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The Roles of Cognitive Styles and Emotional Intelligence on Job Performance

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Abstract

Over the years, construction scholars have identified the essence of professionals' cognitive styles and emotional intelligence in project delivery. This study contributes to the ongoing discussion on the construction stakeholders' job performance by identifying the direct and indirect influence of cognitive styles (knowing, planning, and creating styles) and underlying emotional intelligence dimensions (self-emotional appraisal, use of emotion, regulation of emotion and other's emotional appraisal) on construction professionals' job performance. Using survey data from Sarawak construction consultants, the population stood at 311, while 180 were sampled for this study. Structural equation modelling (SEM) was used to confirm the underpinning cognitive-motivational relational theory (CMRT) and the role of cognitive styles in emotional intelligence and job performance link. The findings demonstrated the mediating role of cognitive styles on the emotional intelligence and job performance relationship. The limitations and future research directions are also discussed.

Keywords: Job Performance, Cognitive Styles, Emotional Intelligence, Construction Consultants, Pls-Sem, Malaysia

Introduction

The construction industry is made up of professionals whose various disciplines are to ensure that construction project can be completed, and their performance is a factor that determines the long-term effect of the project they produce. So many issues, over the years, constituted problems for construction professionals, most importantly, the project time frame. Yap et al., (2019) identified six major underlying dimensions of these proble: a three-dimensional (3D) stigma, poor site coordination and management, incompetency of construction stakeholders, slow technology adoption, haphazard decision-making, and inefficient administrative processes. Equally, time overrun, cost overrun, dispute, loss of profit, arbitration, claims,

contract termination, litigation, poor quality of work, and total project abandonment were the main effects of delay in Malaysian building projects (Yap et al., 2019). Ramli et al., (2018) also reported that 79.5% of private and 66.7% of public projects out of 359 in Malaysia were not completed within the contract's specified time, and 80% of Malaysian government projects were delayed**.** The severe issue of delay and budget overrun have a devastating impact on the present and future projects of a construction professional as well as the country's productivity and wealth generation, which are often linked to the emotional incompetence of construction professionals (Hanafi & Mohd Nawi, 2019; Munyug et al., 2020).

Project management and delivery aim to prevent defects during and after the project and to achieve success using efficient time management, overall cost control, and comprehensive, structured project planning that is not realised through technology or tools alone (Hanafi & Mohd Nawi, 2019). However, the underlying causes of these issues are rooted in human factors rather than technical issues. Still, the emphasis is more on the technical grounds rather than human actions behind the poor performance (Lawani & Moore, 2021)**.** For instance, ineffective communication and delegation of tasks, progress, or obstacles, the inefficient process of dissemination and use of information, and delay in identification of risk coupled with the delay of a prompt decision on short - and long-term issues, among co-professionals or employees are some of the non-technical causes of delay, cost overrun and low-quality project delivery (Butler & Chinowsky, 2006; Doloi, 2013; Hanafi & Mohd Nawi, 2019; Townsend & Gershon, 2020)

According to Saini & Soni, (2016), a high level of related emotional competencies results in better performance, management, and success. Emotional intelligence is considered a key to solving challenges in contemporary professional practices but is often neglected in workplace practice (Wagner, 2017). Emotional intelligence is proven to relate to a range of emotional and social skills beneficial for professional success, such as empathy, teamwork, communication, and negotiation (Sanchez-Gomez & Breso, 2020). Higher levels of emotional intelligence enable efficient management of the challenges and demands of the job, leading to increased job satisfaction (Ceballos et al., 2017). Efficacy in regulating and expressing emotions is critical for effective problem-solving and achievement and is especially important in managing stress and maintaining emotional balance in challenging situations (Fitzpatrick & Kuo, 2016; Ivcevic & Brackett, 2014). In addition, EI is a robust factor of personal success and organisational efficiency. For instance, emotionally intelligent people may accept, consistently handle, and effectively manage all emotions and make wise and judicious decisions (Unnikrishnan et al., 2019). Conversely, a deficiency in emotional intelligence has resulted in rude behaviour, such as difficulty in communicating and bullying the weak, among other negative behaviours (White & Grason, 2019).

Previous research has reported that aligning an individual's cognitive style with the task demands of their job leads to improved productivity (Armstrong, 2000; Güngör & Alp, 2019a; Juvina et al., 2018; Vanderheyden et al., 2010). Furthermore, a lack of critical analytical, leadership and motivational skills could lead to project failure (Iyer & Jha, 2005). Imam, (2021) asserted that well-managed cognitive styles are important for better output in construction. In addition, Cognitive style impacts how an individual's brain processes information from different environments and organises and interprets that information, ultimately shaping their behaviour, which explains why the wrong perception of stimuli and use of information can lead to conflict mismanagement in the case of change in demand of employees, co-professionals in the field or taste of clients, an important issue in project planning and

management of different project portfolios simultaneously. Cognitive style improves performance by allowing an individual to learn job-related knowledge and process information, leading to improved decision-making (Güngör & Alp, 2019b). Despite the significance of cognitive styles to employee functioning, they have received much less attention than is merited (Güngör & Alp, 2019a)

Based on the Cognitive Motivational Relational Theory (CMRT) and the Four-branch ability model, this study upholds the behavioural capabilities that are important for the performance of construction professionals. The behavioural capabilities, which include emotional intelligence and cognitive styles, are considered because these competencies will allow construction professionals perform favourably in a broader market spectrum, especially in large-scale markets (Teerajetgul et al., 2009).

This study adopted a dual approach to investigate the role of emotional intelligence and cognitive styles in facilitating job performance among construction professionals. Specifically, this investigation involved the theoretical development of a conceptual framework and an empirical examination of the impact of four dimensions of emotional intelligence and three dimensions of cognitive styles on job performance. These variables were considered first-order constructs to achieve a more parsimonious theoretical relationship and simplify model complexity.

The subsequent sections of the study were organised as follows: Firstly, the theoretical considerations underpinning the development of the research hypotheses were addressed. Secondly, research hypotheses were derived based on synthesising existing theoretical and empirical studies. Additionally, detailed information was presented regarding the questionnaire design, response rate, measures, validity, reliability, and hypotheses testing. The results of the empirical investigation were then reported in a subsequent section. Finally, the study concluded by discussing the managerial implications of the findings.

Theoretical Consideration

The Cognitive-motivational-relational theory (CMRT) is an extension of the cognitive appraisal theory proposed by Lazarus, (1991), which emphasises the critical role of cognitive processes involved in generation-specific emotions, which leads to eliciting specific behaviour responses towards a goal or outcome. The CMR theory suggests that emotion is a cognitive function resulting from a circumstance and that our stimulus appraisal determines an individual's emotions. It also indicates that our initial, unconscious evaluations mediate the link between a stimulus and an emotional response. These cognitive appraisals, a comprehensive review of various assessment components, are believed to be the primary factors determining our emotional reactions to specific individuals and their relevance to our goals (Uphill & Jones, 2007). Each underlying interpersonal theme has a connected action or consequence tendency that directly reflects the expression of the person's judgment of the stimulus concerning themselves. The proposition of this approach makes it useful (in this study) in explaining the relationship between emotional intelligence and job performance, as well as the mediating role of cognitive styles on the assumption that the central interactive theme and the related action tendency may have an impact on the performance conditional to the connection between a person and the environment or situation (Karimi et al., 2020; Rezwan & Takahashi, 2021; Uphill & Jones, 2007).

