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Article

Enhancing team effectiveness in high-performance IT environments: the role of emotional intelligence and communication quality through team cohesion in Dalian, China

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Abstract: This study examines the influence of emotional intelligence and communication quality on team effectiveness in high-performance work environments, with team cohesion acting as a mediator. The focus of the research is on the information technology (IT) industry in Dalian, China, where companies face high competition and rapid advancements in technology. A quantitative, cross-sectional research design was utilised, and data were collected through a structured questionnaire administered to 350 employees. IBM SPSS was used for preliminary data screening and descriptive analysis, while SmartPLS was used to carry out Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings show that emotional intelligence and communication quality have significant positive impacts on team effectiveness. Emotional intelligence was the strongest predictor of both team cohesion and team effectiveness. Communication quality was also found to significantly enhance team cohesion and team effectiveness. Team cohesion partially mediated the relationships between emotional intelligence and team effectiveness, and also between communication quality and team effectiveness. The study concludes that effective team performance in high-performance IT environments depends not only on technical capabilities but also on interpersonal and relational factors. Team cohesion serves as a mediating mechanism through which emotional intelligence and communication quality enhance team effectiveness.

Keywords: emotional intelligence, communication quality, team cohesion, team effectiveness, IT industry

1. Introduction

The information technology (IT) industry in China has grown rapidly in recent years, making it a major contributor to national growth. Dalian city, in particular, is worth over 100 billion Yuan through the Dalian software park, and the city includes more than 3000 companies and employs over 200,000 people (China Daily, 2024). However, Dalian has lost its leading position in the IT industry in recent years due to high competition from other regions. A new strategy to support the development of the industry in the city involves connecting the information service industry with the combined sector of industrial internet, artificial intelligence, data industry, and internet of vehicles. This implies that teams in the IT industry will have diverse members with diverse skills. Several global companies such as International Business Machines (IBM) and Toshiba have already downsized operations in Dalian or exited from the city (Zhang, 2024). The high level of competition and rapid technological advancements in the IT industry can result in pressure on employees and teams to deliver high performance.

The success of firms in the city and the contribution of the city to the

IT industry can be understood in terms of team effectiveness, which can result in organisational performance and competitiveness. High-performing teams are characterised by effective collaboration, and it results in improved organisational success because team members can achieve goals collectively by overcoming individual weaknesses (Kirubakaran, 2025). This means that team effectiveness can contribute to organisational competitiveness. In the context of the IT industry in Dalian, high-performance working environments can have challenges of communication, misunderstandings and coordination. Ensuring team effectiveness can become important for maintaining productivity, innovation and competitive advantage so that organisations can benefit from the industry partnership policy directed at reviving Dalian's IT industry. This policy focuses on integrating "1" (which is the information service industry) with "4" (which stands for artificial intelligence, industrial Internet, internet of vehicles, and data industry) (China Daily, 2024). The intention is to leverage the existing industry in Dalian to enhance research and development, basic software, new application software, and network security software.

The IT sector of Dalian also serves as a significant context within which one can explore these relationships. In IT, work is based on knowledge and requires teamwork by people having different technical skills. The fast-changing nature of technology and the competition might also necessitate the coordination of activities and sharing of information among team members. In such an environment, individual emotional skills might affect the manner in which interpersonal relationships are managed, and communication skills would determine the effectiveness of sharing knowledge and information. However, the extent to which these factors translate into effective team outcomes can also depend on the quality of relationships developed among team members. Team cohesion may therefore represent an important contextual mechanism through which emotional intelligence and communication quality contribute to team effectiveness in Dalian's IT industry.

Existing research suggests that team effectiveness can be affected by a variety of factors. Salcinovic et al. (2022) found that leadership styles, supportive team behaviour, communication, and performance feedback can affect team performance and function. This means that factors within the team that can affect team effectiveness are communication and supportive behaviour. Stewart et al. (2024) found that team performance is affected by individual factors, such as role proficiency, adaptability, humility and open-mindedness. It implies that team effectiveness has been studied from the scope of organisational factors, team factors and individual behaviour within the team. However, it is also important to study the impact of team-level factors and psychological factors, as it can result in improved team contribution to organisational success through minimal interventions. Despite the importance of team effectiveness for organisational competitiveness in high-performance environments, there is limited research on how emotional intelligence and communication quality can impact team effectiveness together. Existing research on emotional intelligence, communication quality, team cohesion, and team effectiveness has predominantly been conducted across diverse international and organisational contexts. There has been comparatively limited empirical attention to IT teams in Northeast China and Dalian in particular. While previous studies provide evidence for the individual relationships among these variables, the extent to which these relationships operate within China's regional IT industry remains insufficiently explored. There is also a lack of research on whether team cohesion functions as a mediating mechanism linking emotional intelligence and communication quality with team effectiveness in the context of Dalian's IT sector.

Therefore, the aim of the research is to examine how emotional intelligence

and communication quality impact team effectiveness and how team cohesion mediates this relationship.

The objectives of the research are

• To analyse the impact of emotional intelligence on team effectiveness in high-performance work environments

• To examine the impact of communication quality on team effectiveness in high-performance work environments

• To understand the mediating effect of team cohesion on the impact of emotional intelligence and communication quality on team effectiveness in high-performance work environments.

2. Literature review

2.1. Theoretical foundations

The relationships between the variables and their impact on team effectiveness can be examined through the perspectives of social exchange theory and the Input-Process-Outcome (IPO) model. The social exchange theory explains that individuals participate in social relationships to minimise costs and gain benefits (Khan et al., 2025). The application to team contexts can demonstrate that team members can perceive team effectiveness as the benefit in terms of performance, which can result in rewards and recognition. The costs in this context are failure, redundancy, or lack of competitiveness, which can result in a threat to membership. Therefore, social exchange is emotionally regulated behaviour and high-quality communication to achieve the gains of effective team performance. On the other hand, the IPO model explains that team inputs consist of characteristics of individual team members, which follow a process, and are converted into team outcomes (Schoss et al., 2022). The emotional intelligence of team members and their communication quality can be considered as the inputs that allow them to follow the processes and achieve the output of team effectiveness. Team cohesion can also affect the efficiency and efficacy of the processes. The theoretical contribution of this study lies in integrating individual-level and team-level factors within the IPO framework. Emotional intelligence represents an individual-level input, and communication quality represents a team interaction input, while team cohesion represents the relational mechanism through which these inputs are translated into team effectiveness. This framework therefore provides a more comprehensive explanation of team effectiveness than models that examine the direct effects of individual or team-level variables in isolation.

