, they will engage in more usage behaviors [111]. Vinodkumar and Bhasi [112] emphasized that safety management practices can reduce occupational accidents by shaping employee safety attitudes through hedonic motivation and EQ.

This study reveals that price value perception, one of the sub-dimensions of the UTAUT-2 model, has a significant and positive effect on employees' behavioral intention to use OHS-PCT, both directly and indirectly through EQ. These findings support H_6 by emphasizing the role of EQ on the effect of price value. Price value refers to a cognitive appraisal in which individuals compare the benefits of technology use with the costs [76], and has been identified as an important determinant in the UTAUT-2 model [39]. Individuals with high EQ tend to perceive technology use as a more meaningful process by reframing their perceived costs [113]. The cognitive reappraisal ability of the EQ leads to lower burdens and more salient perceptions of benefits toward technology, increasing behavioral intention. EQ partly mediates this because individuals with high EQ can transform cost evaluations into more positive behavioral intention [114].

The fact that habit explains 62.1% of the variance in behavioral intention reveals that habit is a determining factor in the continuity of technology use, and this finding is in line with the UTAUT-2 approach [39]. Although the direct effect of EQ on behavioral intention remained low, individuals with high EQ were more likely to sustain technology use by internalizing positive emotional experiences [79,80]. Some commonly used human performance improvement tools include organizing pre- and post-task briefings, peer checking and ‘take a minute,’ STAR (Stop-Think-Act-Review), and procedures for employees who believe they do not have the appropriate information to safely proceed with the task [115]. These systematic approaches are designed to make employee behavior safer and more productive. These tools enable employees to habituate safety-oriented behaviors. This encourages regular practice of techniques and procedures to reduce errors and improve safety [116]. EQ plays an important role in accepting and effectively using OHS technologies by helping employees develop positive habits toward technology [117]. Management commitment to safety and employees' safety habits improves the performance of correct behavior change by increasing the effective use of OHS technologies [118]. Beatty and Beatty [119] state that individual characteristics are determinants of compliance with OHS rules and that compliance attitude, habit, behavioral intention and involvement in previous accidents are strongly associated with violations.

According to the literature, the mediating effect of EQ is generally more pronounced in attitudinal and motivational factors but may be more limited in habitual or structural determinants [120,121]. This is in line with the findings of our study and supports that EQ plays a contextual role in shaping behavioral intentions.

5.1. Limitations and further work

This study has some limitations. The sample was limited to 607 employees using OHS-PCTs in Turkey. It may not be possible to generalize the results directly to different cultural hazard classes between workplaces, sectoral and technological contexts; therefore, it is recommended that similar studies be conducted in different sectors and geographies to increase the external validity of the findings. Thus, more comprehensive conclusions can be drawn regarding the universality of the findings. In this study, CMV was not tested separately using alternative methods based on CFA, such as the single-factor CFA model or the latent factor model. Therefore, common method bias arising from the data structure could not be eliminated, which is considered a significant limitation of the study.

6. Conclusion and suggestions

In the process of OHS-PCT acceptance and effective use, the effect of the sub-dimensions of the UTAUT-2 model such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit on the behavioral intention of employees increased partially with the mediating role of EQ; thus, it was seen as a result of the findings that this model provides an important framework in reinforcing safe behaviors and preventing occupational accidents and occupational diseases. These findings suggest that EQ may play an indirect but strategic role in shaping behavioral intention toward technology. Therefore, it is important for organizations to positively associate users' first contact experiences with technology by supporting EQ development. Based on these findings, we offer several practical recommendations.

Integrating EQ-based approaches can increase workplace safety and well-being by improving employees' self-awareness, self-management, empathy and social skills. Structured EQ training programs significantly increase employee competencies, particularly in stress management, leadership and communication [122–127]. Furthermore, role-based EQ development modules for team leaders in communication, conflict management and coping with stress significantly improve team performance and workplace well-being [128–130]. A leader conflict management style directly affects

team innovation and psychological safety, while collaborative management styles reduce employees' stress levels and increase cooperation [131,132]. AI-based mood monitoring systems provide real-time tracking of employees' emotional states, enabling the early detection of signs of stress and burnout and offering personalized psychosocial support [133–135]. Additionally, including EQ components in psychosocial risk assessment forms aims to understand individuals' stress responses and increase the effectiveness of interventions [136]. Assessment tools that incorporate EQ can offer a more detailed understanding of psychosocial risks by assessing emotional responses along with traditional stressors. The development of standardized EQ-inclusive questionnaires would facilitate better comparisons across studies and settings, and address the existing gaps [137–139]. Mentoring and peer support groups also play important roles as social mechanisms that support EQ development; these structures increase individuals' emotional resilience and create inclusive environments [140,141]. Therefore, it is recommended that various strategies be implemented to support EQ development in workplaces, which will contribute to strengthening the OHS culture and integrating human factors with technological solutions.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Ethical approval

The Ethics Committee at the Marmara University Institute of Science and Technology found no unethical findings in the information regarding the data collection tools and methods used in the study, which consequently received ethical approval (approval no.: E-44174047-302.14.01-512814 388101/2000000485, approval date: March 29, 2023).

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