As indicated in Figure 1, there are three components of emotions: cognitive (individual's understanding and assessment of their environment), relational (emotions that vary over time and are related to an individual's relationship with their surroundings), and motivational

(emotions that pertain to the progress or fulfilment of one's goals). The implication is that the purpose of an individual's goal (in this case, job performance) will be influenced by the environment (cognitive styles), cognitive appraisal of the environment and subsequent emotional response based on this appraisal (Lazarus, 1991). Drawing on this theory concerning job performance, how a person understands and manages their emotions and those around them is crucial in determining their job performance (Karimi et al., 2020).

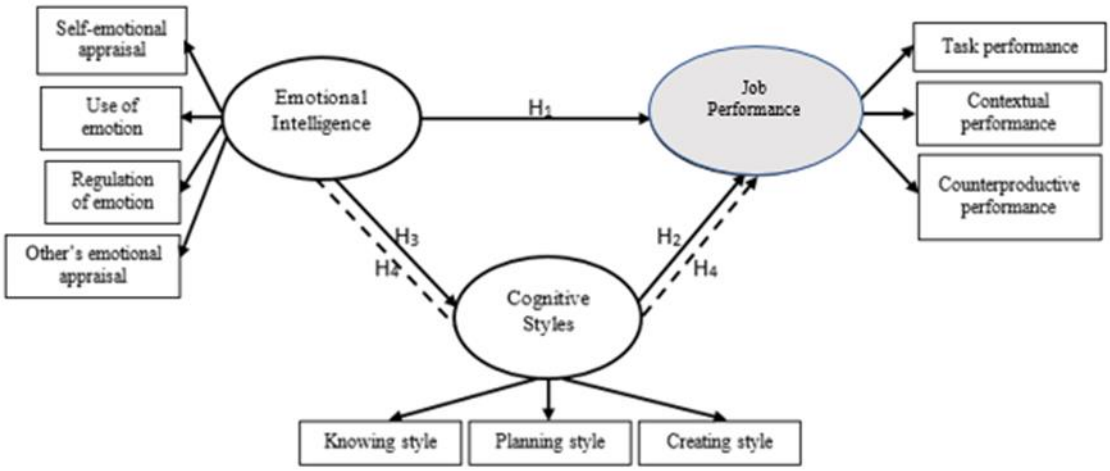

Figure 1: Conceptual Framework depicting the relationship between emotional intelligence and performance with cognitive styles acting as the mediator in the relationship.

Hypothesis Development

Emotional Intelligence and Construction Professionals' Job Performance

Emotional intelligence, as a skill set, has been acknowledged as a critical factor in facilitating the performance of construction consultants. Theory suggests that highly emotionally intelligent individuals demonstrate superior performance outcomes (Carmeli & Josman, 2006). Furthermore, a theoretical framework proposed by (Shahhosseini et al., 2012) highlights emotional intelligence as a crucial prerequisite for exceptional job performance in construction consulting. More importantly, several studies (Ashkanasy & Dorris, 2017; Kopp & Jekauc, 2018; Rezvani et al., 2020; Toyama & Mauno, 2016) also confirmed a substantial clear effect of emotional intelligence on job performance. (Newman et al., 2010) stated that, after adjusting the intelligence quotient and personality, the relationship between job performance and emotional intelligence became more vigorous. Research on the relationship between emotional intelligence and job performance has yielded mixed results (Motowildo et al., 1997). While some aspects of emotional intelligence are inconsistently linked to job performance (Bozionelos & Singh, 2017), utilising emotions to enhance performance is a crucial component of emotional intelligence. Specifically, leveraging emotions in targeted forms of cognitive processing, such as generating a positive mood, has been shown to enhance creativity, integrative thinking, and inductive reasoning.

Negative mood states may increase the likelihood of mistakes and errors during information processing (George, 2000). Despite the potential benefits of emotional intelligence for contemporary professional work, its application is often overlooked in practice (Zeidner et al., 2004). While there is limited empirical research on the relationship between emotional intelligence and the performance of construction professionals within the industry (Potter et al., 2018), emotional intelligence remains an interesting and emerging research area in

psychology that requires further investigation (Kukah et al., 2021). Therefore, this study aims to contribute to the existing research by examining the relationships between emotional intelligence, cognitive styles, and job performance among construction professionals, focusing on Sarawak. We hypothesise that:

H_1. EI is positively associated with Construction Professionals' Job Performance

Emotional Intelligence and Cognitive Styles

Salovey & Mayer, (1990) four-branch ability model of emotional intelligence is considered a seminal influence on constructing subsequent models and assessment tools for emotional intelligence. This model conceptualises emotional intelligence as a cognitive capability, positioning it as an intelligence type that incorporates the interplay between cognition and emotion (Wagner, 2017). The model postulates that emotions can influence cognitive processing and vice versa. Specifically, emotional intelligence is comprised of four branches: the capacity to accurately perceive emotions within oneself and others, the ability to use emotions to facilitate cognitive processes, the capacity to understand and interpret emotional cues, and the skill to manage emotions to achieve specific objectives (Lansigan, 2021)

EI involves using emotions properly and the interaction between cognition and emotion. It is believed that EI can improve thinking and intelligence, which highlights the correlation between cognitive style and emotional intelligence. An individual's cognitive styles can profoundly influence various aspects of their professional and personal development, including learning processes, emotional responses, problem-solving techniques, leadership and management styles, conflict resolution skills, stress-handling abilities, and coping mechanisms (Güngör & Alp, 2019a). In the long run, regulating emotions may lead to more flexible planning, multiple solutions to problems, and an expanded perception of challenges (Mayer et al., 2000), Whilst some perceive the expression of anger as a weakness. Emotionally intelligent individuals might use controlled anger expression to achieve desired outcomes. This can be applied to regulating emotions, especially when negotiating, which often requires emotion (Kumar & Oliver, 1997). According to Sternberg, (1994), in the mental self-government theory, people use 13 different thinking styles to manage their daily activities and work responsibilities to feel comfortable. Cognition and emotion are closely connected and influence the performance of everyday life activities (Delhom et al., 2020).