2.2. Emotional intelligence and team effectiveness

Emotional intelligence is a part of individual behaviour, and this can have an impact on team effectiveness. Lima et al. (2022) defined emotional intelligence as understanding and regulating emotion in oneself and others. This can help team members to understand the behaviour of others, which can resolve confusion in teams. Paredes-Saavedra et al. (2024) found that emotional intelligence leads to team effectiveness because it results in empathetic and adaptive behaviour, which favours conflict resolution and builds trust in the team. This means that emotional intelligence is an important trait for team members because it regulates their interactions with others through mutual understanding. Shafique and Naz (2023) agreed that there is a positive association connecting emotional intelligence to team outcomes, and team trust positively acts as a mediating variable in this relationship. It implies that team members with high emotional intelligence can work in complex situations by regulating their emotions, and it also contributes to a positive environment that motivates them. On the other hand, Zhang and Hao (2022) argued that the emotional intelligence of the project manager determines team effectiveness. However, the study did not examine the impact of the

emotional intelligence of team members in the Chinese construction industry. Therefore, emotional intelligence results in team effectiveness because it keeps team members motivated and also because it helps them to deal with complex and uncertain situations, which can be associated with high-performance work environments. Based on the IPO model, emotional intelligence can be viewed as an individual-level input that influences team interactions and contributes to team outcomes. Social Exchange Theory suggests that emotionally intelligent behaviour can facilitate positive interpersonal exchanges through empathy, mutual understanding, and constructive interactions. Therefore, emotional intelligence may enable team members to manage complex situations, maintain positive relationships, and contribute towards collective goals, which can enhance team effectiveness. Accordingly, the hypothesis can be posited as follows:

H1: Emotional intelligence has a positive impact on team effectiveness.

2.3. Communication quality and team effectiveness

Communication quality can be important for a team because it allows for the sharing of information and ideas, which can result in the achievement of collective goals. Arifandi et al. (2024) suggested improving the quality of team communication because it can influence team effectiveness by improving conflict resolution, information sharing and coordination. Good communication quality can result in team effectiveness because it allows for collective problem-solving through the discussion of ideas and the exchange of information. Strode et al. (2022) argued that challenges in communication result in difficulties for effective teamwork. This is because poor communication can hinder adaptability and peer feedback. Rajhi and Aljuhmani (2026) demonstrated that communication can contribute to collaborative problem solving. This implies that team effectiveness can be supported by supportive and transparent communication because it improves trust and creates a workplace that is conducive to creativity. On the contrary, Schweitzer et al. (2025) argued that when task-oriented communication frequently comes after relational communication, there is no improvement in team performance. However, the study focused on the context of team performance and communication in supply chain management, which may not be generalisable. Under the IPO model, good communication may enhance the processes of information flow, coordination, and problem solving in the team, which can contribute to team performance. In addition, Social Exchange Theory proposes that communication can help in achieving reciprocal interaction and cooperation between team members. Hence, communication can provide the environment that can allow teams to coordinate and accomplish team goals. Accordingly, the hypothesis can be proposed as follows:

H2: Communication quality has a positive impact on team effectiveness.

2.4. Emotional intelligence and team cohesion

Emotional intelligence is a psychological aspect that can affect the behaviour of team members and their cohesion with other members. Watanabe et al. (2024) stated that the emotional intelligence of team members can increase team cohesion by reducing misunderstandings and challenges. This is important for organisational success because cohesiveness helps team members to work well with each other and feel like they contribute to collective success. Woime and Shato (2025) also found that emotional intelligence strengthens team cohesion by allowing for constructive responses to disagreements in the workplace. The implication is that emotional intelligence can create a shared space where team members can be honest and trusting, which results in better team cohesion. Xiao et al. (2023) also confirmed that emotional intelligence significantly influences cohesiveness of teams, and it also serves to reduce the impact of relational conflicts on team cohesiveness. Mitigating the chances of conflicts escalating can

safeguard the cohesiveness of teams, which can be achieved through emotional regulation of team members. However, Attah et al. (2024) argued that it is the emotional intelligence of leaders that results in team cohesion. But the study did not analyse the impact of the emotional intelligence of team members. It can be said that existing literature largely supports that emotional intelligence positively influences team cohesion. From the perspective of Social Exchange Theory, emotional intelligence can facilitate positive social exchanges by enabling team members to understand the emotions of others, regulate their own responses, and respond constructively to disagreements. These exchanges can strengthen trust, mutual understanding, and interpersonal relationships, thereby resulting in greater team cohesion. The IPO model suggests that individual characteristics such as emotional intelligence can influence team processes and relational outcomes. Therefore, emotional intelligence may create a supportive environment in which team members develop stronger relationships and greater unity. Accordingly, the hypothesis can be framed as follows:

H3: Emotional intelligence has a positive impact on team cohesion.

2.5. Communication quality and team cohesion

Communication quality has the potential to improve personal and professional relationships between team members, resulting in improved team cohesion. Khaliq et al. (2024) stated that communication quality involves the frequency, clarity and accuracy of information shared. This supports team cohesion by mitigating challenges. Effective communication leads to better coordination, which is important for maintaining team cohesion. Wang et al. (2025) agreed that team cohesion positively impacts team cohesion. Their study of employees in Chinese banks found that team cohesion acted as a mediating factor between communication quality and team performance. Palos-Sanchez et al. (2023) found that communication quality was one of the important aspects used by employees to define team cohesion. This means that communication is one of the foundations of how team members perceive their unity with team members. But Putri et al. (2026) found no significant relationship between interpersonal communication and cohesiveness in organisations. However, the study was limited to the area of Greater Jakarta, and communication was examined through the aspects of self-expression, self-concept and openness, which limits its generalisability. The majority of the literature confirms that communication quality positively influences team cohesion. According to Social Exchange Theory, high-quality communication can encourage reciprocal interactions by promoting openness, information sharing, and mutual understanding among team members. The IPO model further positions communication as an important team process through which information and ideas are exchanged, allowing team members to coordinate their activities and develop stronger relationships. Therefore, effective communication may strengthen the unity and connectedness among team members, which can enhance team cohesion. Accordingly, the hypothesis can be stated as follows:

H4: Communication quality has a positive impact on team cohesion.