Goleman, (1998) posited that cognitive intelligence significantly predicts success in various life domains. Emotional intelligence, on the other hand, emphasises the use of emotion as a critical tool to enhance performance in specific forms of cognitive processing, such as creating a positive mood, which has been shown to improve creativity, integrative thinking, and inductive reasoning. In contrast, negative mood states increase the likelihood of mistakes and errors during information processing (George, 2000). While studies have demonstrated that emotional intelligence can be a more potent predictor of success than cognitive intelligence, there are also connections between both variables. Using multiple regression analysis, (Bar-On, 2006) studied the relationship between emotional intelligence and cognitive style and discovered a strong correlation between these variables. Furthermore, according to (Mischung et al., 2015) the perception of oneself and the ability to manage relationships, two components of emotional intelligence, can enhance the performance of construction management students. Hence, it is hypothesised that:

H_2. EI is positively associated with the Cognitive Styles of Construction Professionals

Cognitive Styles and Job Performance

Studies have shown that a person's cognitive style can significantly impact their job performance, especially in leadership positions. Cognitive inflexibility can lead to an

unyielding approach that can adversely affect personal and professional life (Odacı et al., 2021). Similarly, there is empirical evidence that cognitive styles influence creativity, interpersonal relationships, national culture, decision-making, management, and learning and information processing, all of which are critical components for productive performance (Armstrong et al., 2012). Moreover, an individual's cognitive style can determine their reaction to different situations (Streufert & Nogami, 1989). Bălău et al., 2019) conducted a study investigating the relationship between a team's experiential cognitive style, team performance, and workplace setting. Their findings indicated that teams with an experiential cognitive style were most productive in generating creative ideas in a neutral workplace environment without cues.

The impact of cognitive style on teamwork and interpersonal relationships has been well-documented in the literature. It has been observed that individuals and groups with more intuitive cognitive styles tend to prioritise social-emotional acts in task-focused behaviour, as compared to analytical teams (Armstrong, 2000). Consequently, understanding the cognitive styles of one's co-workers may facilitate more effective communication and information exchange within teams.

Furthermore, Jordan & Troth, (2004) demonstrated that problem-solving styles could significantly affect how work group's structure and complete tasks. This finding was arrived at through close observation, videotaping, and communication with individuals that formed a team for a particular job. The study confirms the strength of cognitive styles in moderating team behaviour and outcomes. (Garfield et al., 2001) contributed to this area of research by asserting that innovators in a team generate more novel ideas than adaptors, particularly in a virtual working environment. However, Kollmann et al., (2017) found that proactiveness diversity has a direct negative impact on team performance, while risk-taking diversity has an indirect negative impact by creating relationship conflict.

Creasy & Anantatmula, (2013) indicated the importance of a construction professional's cognitive ability and flexibility (a subcategory of personality dimensions) to project success. However, the contribution of personality characteristics to performance is yet to be established empirically. Vanderheyden et al., (2010) examined the effect of Cognitive styles on job performance using the Cognitive Style Indicator instrument for assessing differences regarding how people prefer to perceive, process, and structure information. The research findings suggest that diversity in cognitive styles does not necessarily result in improved team performance and that teams composed of similar individuals are not necessarily more efficient at making decisions, contrary to common assumptions.

H_3. CS is positively associated with Construction professionals' job performance.

Mediating effects of cognitive styles

Emotional intelligence (EI) suggests an individual's job performance is not solely determined by traditional abilities but also by their ability to manage emotions. However, conflicting research on the relationship between EI and job performance has led to a limited understanding of how this relationship occurs. Some studies suggest a positive correlation between EI and job performance (Ashkanasy & Dorris, 2017; Toyama & Mauno, 2016). For instance,Mohamad & Jais, (2016) found that emotional intelligence predicted the performance of Malaysian teachers, while Naz et al., (2021) reported a connection between emotional intelligence and university students' performance.

However, some studies report no relation or inconsistency between emotional intelligence and job performance. Schlaegel et al., (2022); Uslu & Uslu, (2019) reported variations in how different dimensions of emotional intelligence affect job performance, while Saklofske et al.,

(2007) found an unbalanced connection between emotional intelligence and performance on particular tasks. This ambiguity has led to critiques of the scientific status of EI in psychological research. Furthermore, a study on how EI impacts job performance during the COVID-19 crisis reported an inconsistency in the correlation between EI and the performance of certain nurses. More research is needed to fully understand the complex relationship between emotional intelligence and job performance.

Motowildo et al., (1997) identified cognitive styles as potential enhancers of job performance by applying knowledge, procedures, and relevant technical expertise. Emotional intelligence has been proposed as a complementary mechanism for augmenting job performance by fostering understanding and interaction with others' emotions (Côté & Miners, 2006). According to the study, analytic cognitive style, characterised by extensive mental stimulation, mediates the relationship between cognitive ability and belief-based response bias. Research has indicated that the reflective-analytic cognitive style is influenced by factors such as working memory capacity and thinking dispositions, impacting rational thinking (Viator et al., 2020).

As defined by Mayer et al., (2000), emotional intelligence represents a distinct contributor to job performance that remains unexplained by established constructs like emotional intelligence and cognitive ability. These factors exert independent and proportional linear effects on job performance. Nevertheless, disparities observed across studies have prompted researchers to propose mediating constructs for emotional intelligence and workplace performance (Van Rooy & Viswesvaran, 2004).

Carroll, (1993) posited that an individual's shortcomings in job performance could be offset by a high proficiency in a different performance-associated ability, founded on the principle that distinct skills can compensate for each other. Furthermore, distinctive characteristics may offset low cognitive intelligence (Viswesvaran & Ones, 2002), implying potential compensatory effects between diverse abilities. Interactive models suggest that certain abilities may exert a more pronounced influence on predicting job performance for individuals lacking other skills than those with a broader spectrum of performance-related capabilities. Nonetheless, as cognitive ability increases, the correlation between emotional intelligence and job performance is anticipated to diminish. Enhanced cognitive ability is consistently linked with superior job performance (Côté & Miners, 2006). Therefore, we contend that:

H_4. CS mediates the effects of EI on the job performance of construction professionals.

2. Method

2.1. Questionnaire development and sampling

The questionnaire for this study was adapted from previous studies. The instrument consisted of 3 parts: (1) EI, (2) Cognitive Styles, and (3) Job Performance. However, to ensure that the adapted indicators from previous studies are relevant to the domain of each construct, a pre-test involving three experts familiar with the constructs of this study was conducted. These experts were asked to complete the questionnaire and indicate if there was any ambiguity in the dictions of the questions. The researchers further refined the questionnaire to incorporate the inputs and suggestions of the experts into the final draft of the instrument. A pilot study was also conducted to pre-test the final instrument. Thirty (30) representatives of the construction professionals who are part of the target group participated in the pre-testing. The feedback from the pilot study was used to determine the internal consistency of the constructs.

The population of registered and active construction consultants registered with Unit Pendaftaran Kontraktor dan Juruperunding (UPKJ) i.e., The Contractor and Consultant Registration Unit in Sarawak, Malaysia, was obtained from the UPKJ website in 2022, and the population stood at 311. Accordingly, Krejcie & Morgan, (1970) generalised sample size parameters, which give a sample size of 180, are adopted in this study.