2.6. Team cohesion and team effectiveness

Team cohesion can be understood as the unity between team members, which can positively influence team effectiveness. Grossman et al. (2022) found that team cohesion is an important influence on team effectiveness. The authors also framed this relationship as group pride translating into group performance. Sidorenkov and Borokhovski (2023) argued that cohesion can result in performance effectiveness in challenging conditions. The study found a stronger relationship when task interdependence is high. Ganotice et al. (2022) also opined that cohesiveness results in collective achievement of goals in the Chinese

context. Team cohesiveness results in satisfaction with the team experience, which in turn can contribute to positive team outcomes. Li et al. (2020) found that team cohesion played a moderating role on the impact of team efficacy on team performance. High team cohesion was found to result in a positive impact of team efficacy on team performance in Chinese high-tech organisations. On the other hand, Cai (2023) found that the perception of team members about team cohesion did not impact the perceptions of team effectiveness in China. However, it should be noted that the study explained that groupthink could be one of the reasons that did not support a positive correlation between the variables. There could also be inconsistency between the perceptions of team members. According to the IPO model, team cohesion is a process through which team interactions are transformed into collective outcomes. Cohesive teams may be better able to coordinate activities, support one another, and maintain commitment towards shared objectives. Social Exchange Theory further suggests that strong reciprocal relationships within cohesive teams can encourage cooperation and collective effort. It also suggests that effective communication can promote reciprocal and supportive exchanges, strengthening interpersonal relationships and cohesion among team members. Positive reciprocal interactions, as well as mutual trust and support, which can be achieved through emotionally intelligent behaviour, can help build effective teams. Cohesive teams tend to work together and cooperate more effectively. Therefore, based on the positive influence of communication quality and emotional intelligence on team cohesion, and the impact of team cohesion on team effectiveness, the hypotheses can be framed as follows:

H5: Team cohesion has a positive impact on team effectiveness.

H6: Team cohesion has a mediating impact on the relationship between communication quality and team effectiveness.

H7: Team cohesion has a mediating impact on the relationship between emotional intelligence and team effectiveness.

2.7. Research gap

Existing studies have analysed the factors affecting team effectiveness, but there are some important gaps. One of the major gaps is that existing studies have mostly focused on team effectiveness by examining the team-level factors, such as communication quality, or individual-level factors, such as emotional intelligence, in isolation. There is a dearth of literature that examines the combined effect of psychological and collective factors on team effectiveness. Team cohesion has also been examined as an important factor in team effectiveness, but there is inadequate literature analysing its role as a mediator in the relationships between individual and team-level factors on team effectiveness. Another gap in existing literature is the limited focus on high-performance industries, such as the IT industry, particularly in the Chinese context. Existing research has mostly studied emotional intelligence, communication quality, and team cohesion as separate determinants of team outcomes. However, less attention has been given to how individual-level emotional capabilities and team-level communication together influence team effectiveness through a common mechanism. By understanding team cohesion as a mediator, this study moves beyond examining whether emotional intelligence and communication quality influence team effectiveness, and explains how these factors are translated into team outcomes. The current research adds to existing literature by considering the same phenomenon within the information technology industry of Dalian, which is marked by a lot of collaboration, knowledge-intensive work, and competition due to the fast-paced advancement in technologies. This particular situation makes a suitable platform for further analysis regarding the relevancy of interpersonal and relational mechanisms found in earlier studies.

Existing studies also suggest that the relationships between emotional intelligence, communication quality, team cohesion, and team effectiveness can vary according to characteristics of teams and workplaces. Factors such as team size and working arrangements may influence the frequency of interpersonal interactions, communication patterns, and the development of cohesive relationships among IT employees. However, these contextual conditions are beyond the scope of the present study, which focuses on examining the core relationships among emotional intelligence, communication quality, team cohesion, and team effectiveness in Dalian's IT industry. Future research could therefore examine whether such contextual characteristics influence the strength of the proposed relationships and provide further insight into the boundary conditions of the proposed model. Therefore, this study addresses the identified gaps by examining the impacts of emotional intelligence and communication quality on team effectiveness, with team cohesion as a mediating variable, among IT professionals in Dalian, China as demonstrated in the conceptual framework (**Figure 1**).

2.8. Conceptual framework

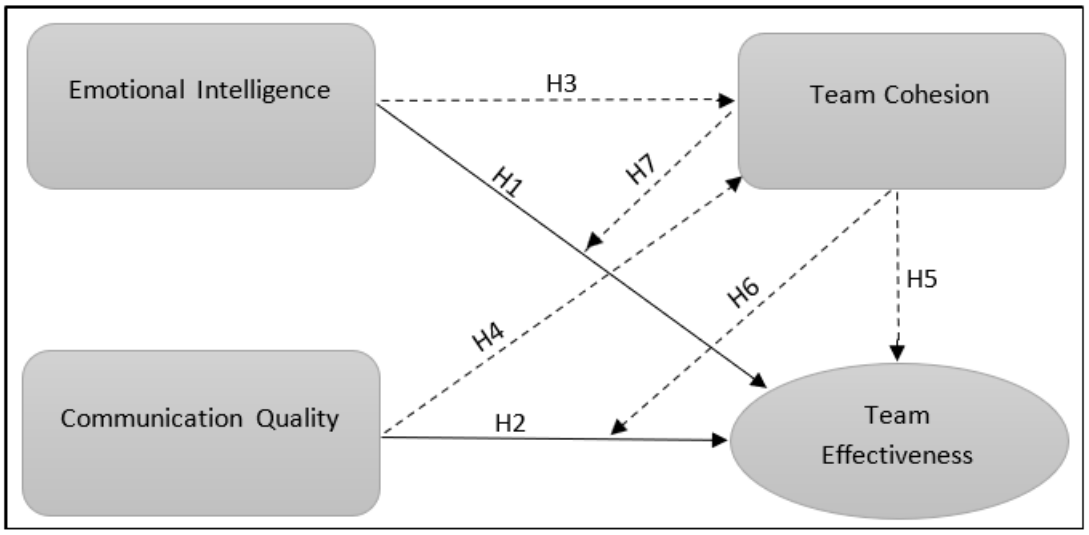


Figure 1. Conceptual Framework

3. Methodology

The research uses a quantitative and cross-sectional design to analyse the relationships between emotional intelligence, communication quality, team cohesion and team effectiveness. A quantitative approach was chosen because of its suitability for empirical assessment of hypothesised relationships through statistical analysis (Kale, 2024). Based on the cross-sectional approach, the data were collected from the participants at one point in time, which will allow for examining perceptions of team dynamics within organisational settings. The target population are employees of the IT industry in Dalian. Convenience sampling was followed to select participants for the study because, despite its limitations of sample bias, it is cost-effective and takes less time (Golzar et al., 2022). The study employed a combination of convenience and snowball sampling to recruit participants from the IT industry in Dalian, China. The survey link was initially distributed through the researchers' relevant personal and professional networks to individuals who met the eligibility criteria. These participants were subsequently encouraged to share the survey with other eligible employees working in the IT industry in Dalian. This kind of non-probability sampling technique can be used when there are accessibility constraints in approaching a comprehensive sampling frame. The sample size was targeted between 300 and 350 respondents, and

it was considered adequate for structural equation modelling with bootstrapping (Sim et al., 2022).

A structured survey questionnaire was used to collect data, and the survey was distributed to employees working in the IT industry in Dalian. The survey was administered, and the data were collected between 13 April 2026 and 8 May 2026. The survey consisted of multiple items measuring the variables in the proposed model. The survey started with demographic questions, including age, gender, and IT tenure, which were collected to describe the characteristics of the respondents. These variables were not included as control variables in the Partial Least Squares Structural Equation Modelling (PLS-SEM) model because the study was concerned with investigating the theoretically proposed relationships among emotional intelligence, communication quality, team cohesion, and team effectiveness. Accordingly, the demographic variables were used for sample profiling rather than as predictors within the model. The measurement scales were assessed by a 5-point Likert scale, ranging from 1, implying "strongly disagree", to 5, implying "strongly agree" (**Appendix**). The suitability of the 5-point Likert scale is that it is reliable for research and convenient for participants to respond to (Aybek & Toraman, 2022). The variables of the study were measured by adapting established scales from existing studies to ensure reliability and validity. Emotional intelligence was assessed using the 16-item scale developed by Mustafa et al. (2023). Communication quality was assessed using the 4-item scale used by Khaliq et al. (2024), which assessed the clarity, frequency, timeliness, and effectiveness of communication. Team cohesion was assessed by adapting the 4-item scale used by Uhlemann et al. (2025) for measuring communal sharing since it was used to assess relational climate. This scale was slightly adapted by changing the focus on group alliance to the context of a team. Finally, team effectiveness was assessed using the 5-item scale of Hodzic et al. (2025).

The data obtained from the survey were analysed using IBM SPSS and SmartPLS. SPSS was used in the initial stages for screening of data and preliminary analysis, which included checking for missing values and identifying outliers, along with exploring the descriptive statistics of the sample. After this, Partial Least Squares Structural Equation Modelling (PLS-SEM) was used on SmartPLS to examine the model because of its capability for examining relationships with multiple constructs and mediation effects (Hair Jr et al., 2026). The analysis was carried out in different stages. Firstly, the measurement model was assessed to understand the reliability and validity of the constructs. This involved reliability of internal consistency through Cronbach's alpha and composite reliability, and convergent validity through average variance extracted. Secondly, the structural model was examined to assess the relationships between variables. This included the testing of hypotheses and the mediating effect of team cohesion. Bootstrapping was used to analyse the significance of the results. Ethical considerations were followed in the study by making participation voluntary. Respondents were informed about the purpose of the research before data were collected from them. All responses were kept anonymous, and no personal details were asked for that could result in their identification. Informed consent was obtained from the respondents, and anonymity was maintained. There was a possibility of common method variance as all variables were measured by self-report questionnaire method. In place of performing a statistical test for common method variance such as Harman's single factor analysis or complete collinearity analysis, procedural controls during the measurement phase of the data were adopted to minimize the threat of common method variance. Respondents were assured that participation was voluntary and were made aware of the purpose of the study, along with collecting anonymous responses. These controls were taken to alleviate evaluation apprehension and social desirability

problems.

4. Results

Demographic profile shows that Dalian has a reasonably young and skilled IT workforce (**Table 1**). The majority (73.5 per cent) of the respondents were aged between 18 and 35 years, and both early- and mid-career professionals were well-represented. A small majority of the respondents (53.7 percent) were male, whereas the number of females was also significant, which means that gender diversity was decent. On work experience, 65.8% had between 0 and 10 years of experience in the industry, and 34.3% of employees had more than 10 years of work experience in the industry, which gives us insights into both the junior and senior employees. On the whole, the sample represents an adequate and representative respondent sample to study the team dynamics, emotional intelligence, quality of team communication, and team effectiveness in the high-performance IT operating environment.

Table 1. Demographic results

Variable	Category	Frequency	Percentage (%)
Age	18 to 25	129	36.9
	26 to 35	128	36.6
	36 to 45	67	19.1
	Over 45	26	7.4
Gender	Male	188	53.7
	Female	143	40.9
	Other	8	2.3
	Prefer not to say	11	3.1
Work Experience in IT	0 to 5 years	108	30.9
	6 to 10 years	122	34.9
	11 to 15 years	73	20.9
	More than 15 years	47	13.4

The loading of the factors show that the indicators have a satisfactory level of reliability because all item loadings are greater than the minimum desirable value of 0.60, with the range of 0.684 to 0.851 (**Table 2**). In the case of Communication Quality, the four indicators had high loadings (0.808-0.851), which demonstrates the strong representation of the construct. It was found that the items in the Emotional Intelligence had decent to strong loadings (0.684-0.784) and that most of the loadings were above 0.70, indicating that all the sixteen indicators contributed well, albeit with slight variation. Team Cohesion showed good indicator performance with a loading of between 0.762 and 0.799 as there was consistency in how the construct was measured. Similarly, the loading values of the Team Effectiveness indicators were strong ranging between 0.778 and 0.819, which affirms good construct representation. Since all loadings are above the generally accepted level, and most of them are close to or greater than 0.70 there are no indicators to be deleted. These results confirm the reliability of the indicators and evidence that the observed variables measure their underlying latent constructs reasonably well to proceed with the reliability and validity evaluation in the measurement model.

Table 2. Confirmatory factor loadings of items for each latent construct

	Communication Quality	Emotional Intelligence	Team Cohesion	Team effectiveness
CQ1	0.851			
CQ2	0.840			
CQ3	0.808			
CQ4	0.844			
EI1		0.699		
EI10		0.698		
EI11		0.762		
EI12		0.722		
EI13		0.706		
EI14		0.705		
EI15		0.762		
EI16		0.754		
EI2		0.712		
EI3		0.760		
EI4		0.684		
EI5		0.696		
EI6		0.735		
EI7		0.783		
EI8		0.710		
EI9		0.784		
TC1			0.767	
TC2			0.799	
TC3			0.762	
TC4			0.792	
TE1				0.786
TE2				0.778
TE3				0.815
TE4				0.819
TE5				0.804

The results of reliability and convergent validity indicate that all constructs exceed recommended levels (**Table 3**). The alpha values of the Cronbach vary between 0.786 and 0.941 that is greater than the required alpha of 0.70 and shows good internal consistency. Other values, including composite reliability (rho_c) values (0.861-0.948), and composite reliability (rho_a) values (0.787-0.942), are also above the suggested level of 0.70, another indicator of construct reliability. There is a high level of reliability in Emotional Intelligence ($a = 0.941$; CR $= 0.948$). Convergent validity is determined when all the Average Variance Explained (AVE) values are greater than 0.50 with a range of 0.533 to 0.699 meaning that each construct was found to explain more than 50 percent of the variance in its indicators.