2.2. Response rate

The initial sample size of 180 questionnaires instruments were mailed to construction consultants registered with the Contractor and Consultant Registration Unit – Unit Pendaftaran Kontraktor dan Juruperunding (UPKJ) Sarawak, Malaysia only. As recommended by Sekaran & Bougie, (2016), several efficient methods can be utilised to enhance the response rates in an online survey, including sending follow-up emails and phone calls and keeping the questionnaire succinct mostly helps. Therefore, from the beginning of the 2nd week from the date the emails were sent, a reminder via email was sent to increase the response rate. Meanwhile, the survey was administered online due to the pandemic. Of the 180 mailed questionnaires, 78 responses were not received, with an equal percentage of 43.4%, and 102 questionnaires were received, an equivalent of 56.66%. Thus, 56.66% of the total questionnaires received concluded an effective sample of 102. Therefore, a 56.66% response rate is regarded as adequate for the analysis in this study; additionally, 30% response rate is sufficient for surveys, more importantly for a survey conducted online (Hair Jr et al., 2014; Sekaran & Bougie, 2016). The response rate was sufficient for validating the study's research model using PLS-SEM, which requires a minimum of ten times the number of predictors in the model (Chin et al., 2003). In addition, "SmartPLS" accepts a reasonably lower size of samples, as small as 50, for analysing data (Chin, 1998b). Therefore, a 180-sample size is considered sufficient in this study.

Table 1. Summary of response rate

Items	No of questionnaire	Percentage
Total questionnaires mailed	180	100
Unreturned questionnaire	88	43.4
Completed questionnaires received	102	56.6

Measures

As shown in Table 2, this study adapted Wong & Law Emotional Intelligence Scale (WLEIS), a short 16-item instrument by (Wong & Law, 2002) to measure emotional intelligence (EI) adapted from LaPalme et al., (2016) integrating a five-point scale, where 1 = strongly agree to 5 = strongly disagree. The instrument assessed four aspects of emotional intelligence: Self-Emotional Appraisal (SEA), Use of Emotion (UOE), Regulation of Emotion (ROE) and Others' Emotional Appraisal (OEA).

Cognitive styles were measured with the Cognitive Style Indicator (CoSI) developed by Cools & Van den Broeck, (2007). A total of 18 items were adapted to describe the three cognitive styles: Knowing, Planning, and Creating. The CoSI presented strong support for the reliability and validity of the measurement instrument in this research. The Likert scale ranged from 1 = strongly agree to 5 = strongly disagree.

Individual Work Performance Questionnaire (IWPQ), an 18-item scale developed by Koopmans, (2015), was used to measure three components of job performance: task performance, contextual performance, and counterproductive work behaviour. The items

have a 5-point rating scale (1 = strongly agree to 5 = strongly disagree) for all the dimensions. Five items were used to measure task performance, 8 for contextual performance, and 5 for counterproductive aspects (Koopmans et al., 2013).

Table 2. Summary of Variables and Measurement of Indicators

Variable	Literature Support	Dimensions	Scale	No. of questions
Emotional Intelligence	LaPalme et al., (LaPalme et al., 2016)	Self-Emotional Appraisal (SEA)	5-points	4
		Others' Emotional Appraisal (OEA)	5-points	4
		Regulation of Emotion (ROE)	5-points	4
		Use of Emotion (UOE)	5-points	4
Cognitive Styles	Cools, (Cools & Van den Broeck, 2007)	Knowing Style	5-points	4
		Planning Style	5-points	7
		Creating Style	5-points	7
Job Performance	Koopmans et al., (Koopmans, 2015)	Task Performance (TP)	5-points	5
		Contextual Performance (CP)	5- points	8
		Counterproductive Work Behaviour (CPWB)	5-points	5

Data screening and outlier analyses

Preliminary data screening involved the examination of potential violations of key assumptions associated with applying multivariate data analysis techniques(Hair et al., 2007). The evaluation encompassed assessments of normality and multicollinearity as prerequisites before the main data analysis. Examining missing values was unnecessary, given the study's adoption of an online survey methodology. It is worth noting that the web survey platform inherently verifies and enforces the submission of complete responses, ensuring that all data collected remains devoid of missing elements.

The term "normal distribution" describes a "balanced" and "bell-shaped" curve in research (Pallant, 2020), which implies that most of the scores are in the centre and minimal fall at the extremes (left and right). If the variance from the standard distribution is large, all subsequent statistical tests are null since the F and t-statistics depend on the presumption of normality (Newman et al., 2010). However, there are no specific values regarding the standard skewness and kurtosis to decide whether the data follow a normal distribution. Ghiselli et al., (1981) suggested that skewness and kurtosis's appropriate values should not exceed 2.0 and 5 in absolute values. The absolute skewness and kurtosis scores for job performance are -0.739 and 0.917 for contextual performance, -0.037 and 0.292 for Task performance and 0.112 and 0.393 for counterproductive work behaviour, respectively, for emotional intelligence, the absolute skewness and kurtosis -0.798 and 0.681 for EI (Emotional Intelligence). Moreover, skewness and kurtosis values for Cognitive styles are -0.898 and 0.474 (KS), -0.899 and 1.816 (PS) and -0779 and 1.662 (CSCS), respectively; therefore, the

skewness and kurtosis values for each latent variables in this study indicate that the data is normally distributed, this is because the scores are far away from the reasonably non-normal benchmark scores as recommended by West et al., (1995) and Curran et al., (1996). All the items in this study's variables have skewness and kurtosis scores of less than 2.0 and 5.0, indicating that all scores are absolute in value.

Table 3.
Normality Assessments

Construct Labels	Skewness	Kurtosis
KS	-.898	1.881
PS	-.899	1.816
CSCS	-.779	1.662
TP	-.739	.917
CP	-.037	-.292
CPWB	.112	-.393
EI	-.831	.936

The existence of multicollinearity usually leads to increased coefficient standard error scores (Hair et al., 2013). This research computes variance inflation factors (VIF) for each exogenous latent variable to detect collinearity. Kock, (2015) recommended a variance inflation factor (VIF) score higher than 5.0 to suggest multicollinearity problems. So, VIF was evaluated in the collinearity diagnostic procedures for values higher than the recommended limit value. Results revealed that all values are far below 5.0 for the VIF, indicating no common method bias, as shown in Table 4. Consequently, it can be assumed respondents' answers were not affected by "common method bias".

Table 4.
Variance Inflation Factors

Constructs	Item Code	VIF
Emotional Intelligence	EI	2.653
Knowing Styles	KS	3.168
Planning Styles	PS	3.014
Creating Style	CSCS	2.099

Dependent Variable: JP

Results

Demographics

A survey was administered to construction consultants registered with Unit Pendaftaran Kontraktor dan Juruperunding (UPKJ) Contractor and Consultant Registration Unit Sarawak, Malaysia. The survey instrument employed a five-point Likert scale to gauge respondents' perspectives on the influence of emotional intelligence and cognitive styles on the job performance of construction professionals. Out of the initial sample size of 180, 102 consultants provided complete responses, representing a response rate of 56.66%. These surveys were subjected to subsequent analysis.