Table 3. Results of convergent validity, reliability and internal consistency analysis

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Communication Quality	0.856	0.858	0.903	0.699
Emotional Intelligence	0.941	0.942	0.948	0.533
Team Cohesion	0.786	0.787	0.861	0.609

Continued table:

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Team effectiveness	0.860	0.861	0.899	0.641

The results of the Heterotrait-Monotrait Ratio (HTMT) indicate satisfactory discriminant validity because all the values are lower compared to the conservative value of 0.85 (**Table 4**). The HTMT ratios lie between 0.375 and 0.663 and this shows empirical differentiation of the constructs. The greatest HTMT between Team Cohesion and Team Effectiveness (0.663) is still far below the threshold, whereas the lowest value among the constructs is Communication Quality vs. Emotional Intelligence (0.375), which indicates high construct separation. These results indicate that all constructs capture conceptually different phenomena and this shows that the measurement model is discriminant valid.

Table 4. HTMT matrix of latent construct in PLS-SEM model

	Communication Quality	Emotional Intelligence	Team Cohesion	Team effectiveness
Communication Quality				
Emotional Intelligence	0.375			
Team Cohesion	0.555	0.618		
Team effectiveness	0.494	0.646	0.663	

The f-square outcomes depict different effect sizes of predictors. Emotional Intelligence has a moderate impact on Team Cohesion ($f^2 = 0.258$) and a small-to-moderate impact on Team Effectiveness ($f^2 = 0.189$) (**Table 5**). Team Cohesion (0.137) and Team Effectiveness (0.042) are slightly affected by Communication Quality but with a weak but significant effect. Team Cohesion also affects Team Effectiveness (0.076). In general, Emotional Intelligence proves to be the most predictive with the other effects being also substantively significant. Emotional intelligence demonstrated a moderate effect on team cohesion, indicating that it makes a meaningful contribution to explaining variations in team cohesion beyond its statistical significance alone. In comparison, communication quality demonstrated a weaker effect on team cohesion, suggesting that although communication quality contributes to cohesion, its individual explanatory contribution is comparatively smaller. This difference shows that emotional intelligence may play a more substantial role than communication quality in shaping cohesive relationships among IT team members in the present context. The findings therefore highlight the importance of considering whether a relationship is statistically significant, and also the relative substantive contribution of each predictor to the model.

Table 5. F square of exogenous constructs in predicting mediator and dependent constructs

Exogenous Construct	DV: Team Cohesion	DV: Team effectiveness
Communication Quality	0.137	0.042
Emotional Intelligence	0.258	0.189
Team Cohesion	N/A	0.076

The model fit indices for the PLS-SEM model presented in **Figure 2**, reveal that the structural model is acceptable (**Table 6**). The value of Standardized

Root Mean Square Residual (SRMR $= 0.044$) is less than the recommended value (0.08) and this indicates that the model fits well, and that there is minor discrepancy between observed and model-implied correlations. The dULS (0.856) and dG (0.280) values indicate as well satisfactory measures of variances of discrepancy, especially when used in conjunction with bootstrapping evaluation in PLS-SEM. The Normed Fit Index or NFI value (0.899) is very similar to the suggested 0.90 value which means there is an acceptable incremental model fit. Chi-square (549.028) is reported but generally not emphasised in PLS-SEM because it is sensitive to the size of a sample. Altogether, these pointers substantiate the sufficiency of the suggested model (Hair et al., 2022; Henseler et al., 2016).

Table 6. Model fit measures of CB-SEM model

	Saturated model	Estimated model
SRMR	0.044	0.044
d_ULS	0.856	0.856
d_G	0.280	0.280
Chi-square	549.028	549.028
NFI	0.899	0.899

All the hypothesised relationships are well supported by the structural path analysis since all path coefficients (β), which indicate the strength and direction of relationships between constructs, are positive and statistically significant. Team Effectiveness is positively influenced by Emotional Intelligence ($\beta = 0.387$, $t = 8.610$, $p < 0.001$), meaning that increased emotional intelligence enhances team effectiveness, which supports H1 (**Table 7**). Communication Quality also has a positive impact on Team Effectiveness ($\beta = 0.174$, $t = 4.006$, $p < 0.001$), but with a relatively lesser effect, supporting H2. Team Cohesion is most strongly influenced by Emotional Intelligence ($\beta = 0.428$, $t = 10.509$, $p < 0.001$), supporting H3 and indicating its central role in strengthening team dynamics. Team Cohesion is also significantly improved by Communication Quality ($\beta = 0.312$, $t = 7.138$, $p < 0.001$), which supports H4. Furthermore, Team Cohesion positively affects Team Effectiveness ($\beta = 0.260$, $t = 5.375$, $p < 0.001$), thereby supporting H5. The t-values exceeding 1.96 indicate statistical significance, and p-values less than 0.001 confirm that these relationships are highly unlikely to have occurred by chance.

Table 7. Hypotheses testing results as per SEM path coefficients

Hypothesis	Relationship	β (O)	STDEV	T-value	P-value	Result
H1	Emotional Intelligence → Team Effectiveness	0.387	0.045	8.610	0.000	Supported
H2	Communication Quality → Team Effectiveness	0.174	0.044	4.006	0.000	Supported
H3	Emotional Intelligence → Team Cohesion	0.428	0.041	10.509	0.000	Supported
H4	Communication Quality → Team Cohesion	0.312	0.044	7.138	0.000	Supported
H5	Team Cohesion → Team Effectiveness	0.260	0.048	5.375	0.000	Supported
H6	Communication Quality → Team Cohesion → Team Effectiveness	0.081	0.019	4.210	0.000	Supported (Partial Mediation)

Continued table:

Hypothesis	Relationship	β (O)	STDEV	T-value	P-value	Result
H7	Emotional Intelligence → Team Cohesion → Team Effectiveness	0.111	0.024	4.631	0.000	Supported (Partial Mediation)

In addition to the direct effects, the mediation analysis further strengthens the proposed model. The indirect effect of Communication Quality on Team Effectiveness through Team Cohesion is significant ($\beta = 0.081$, $t = 4.210$, $p < 0.001$), supporting H6. Similarly, Emotional Intelligence also exerts a significant indirect effect on Team Effectiveness via Team Cohesion ($\beta = 0.111$, $t = 4.631$, $p < 0.001$), supporting H7. Since both the direct and indirect effects are significant, this indicates that Team Cohesion plays a partial mediating role in the relationships between Emotional Intelligence and Team Effectiveness, as well as between Communication Quality and Team Effectiveness. The comparison of coefficients further shows that Emotional Intelligence has the strongest overall influence, followed by Communication Quality and Team Cohesion, thereby supporting the robustness of the proposed conceptual model.