Demographic attributes of the selected sample were documented in Table 5, encompassing variables such as gender, work experience, and operational location. Among the respondents, 28 individuals (27.5%) identified as female, while 74 (72.5%) identified as male. Work

experience among the participants was distributed as follows: 45 consultants (44.1%) possessed 1 to 5 years of experience, 25 (24.5%) reported 6 to 10 years of experience, and 32 respondents (31.4%) had accrued more than ten years of experience. The operational locations of the consultants varied, with 60 respondents (58.8%) predominantly active in the local market. Furthermore, 46 consultants (45.1%) operated within multiple states, 12 (11.8%) at a regional level, 45 (44.1%) extended their operations across the entirety of Malaysia, and 14 (13.7%) are operating internationally.

Table 5.
Profile of Respondents

Profiles Items	Frequency	%
Work Experience		
1-5years	45	44.1
6-10years	25	24.5
More than 10years	32	31.4
Gender		
Male	74	72.5
Female	28	27.5
Operational Location		
Local Market Area	60	58.8
Within few states	46	45.1
Regional	12	11.8
Across entire Malaysia	45	44.1
International Market	14	13.7

Model estimation

This study's hypotheses were tested using structural equation modelling (SEM) through the PLS approach, which is suitable for small sample sizes, limited latent variables, and small numbers of items that are inadequate for covariance-based SEM. The theoretical model consists of three reflective constructs, and four types of tests were conducted to validate these constructs, following the techniques proposed by (Hair et al., 2011) for evaluating PLS-SEM measurement models. These tests encompassed indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Table 6 presents the loadings of the respective indicators on their latent constructs and their composite reliability coefficients for the reflective constructs.

Hair Jr et al., (2014) and Sekaran & Bougie, (2010) proposed that an instrument with a Cronbach Alpha of 0.60 is moderately reliable, while a coefficient of 0.70 or higher indicates high reliability. To achieve reliability, the composite reliability coefficient should also be at least 0.70. Previous studies have shown that a Cronbach alpha coefficient closer to 1 indicates greater internal consistency and reliability. Fornell & Bookstein, (1982) suggested that the Average Variance Extracted (AVE) score should be 0.5 or higher. The AVE values for the constructs in this study ranged from 0.5 to 0.623, which is acceptable as it indicates that the measures can explain more than 50% of the constructs' variances. Table 6 shows that the constructs' Cronbach's alpha (CA) and Composite Reliability (CR) ranged from 0.685 to 0.946

and 0.770 to 0.946, respectively, confirming the internal consistency and reliability of all constructs in this study.

Table 6.
Construct Reliability and Validity

Factor	Items	Outer Loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
EI			0.945	0.947	0.944	0.531
	SEA1	0.638				
	SEA2	0.677				
	SEA3	0.669				
	OEA1	0.786				
	OEA2	0.814				
	OEA3	0.777				
	OEA4	0.806				
	ROE1	0.758				
	ROE2	0.676				
	ROE3	0.757				
	ROE4	0.733				
	UOE1	0.843				
	UOE2	0.605				
	UOE3	0.674				
	UOE4	0.673				
CS			0.946	0.948	0.946	0.497
	KS1	0.701	0.854	0.860	0.857	0.601
	KS2	0.781				
	KS3	0.800				
	KS4	0.813				
	PS1	0.759	0.920	0.922	0.920	0.623
	PS2	0.782				
	PS3	0.835				
	PS4	0.862				
	PS5	0.772				
	PS6	0.742				
	PS7	0.763				
	CSCS1	0.708	0.894	0.896	0.895	0.549
	CSCS2	0.807				
	CSCS3	0.753				
	CSCS4	0.743				
	CSCS5	0.754				
	CSCS6	0.739				
	CSCS7	0.678				
JP			0.657	0.937	0.734	0.461
	TP1	0.713	0.868	0.869	0.868	0.568
	TP2	0.740				
	TP3	0.753				

TP4	0.792				
TP5	0.769				
CP1	0.656	0.874	0.876	0.875	0.501
CP2	0.687				
CP3	0.705				
CP4	0.750				
CP6	0.670				
CP7	0.731				
CP8	0.747				
CPWB1	0.815	0.854	0.867	0.859	0.551
CPWB2	0.713				
CPWB3	0.728				
CPWB4	0.828				
CPWB5	0.608				

In addition, most constructs' outer loadings in Table 6 exceed the minimum threshold of 0.50, as suggested by previous research for exploratory studies (Neupane et al., 2014). Two items were removed because they had loadings below the minimum threshold. Therefore, the remaining loading scores are considered acceptable.

To identify whether other variables can explain one variable in a model, multicollinearity is used, which is the degree to which this occurs (Tabachnick & Fidell, 2007). This research utilised the variance inflation factors (VIF) to detect multicollinearity in the exogenous latent constructs. If multicollinearity is present, it can substantially influence the regression coefficients' estimates and the statistical significance tests for these coefficients (Hair et al., 2007). A VIF value greater than 5 indicates multicollinearity, but this study's VIF values were below this threshold, suggesting no multicollinearity issue.

Table 7.
Multicollinearity Test for Exogenous Latent Constructs

Construct	Items	Variance Inflation Factors
Emotional Intelligence	SEA1	2.623
	SEA2	2.315
	SEA3	3.688
	OEA1	3.972
	OEA2	3.022
	OEA3	4.007
	OEA4	2.606
	ROE1	3.315
	ROE2	2.429
	ROE3	3.682
	ROE4	3.471
	UOE1	2.899
	UOE2	3.563
	UOE3	2.623

	UOE4	3.047
Cognitive Styles	KS1	1.911
	KS2	3.237
	KS3	3.932
	KS4	3.420
	PS1	2.411
	PS2	2.742
	PS3	3.845
	PS4	4.069
	PS5	2.917
	PS6	3.374
	PS7	4.233
	CSCS1	2.354
	CSCS2	3.822
	CSCS3	3.818
	CSCS4	2.834
	CSCS5	3.329
	CSCS6	2.720
	CSCS7	2.210

This study's VIF values were below 5, which is the standard criteria, indicating no multicollinearity issue (Tabachnick & Fidell, 2007).

A recent approach for assessing the discriminant validity of variance-based SEM is the heterotrait-monotrait ratio of correlations (HTMT) (Henseler et al., 2015). This method is suggested due to its more stringent procedure compared to the Fornell and Larcker criterion, which ensures that the interpretation of the causal effect in the modeling analysis is not misleading (Ab Hamid et al., 2017). The recommended acceptable value for HTMT is 0.9 or less, with a value below 0.85 indicating good discriminant validity (Voorhees et al., 2016). As shown in table 8 none of the HTMT values in this study exceed 0.9.

Table 08.
Descriptive statistics and correlations based on the Heterotrait-Monotrait ratio of correlations (HTMT)

	Mean	**SD**	**CP**	**CPWB**	**CSCS**	**EI**	**KS**	**PS**	**TP**
CP	3.95	0.541							
CPWB	1.95	0.523	0.854						
CSCS	3.81	0.648	**0.673**	**0.646**					
EI	3.73	0.700	**0.540**	**0.482**	**0.726**				
KS	3.91	0.663	**0.629**	**0.502**	**0.738**	**0.819**			
PS	3.86	0.668	**0.591**	**0.572**	**0.723**	**0.766**	0.883		
TP	3.95	0.629	0.887	**0.635**	**0.800**	**0.679**	**0.666**	**0.667**	

Furthermore, Chin, (1998a) recommended that discriminant validity be evaluated equally by comparing the values of items' loadings with that of cross-loadings, where all the items' loadings should generally be greater than the resultant cross-loadings. The outer loading of an

item is expected to be greater on its corresponding latent variable than its cross-loadings on other latent variables when assessing cross-loading.

3.3. Structural model analysis

The study validated its hypotheses using parameter estimates, critical ratios, and probability levels and found no significant differences between the model's exogenous and endogenous latent constructs. The structural model (inner model) estimated the paths in the structural model.

Hypothesis one highlights that emotional intelligence (EI) would significantly influence construction professionals' job performance. As reported in Figure 2 and Table 9, the EI and job performance relationship was not significant statistically (β = -0.049, t = 0.292 and p-value of 0.770. Therefore, hypothesis H_1 of this study was not supported.

Hypothesis 2 posited a relationship between EI and the cognitive styles exhibited by construction professionals. The empirical findings revealed a substantial impact of EI on the cognitive styles of these professionals. As delineated in Figure 2 and Table 9, the statistical analysis demonstrated a positive association between emotional intelligence and cognitive styles, as indicated by the significant regression coefficient (β = 0.832, t = 18.065, and p = 0.000). This empirical evidence signifies a direct and affirmative correlation between emotional intelligence and cognitive styles, substantiating the support for Hypothesis 2 and accomplishing Objective 2.

In Hypothesis 3, a significant relationship was assumed between cognitive styles and the job performance of professionals in the construction industry. As depicted in Figure 2 and detailed in Table 9, the findings unveiled a significant correlation between these constructs (β = 0.792, t = 6.290, p = 0.000). This correlation assumes significance as it pertains to the cognitive processes through which construction professionals assimilate, analyse, and organise work-related information, thereby influencing the outcome of their project delivery.

Mediating effect

As posited in Hypothesis 4 (H4), the inner model analysis reveals that cognitive styles mediate the relationship between emotional intelligence (EI) and job performance among construction professionals. Specifically, the analysis yields a mediation effect with a path coefficient (β) of 0.660, a corresponding t-value of 4.848, and a statistically significant p-value of 0.000. In contrast, the direct influence of EI (as the exogenous variable) on job performance (as the endogenous variable) – denoted as Hypothesis 1 – is not found to be significant, as evidenced by a path coefficient (β) of -0.049, a **t**-statistic of 0.292, and a non-significant p-value of 0.770. Conversely, the direct effect of cognitive styles (as the mediating variable) on job performance, as proposed in Hypothesis 3, demonstrates statistical significance with a path coefficient (β) of 0.792 and a t-statistic of 5.319.

Then, the analysis underscores the significance of the direct relationship between EI and cognitive styles, with path coefficient values (β) of 0.792 and a t-statistic of 5.319, substantiated by a notable p-value of 0.000. Following Zhao et al.'s (2010) guideline, the insignificance of the direct relationship between the independent and dependent constructs indicates the presence of indirect or full mediation effects within the model. This observation suggests that cognitive styles function as a full mediator in the relationship between emotional intelligence and job performance, thereby corroborating the support for Hypothesis 4 (H4).

Table 9.
Results of Bootstrapping for Structural Model Evaluation

Hyp	Path	(*β*)	Std. Error	T-value	P value	Confidence Interval 2.5%	Confidence Interval 97.5%	Decision
	Direct path							
H1	EI -> JP	-0.049	0.167	0.292	0.770	-0.393	0.264	Not Supported
H2	EI -> CS	0.834	0.046	18.065***	0.000	0.730	0.908	Supported
H3	CS -> JP	0.792	0.149	5.319***	0.000	0.523	1.087	Supported
Indirect Path								
H4	EI -> CS -> JP	0.660	0.136	4.848***	0.000	0.418	0.933	Supported

Note: ***Significant at 0.01 (*t*-value)

Predictive relevance and effect size

The coefficient of determination (R^2 value) is a widely adopted benchmark for measuring structural models, having assessed the significance and relevance of the path coefficients (Hair et al., 2011; Henseler et al., 2015). It assesses a model's predictive accuracy and could be calculated as the squared correlation (R^2) between actual and predicted values of a specific endogenous construct. Hence, it is quite challenging to provide a benchmark for a satisfactory value of R^2 because it fluctuates across study specialities and is subject to the intricacy of research models (Hair Jr et al., 2014). Although it was earlier suggested by Falk and Miller (1992) that R^2 be 0.10 a minimum acceptable level. However, Chin, (1998b) considered R^2 values of "0.67", "0.33", and "0.19" as "substantial", "moderate", and "weak", respectively. Table 10 presents the R^2 and Q^2 values for the endogenous latent variables. As revealed in Table 10, the model of this research explains 69.5% of the total variance in cognitive styles, signifying that the exogenous latent construct (emotional intelligence) explains 69.5% of the variance of cognitive styles. Likewise, emotional intelligence and cognitive styles explain 56.5% of job performance variance. Thus, this study's endogenous latent constructs (job performance and cognitive styles), in line with the recommendations of (Chin, 1998b), indicated substantial R^2 values of 69.5% and 56.5%, respectively.

From Table 10 below, the predictive relevance Q^2 of job performance and cognitive styles in this study model's path has a value of 0.219 and 0.280, respectively, above zero, indicating the model has predictive relevance for these constructs (Henseler et al., 2015).