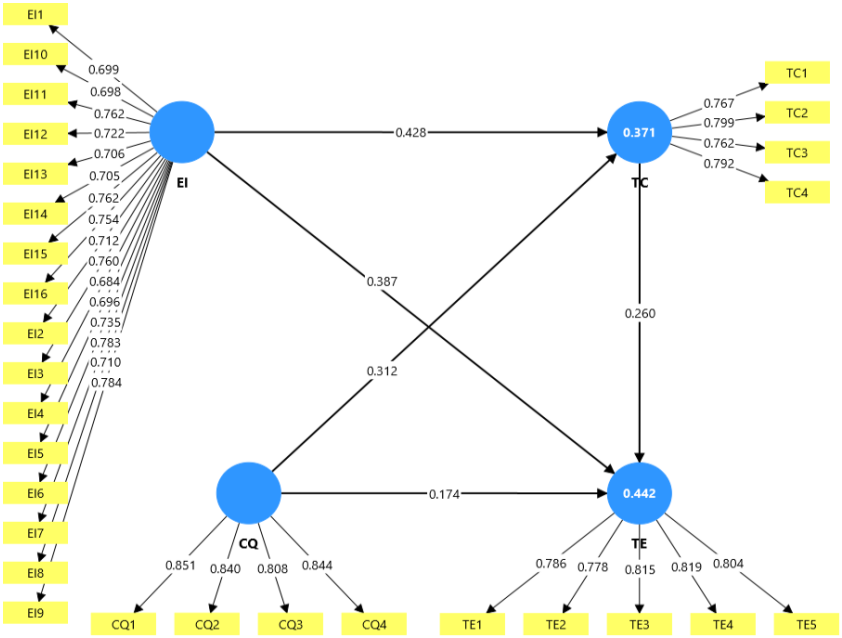


Figure 2. CFinal PLS-SEM model with annotated path coefficients and outer loadings

The outcome of the coefficient of determination (R-SQUARE) suggests moderate explanatory power of the structural model. The R^2 of Team Cohesion is 0.371 and adjusted R^2 is 0.368, which implies that the combination of both Emotional Intelligence and Communication Quality can explain 37.1% of the variance in Team Cohesion (**Figure 2**). This implies that the predictors possess some significant explanatory power of cohesion. On the same note, Team Effectiveness has a reported R-SQUARE of 0.442 and adjusted R-SQUARE of 0.437 which implies that the combination of Emotional Intelligence, Communication Quality and Team Cohesion would explain 44.2% of the variation in Team Effectiveness. The R^2 values indicate the extent to which the predictors collectively explain variations in the endogenous constructs. The R^2 value for team cohesion indicates that emotional intelligence and communication quality jointly explain a meaningful proportion of the variance in team cohesion. Similarly, the R^2 value for team effectiveness demonstrates the extent to which emotional intelligence, communication quality, and team cohesion collectively account for differences in team effectiveness. These findings suggest that

the proposed model provides explanatory value in understanding team-related outcomes in the Dalian IT context, although the unexplained variance also indicates that other factors may contribute to team cohesion and effectiveness. The values of adjusted R-SQUARE that measure the complexity and the predictors used in the model are nearly the same as the original R-SQUARE values implying that the model is stable and there is little overfitting (**Table 8**).

Table 8. R square values of endogenous variables in SEM

	R-square	R-square adjusted
Team Cohesion	0.371	0.368
Team effectiveness	0.442	0.437

5. Discussion

5.1. Discussion of findings

The findings provided strong empirical evidence to support the relationships between emotional intelligence, communication quality, team cohesion and team effectiveness. It implies that both individual traits and team-level interaction processes shape team outcomes. For the employees of the IT industry in Dalian, these findings demonstrate the importance of interpersonal dynamics in ensuring effective team functioning and performance.

The findings showed that emotional intelligence positively impacts team effectiveness, which supports H1. The result is consistent with the findings of existing research including Lima et al. (2022), Paredes-Saavedra et al. (2024), and Shafique and Naz (2023), who found that emotional intelligence has a positive impact on team effectiveness. It implies that the relationships in the context of Dalian are aligned with the findings from Kosovo, Peru and Pakistan. Emotional intelligence improves team effectiveness by enabling team members to understand the emotions of others and regulate their own emotions. Teams can improve conflict resolution and build trust because emotional intelligence makes them empathetic and adaptive. This is relevant for high-performance work environments because team members have to deal with complex situations and high levels of uncertainty. This implies that emotionally intelligent individuals contribute to team effectiveness by supporting a cooperative environment in teams.

The results demonstrated that communication quality positively impacts team effectiveness, thereby supporting H2. This signifies the importance of communication for team effectiveness because it facilitates the exchange of ideas and information. This is aligned with the findings of Arifandi et al. (2024), that communication improves coordination, conflict resolution and information sharing, which result in the achievement of team goals. The implication of communication is that it makes team members aware of each other and their roles, progress, tasks and behaviours so that collective performance becomes possible. The finding also supports the findings of Rajhi and Aljuhmani (2026), who argued that effective communication contributes to collaborative problem-solving. The implication is that the findings in the Chinese context are similar to the results from Turkey. The exchanges of ideas and information can result in improved collective understanding of problems, which can help teams to solve them together. Therefore, the findings provide empirical evidence that high-quality communication results in effective team functioning because of reduced misunderstandings and improved alignment between team members.

The findings demonstrated that emotional intelligence positively impacts team cohesion, which supports H3. This means that emotional intelligence

can support interpersonal relationships in teams. This finding is consistent with the research of Watanabe et al. (2023), who found that emotional intelligence can help team members to deal with challenges together by reducing misunderstandings. Therefore, the findings in the context of Dalian are aligned with research in Pakistan. Team cohesion can improve because team members are understanding of the emotions and perspectives of others, which helps them to work together. This relationship is also supported by Woime and Shato (2025), who found that emotional intelligence allows individuals to have constructive responses to disagreements. This means that team cohesion can be strengthened because emotional intelligence allows team members to appreciate other perspectives. The findings are also aligned with the statements of Xiao et al. (2023), that emotional intelligence reduces relational conflicts. This can contribute to better team cohesiveness in high-performance work environments, where there can be greater chances of conflict because of high workload and stress. Therefore, the findings are consistent with existing studies that emotional intelligence can contribute to better team cohesiveness because harmony is maintained and trust is developed.