Figure 2. Evaluation of Structural Model through PLS Bootstrapping

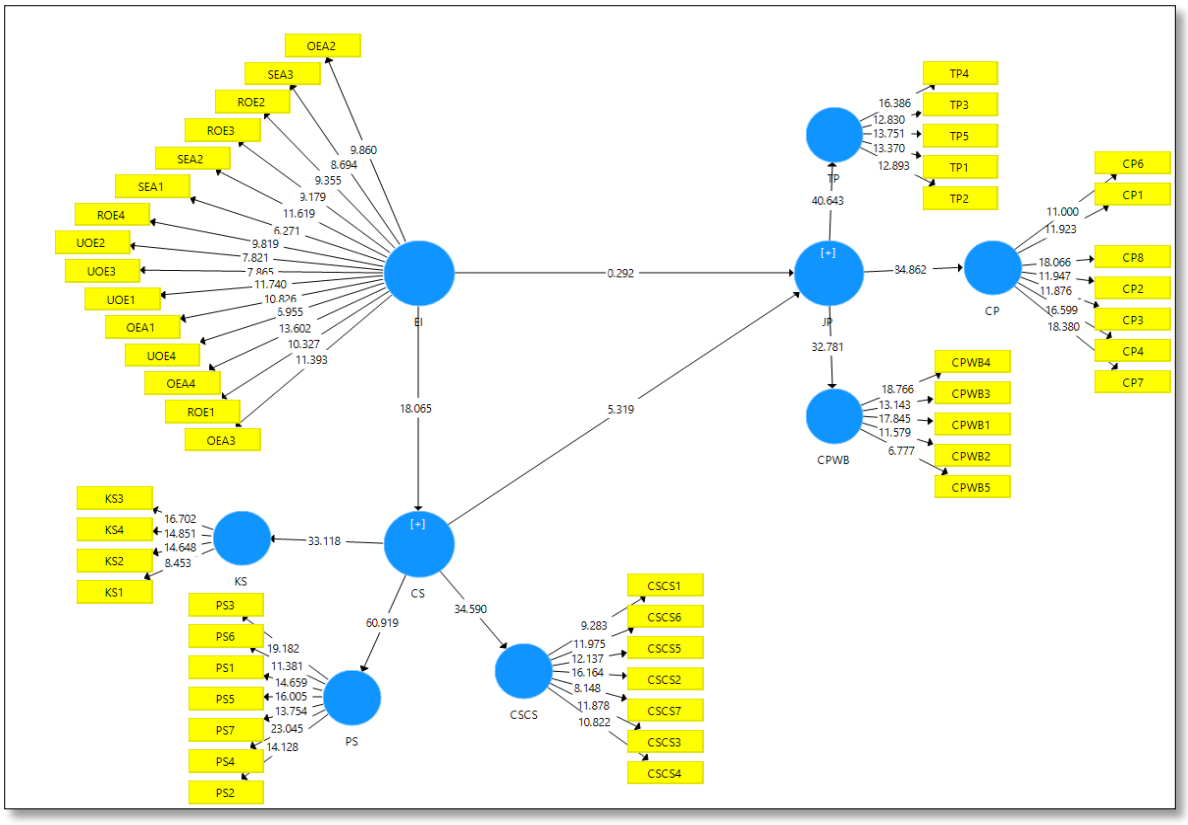

Table 10.
Predictive relevance of the endogenous construct

Construct	R^2	Q^2
Job Performance	0.565	0.219
Cognitive Styles	0.695	0.280

The f^2 value of the endogenous latent construct is evaluated to determine the model's strength. This process is appropriate for assessing how significant the effect of exogenous constructs is on the endogenous construct. Hair et al., (2013) equally reports the predictive relevance effect size (f^2), apart from the basic indices. In line with Cohen, (1988) suggestion, the effect size of "0.10 – 0.14" is considered "small", "0.15 – 0.34" is adjudged "medium", while "0.35" and above are considered "high". However, according to Hair et al., (2013), it is unnecessary to calculate f^2 with a manual formula within the SmartPLS environment. Table 11 shows that the effect sizes for emotional intelligence and cognitive styles on job performance are 0.002, 0.441 and 2.276, respectively. Hence, following Cohen, (1988) 's guideline, these exogenous constructs' effects on job performance can be deemed small, high and high, respectively.

Table 11.
Effect Size on the Endogenous Latent Construct, based on (Cohen, 1988) recommendation.

Latent Constructs	*JP* f^2	**Effect Size**	*CS* f^2	**Effect Size**
Emotional Intelligence	0.002	Small	2.276	High
Cognitive Styles	0.441	High		
Job performance, JP (dependent variable)				

Discussion

This study explored the impact of emotional intelligence and cognitive styles on the job performance of construction professionals. The objectives encompassed an examination of the correlation between emotional intelligence and job performance in the construction field, denoted as H1. Despite postulating a significant positive association between emotional intelligence and job performance, the findings revealed no significant relationship between these constructs. While the extant studies suggested that emotional intelligence is a prerequisite for job performance (Shahhosseini et al., 2012), this study's outcome is different, offering that the sampled construction professionals can perform their job without emotional intelligence. However, this perspective aligns with some studies on emotional intelligence and job performance, which have reported inconsistent findings regarding the relationship between these variables and the stability of links between specific dimensions of emotional intelligence and job performance (Bozionelos & Singh, 2017; Motowildo et al., 1997). Pekaar et al., (2017) noted variability in how particular dimensions of emotional intelligence, such as others' emotional appraisal, impact job performance.

Similarly, Saklofske et al., (2003) identified an uneven connection between emotional intelligence and task performance, including academic performance. Furthermore, a study investigating the influence of emotional intelligence on job performance during the COVID-19 crisis highlighted inconsistencies in the correlation between emotional intelligence dimensions and the performance of certain nurses (Alonazi, 2020). The limited association between emotional intelligence and job performance may be attributed to the enhanced cognitive capacity of the individuals involved (Côté & Miners, 2006). Additionally, the utilisation of emotion to facilitate performance, a facet of emotional intelligence, shares relevance with using emotion in specific forms of cognitive processing (George, 2000). This suggests that for emotional intelligence to impact job performance, it may necessitate a specific mode of cognitive processing.

The results also confirmed emotional intelligence positively correlated with cognitive styles (β = 0.834, t = 18.065), thus confirming hypothesis 2. The result also aligns with the main idea of the four-branch ability model that emotional intelligence is a form of intelligence in which cognitive processing is usually implicated in emotions (Leasa, 2018). It is assumed that cognition and emotion are two complementary aspects of the psyche, and it is relatively difficult to disentangle their influence on everyday activities and performance. The findings established the fact that cognitive processes are implicated in emotional intelligence. As proposed by the four-branch ability model, feelings make thinking more intelligent, and someone thinks intelligently about emotions, and that emotion is used in specific forms of cognitive processing (George, 2000). Emotional intelligence, through cognitive styles, can facilitate the identification of others' emotions, self-emotion management, the improvement of decision-making, and the enhancement of motivation, which should, in turn, lead to better job performance in construction professionals.

The third hypothesis projected that cognitive styles would have a significant positive relationship with the job performance of construction professionals. Table 9 revealed that cognitive styles have a positive relationship with construction consultants' job performance (β = 0.792, t = 6.290 and p = 0.000), which is possible because of how construction professionals prefer to perceive, process and structure information to influence individual job output.