The results showed that communication quality positively impacts team cohesion, which supports H4. The implication of this finding is that communication strengthens relationships between team members by improving transparency and mutual understanding. As discussed in the literature review, communication quality can improve coordination and address challenges, which results in improved team cohesion (Khaliq et al., 2024). The findings were derived by measuring the items for communication quality as clarity, frequency, timeliness, and effectiveness, from the same study. The results also support Palos-Sanchez et al. (2023), that communication is one of the major factors that determine how employees perceive team cohesion. However, this contrasts with the findings of Putri et al. (2026), who reported no significant relationship between communication and cohesiveness in organisations. Putri et al. (2026) examined interpersonal communication through self-expression, self-concept, and openness and focused on organisations in Greater Jakarta. On the other hand, this study examines communication quality in the context of IT teams in Dalian. Differences in organisational and industry contexts may therefore influence how communication contributes to cohesion. Therefore, the findings support the view of most studies that communication quality plays a significant role in making teams more cohesive.

The study also found that team cohesion significantly impacts team effectiveness, which supports H5. This finding is also consistent with the findings of existing literature that cohesion can be a significant predictor of team outcomes. This result supports the findings of Ganotice et al. (2022) within the Chinese context that team cohesion enhances the achievement of common goals, thereby contributing to positive outcomes. The finding is also aligned with the argument of Grossman et al. (2022) that group pride translates to group performance. This means that team members who feel a strong sense of belonging to the team work towards goals because they feel like shared achievements. Strong bonds between team members can help them to perform effectively in challenging conditions, which makes team cohesion important (Sidorenkov & Borokhovski, 2023). This means that the findings of this study support the findings in the Russian context. Therefore, the findings imply that cohesive teams can coordinate better, which results in team effectiveness.

The findings also showed that team cohesion mediates the relationships between emotional intelligence, communication quality, and team effectiveness, which supports H6 and H7. This implies that the impacts of emotional intelligence and communication quality on team effectiveness are not only direct

but also through team cohesiveness. The findings suggest that emotionally intelligent team members have better emotional regulation, which contributes to stronger interpersonal relationships within teams, resulting in better team cohesion. Emotional intelligence is connected with empathy and reduced relational conflict, which supports team cohesion (Xiao et al., 2023; Woime and Shato, 2025). This team cohesion enhances cooperation and collaboration and results in better team effectiveness.

Communication quality facilitates information exchange, which strengthens team cohesion, which in turn contributes to team effectiveness. Existing literature supports that effective communication improves coordination and reduces misunderstandings, which supports a cohesive and collaborative environment (Khaliq et al., 2024). This is also supported by the statements of Wang et al. (2025), who found team cohesion to be a mediating factor between communication quality and team performance. The findings of partial mediation in the results imply that while team cohesion is an important variable through which emotional intelligence and communication quality impact team effectiveness, they also have direct impacts on team effectiveness.

The findings support the social exchange theory and the IPO model, which were used to support proposed model. The social exchange theory proposes that individuals engage with each other to maximise benefits and minimise costs (Khan et al., 2025). The findings are supported by the social exchange theory since the benefits of benefits of emotional intelligence, communication quality, team cohesion and team effectiveness can improve organisational experience when the costs of misunderstanding and unresolved conflicts can be minimised. Individuals will want to be a part of teams where there are emotional regulation, high-quality communication, and unity, so that goals can be achieved collectively. The IPO model explains how inputs are transformed into outputs (Schoss et al., 2022). According to this model, emotional intelligence and communication quality represent the inputs, while team cohesion represents the process in the form of unity and coordination between the members, resulting in the output of team effectiveness.

5.2. Theoretical implications

The findings contribute to existing literature and theories in three distinct ways. First, the research considers both individual and team-level variables. Second, it treats team cohesion as a mechanism but not just another independent variable. Third, it confirms the applicability of the mechanism to the Dalian IT sector. The associations discovered in the research might prove relevant in the context of knowledge-based settings in which the personnel rely on each other for exchanging information, coordinating interdependent actions, and adjusting to new technological demands. In these circumstances, emotional intelligence can contribute to regulating interpersonal contacts and resolving conflicts among team members, while effective communication can assist in exchanging knowledge and coordinating joint actions. The role of team cohesion as a mediator implies that some of the advantages of individual and interactive competencies may rely on developing strong relational ties between team members. Therefore, the results suggest that effective teamwork in the IT industry in Dalian is not simply dependent on individuals' skills and communication styles but also depends on how far these variables help in building relationships among teams. These contextual variables may be considered situations where the relationships studied in the paper become important. However, in this paper, these factors are not tested to determine whether or not they influence the suggested relationships. The contextual variables are used in the interpretation of the results obtained.

5.3. Industry practical implications

Implications of the study for the IT industry of Dalian could be viewed through the following: organisations need to take note of the importance of emotional intelligence as one of the skills among their employees. Emotional regulation, handling of challenges in a constructive way and the maintenance of good relations are some of the essential skills for successful teamwork. The training and development programs should include the enhancement of emotional intelligence and it could also be used during recruitment and performance appraisals. In addition, the quality of communication is an important aspect that was established through the findings of this research and this could be achieved through communication strategies, which will ensure the provision of clear and timely exchange of ideas and information. This could be accomplished by providing recommendations on meeting frequency, feedback methods and the use of collaboration tools. The organisations in the IT industry of Dalian could also benefit from ensuring team cohesion, where team members develop trust and common vision. This could be achieved through policies, which favour team work over competition, for instance, through team feedback and recognition.

6. Conclusion

It was intended to evaluate the influence of emotional intelligence and communication on team effectiveness by taking into account the mediation effect of team cohesion within the context of IT industry in Dalian, China. Findings gave an opportunity to provide the evidence of the significant role of both emotional intelligence and communication quality in defining team effectiveness. The influence of emotional intelligence and communication on team effectiveness not only has a direct character, but also occurs within the cohesive teams. This implies that teamwork in the high-performance IT industry is characterised not only by technical abilities of team members, but also by interpersonal relations and interaction.

The IT industry in Dalian is a highly performing industry, whereby teams have to compete to overcome the downsizing and exits that have been witnessed recently by the organisations. This is significant in ensuring that the city regains its reputation of being a major hub for the IT industry. It entails the capacity of teams to coordinate and adapt to new needs. In such an environment, emotional intelligence may assist the team members to control their reactions and emotions in the event of stresses. It may enable them to overcome difficulties in teams, resolve conflicts, and develop constructive work relationships. The study indicates that effective communication ensured that there was efficient exchange of information and ideas, hence reducing misunderstandings. It implies that teams are capable of performing well and achieving their goals due to the existence of emotional intelligence and communication quality in teams. They also indicate that the impacts of the two variables are magnified in terms of team cohesion. Team cohesion becomes the central process that connects individual capacities and communication strategies with team effectiveness. Effective teams are those with strong interpersonal relations and membership pride. For IT companies in Dalian, fostering team cohesion is important because it can translate emotional regulation and high-quality communication into team effectiveness.

In terms of practical application, organisations can develop and implement a structure to develop emotional intelligence by focusing on self-awareness, emotional regulation, empathy, and conflict resolution. These processes can be developed as part of the employees' development and leadership training for better management of interpersonal challenges in collaborative environments. More explicit communication protocols in IT teams can be achieved through regular project briefings, feedback processes, designated communication channels, and documentation of project information to ensure a more efficient and accurate flow of information. It is recommended that managers develop measures to

enhance relationships between team members, not merely based on individual and communication skills but also by means of relationship-building measures. Team-building, collaboration across functions, team goals, peer support measures, and team recognition can facilitate building of trust and a common sense of purpose among team members. Leadership development can be used to develop skills to recognise interpersonal conflicts and facilitate inclusion and cooperation within the team.

However, there are certain limitations in the study, one of them being that the study is restricted only to the IT industry of Dalian, thus restricting the generalisability of the relationships in the context of other regions and other industries as well. The study's restriction to the IT industry of Dalian can also be considered as a contextual limitation of the study. There may be certain aspects of the IT environment in Dalian that may influence the relationships between the constructs in question, such as the knowledge intensity of the tasks, interdependencies, and competition and technology-related changes. Contextual differences may affect how the three factors –emotional intelligence, communication and cohesion –affect the effectiveness of the teams. Additionally, convenience sampling, and the snowball-style data collection method may reduce the generalisability of the research results since the respondents sampled may not be truly representative of the overall population of IT workers in Dalian. This is because the respondents sampled might be different from the overall IT population in terms of organisation type, occupation, experience, and working conditions. The research does not provide any details on the organisations where the respondents work. Therefore, the distribution of participants across multinational and domestic IT firms and specific software parks could not be established. Therefore, the findings should be interpreted within the context of the participating IT employees rather than being assumed to represent all IT organisations in Dalian. Another limitation is that demographic and work-related characteristics, including age, gender, and IT tenure, were not incorporated as control variables in the structural model. This means that their potential influence on team effectiveness and the proposed relationships was not statistically examined. Therefore, there is a possibility that individual differences associated with these characteristics may have contributed to variations in the observed relationships. Future research can integrate relevant demographic and work-related characteristics as control variables to further assess the strength of the relationships identified in this study. The cross-sectional research design also limits the ability to make conclusions about causality because the study examined the relationships at one point in time. This limits the ability to establish causal relationships or determine how these relationships develop over time. The study also used self-reported data which may be subject to bias because respondents may have selected answers that were socially desirable. This can introduce common method bias and does not capture independent assessments of team effectiveness. However, participation was voluntary, respondents were informed about the purpose of the study, and the survey was conducted anonymously without collecting personally identifying information. These measures were aimed at encouraging respondents to provide honest responses and reduce concerns about identification or potential consequences associated with their answers. However, the potential for self-reporting and social desirability bias cannot be discounted entirely. In the future, the research can use multi-source research design where in addition to the questionnaires for assessing the emotional intelligence, communication quality and team cohesion, supervisors can be asked to rate team effectiveness or use objective measures of team performance. The future research can fill gaps by investigating these relationships in other industries and in different parts of the world in order to compare them in various

contexts. Future research can examine whether the relationships are influenced by various contextual factors such as task interdependence, job stress, IT changes, local/organisational culture, or the type of IT organisation. Comparative studies with IT organisations in other Chinese cities or even from different countries can examine whether the proposed relationships hold across different institutional and organisational contexts. Future research can employ probability or stratified sampling in order to draw representative samples. Longitudinal research designs can also be employed in order to track how the variables change over time. This way, causality can be proven. Future research can also incorporate other variables, such as organisational culture and leadership style. Factors like guanxi, hierarchy in work relations, and work arrangements that include remote and hybrid work collaboration may influence interpersonal relations and communications in IT teams. Further research might explore if there are any differences in these relationships between Chinese IT teams and teams from other countries.

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Appendix

Questionnaire

What is your age?

1. 18 to 25
2. 26 to 35
3. 36 to 45
4. over 45

What is your gender?

1. Male
2. Female
3. Other
4. Prefer not to say

How long have you worked in the IT industry in Dalian?

1. 0 to 5 years
2. 6 to 10 years
3. 11 to 15 years
4. More than 15 years

Table A1

Statements to be rated Strongly Disagree, Disagree, Neutral, Agree, or Strongly Agree

Variable	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Emotional Intelligence	I have a good sense of why I have certain feelings most of the time					
	I have a good understanding of my own emotions					
	I really understand what I feel					
	I always know whether or not I am happy					
	I always know my friends' emotions from their behaviour					
	I am a good observer of others' emotions					
	I am sensitive to the feelings and emotions of others					
	I have good understanding of the emotions of people around me					
	I always set goals for myself and then try my best to achieve them					
	I always tell myself I am a competent person					
	I am a self-motivating person					
	I would always encourage myself to try my best					
	I am able to control my temper so that I can handle difficulties rationally					
	I am quite capable of controlling my own emotions					
	I can always calm down quickly when I am very angry					
	I have good control over my own emotions					
Communication Quality	Communication in my team is clear					
	Communication in my team is frequent					
	Communication in my team is timely					
	Communication in my team is effective					
Team Cohesion	My team makes decisions together by consensus					
	The members of my team tend to have very similar attitudes and values					
	"One for all and all for one" is true of the members of my team					
	The members of my team have many things in common that make them essentially the same					
	My team has been effective in reaching its goals					
Team Effectiveness						

Continued table:

Variable	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	My team is meeting its business objectives					
	My input is valued by my team members					
	My team members and I respect each other					
	In my team, members' morale is high					