Hypothesis 3 predicted a significant positive relationship between cognitive styles and the job performance of construction professionals. The positive result recorded in this instance was also reinforced with a high effect size (f^2) of 0.441, signifying that when construction professionals integrate cognitively, the higher their chances of achieving better job performance. This result confirms that the more closely related a construction professional's cognitive style is to the task demands, the better their job performance will be, which is in line with the argument that cognitive styles affect an individual's performance in creativity, interpersonal relationships, national culture, decision-making, management, information, and learning, among others (Armstrong et al., 2012).

The job performance of construction professionals and their teams and their interpersonal relationships can be influenced by cognitive style. Cognitive style can be seen as a high level of heuristics in complex processes applied instinctively across various situations, establishes the foundation for behaviour, and shapes individuals' reactions to different circumstances (Streufert & Nogami, 1989). The three-dimensional model of cognitive styles identifies planning styles, knowing styles, and creating styles as key factors in decision-making (Esa et al., 2014). Cognitive styles are crucial in how construction professionals interact with their teams and clients. Those who comprehend the cognitive styles of their co-workers or employees (as well as their own) can assist teams in conveying information more efficiently (Garfield et al., 2001). This process can be especially beneficial for consultants who work with clients, co-workers, and employees.

Furthermore, cognitive styles are beneficial, particularly in employment, as they can aid in identifying the most suitable match between workers and their job responsibilities. If a person's cognitive style corresponds well with their job requirements, they are more likely to be productive and content in their work. This, in turn, can positively impact the overall work environment, including better organisational communication, conflict management, and training and development opportunities.

Additionally, when a person's cognitive style closely aligns with the demands of their job, their performance is likely to improve, making it beneficial in recruitment, career guidance, and team building. As previously hypothesised in H_4, cognitive styles mediate the relationship between emotional intelligence and the job performance of construction professionals (*Beta* = 0.660, t = 4.848 and *P-value* = 0.000). Table 9 shows that emotional intelligence has no significant effect on job performance. However, cognitive styles play a crucial role in mediating the relationship between emotional intelligence and job performance in construction professionals (as predicted in H_4). This suggests that even if a construction professional's job performance is not influenced by their emotional intelligence, it can still be enhanced through their cognitive styles. Cognition and emotion are two interconnected aspects of the psyche, making it difficult to distinguish their impact on daily activities, such as the ability to understand and communicate with the emotions of others. Emotional intelligence and cognitive styles can help decision-making and motivation and positively affect job performance. An illustration of this concept is how a construction professional's job performance can be influenced by their leadership style (either transactional or

transformational), emotional intelligence, and empathy. Improving empathy through cognitive stimulation can enhance these personal traits, which can affect a person's overall job performance. As cognitive ability increases, the positivity between emotional intelligence and job performance is expected to decrease, and individuals with high cognitive ability are expected to demonstrate high job performance, as per previous research (Côté & Miners, 2006).

This research significantly adds to our knowledge of the behavioural factors that can potentially enhance the job performance of building industry professionals. By examining the correlations between various external and internal factors, along with the mediating roles of cognitive styles, this study has shed new light on the relationship between emotional intelligence and the job performance of construction professionals in Sarawak, Malaysia. Furthermore, it contributes to the existing body of knowledge regarding how these factors can impact the job performance of professionals in the construction industry.

Study Implications

The findings of this study align with Lazarus's Cognitive Motivational Relational Theory (CMRT (Lazarus, 1991), which underscores the significant influence of cognitive processes in shaping specific emotional responses and, subsequently, distinctive behavioural outcomes. It also emphasises the intricate interplay between emotional intelligence, cognitive styles, and the mediating role of cognitive styles in job performance. Therefore, based on the findings and discussions, this research has provided theoretical contributions through empirical evidence within the field of psychology. This article has provided empirical evidence regarding the significant role of cognitive styles in mediating the influence of emotional intelligence on job performance. While previous studies (Asrar-ul-Haq et al., 2017; Bozionelos & Singh, 2017) has mainly focused on examining the direct relationship between emotional intelligence and job performance in specific sectors, this research has introduced cognitive styles as a mediating variable shedding light on the mechanisms underpinning various associations. The aptitude to harness emotions for performance enhancement, a characteristic feature of emotional intelligence, is intricately linked with the deployment of emotions in distinct forms of cognitive processing. The interpretation of emotions by individuals (termed cognitive styles) and the judicious application of emotional self-regulation, both on a personal and interpersonal level, emerge as pivotal factors that facilitate job performance (Karimi et al., 2020).

The outcomes of this investigation carry substantive practical implications for professionals operating in the construction industry. Specifically, they underline the imperative consideration of emotional intelligence and cognitive style in recruitment, task allocation, and training endeavours. Given the imperative of integrating soft skills in the workplace, construction consultants, consulting firms, organisations, and governmental bodies can harness the insights offered by this study to enhance the job performance of their personnel and labour force via tailored training and development initiatives.

As earlier sections of this article have emphasised, emotional intelligence and cognitive styles stand as seminal indicators of individual success within professional contexts. The inclusion of soft skills has become imperative in addressing behavioural quandaries, such as decision-making challenges, communication issues, and the learning curve, all of which can precipitate complications such as project delays, cost overruns, or project failures. This study recommends equal prominence to behavioural attributes alongside technical competencies in augmenting job performance among construction professionals. The mediating role of

cognitive styles posits that emotional intelligence can indirectly improve job performance. Therefore, Malaysian construction professionals should accord precedence to the cultivation of emotional intelligence, cognitive assessments, and training as indispensable constituents for enhancing their performance and that of their workforce.

Conclusion, limitations, and directions for future research

While this study provides evidence correlating the independent and dependent variables, it is essential to acknowledge its limitations. First, this research was designed cross-sectionally, i.e., the data collection procedure was done simultaneously to prevent causal conclusions from being made from the study's population. Since emotional intelligence and job performance require a long-term commitment, this study suggests that a longitudinal design should be adopted as an alternative research design for future studies, ensuring latent variables are measured at various points to confirm further and strengthen this study's outcomes.

Second, this study presents a relatively limited generalisation as it concentrated mainly on construction professionals because they are mostly referenced when measuring project success. In addition, the sampling is limited to construction professionals registered with UPKJ, i.e., the Contractor and Consultant Registration Unit, Sarawak, Malaysia. This procedure has constrained the scope of this research to replicate local populations' understandings. A direct implementation of the findings of this study for future research to precise local situations, contexts, and individual construction professionals under consideration might be too abstract. Hence, further research may broaden the scope of this study by including more sectors, personnel, and locations in the industry.

Third, this study gathered data from an individual as a response unit through an online survey. Several factors may have affected how participants responded to the study, such as their knowledge, experiences, self-awareness, the work environment, and mental state when responding. Thus, the responses from participants may have deviated from the anticipated issues and the expected results despite the survey instrument passing reliability and validity tests. The concern of common method variance (CMV) in the data is not applicable. Future research may consider collecting data from the company to avoid this limitation.

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