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ASSESSING RELATIONAL CAPABILITY IN PROJECTS

Samenvatting

Een samenwerkingsverband is cruciaal om de succesvolle uitvoering van projecten te waarborgen. Echter, een echte collaboratieve houding en gedrag blijkt in de praktijk heel moeilijk. Dit artikel presenteert de RELationele CAPability assessment tool (RECAP), die de relationele aspecten en de prestaties binnen de samenwerking eigenaar-aannemer in projecten helpt te beoordelen. Het omvat de vier belangrijkste factoren en twee prestatiecriteria op het gebied van samenwerking, die theoretisch en empirisch ontwikkeld zijn in een aantal studies. Alle factoren en criteria zijn bijeen gebracht in een assessment tool. Hiermee is het voor projectbeoefenaars mogelijk met een eenvoudig en praktisch hulpmiddel specifieke aspecten van de samenwerking te identificeren, te verzamelen en te analyseren met het doel om verbetering tot stand te brengen.

Introduction

Over the last two decades, project practitioners have increasingly recognized the importance of owner-contractor collaborative relationships in ensuring the successful execution of projects. The efficacy of owner-contractor collaborative relationship on project performance is not a myth as a large body of research has provided unequivocal empirical evidence. Many scholars have studied the practice of collaborative relationship under various terms, e.g. 'relational capability', 'collaborative working relationship', and 'relationship management'. Through a series of studies (Suprapto et al., 2015a; Suprapto et al., 2015b; Suprapto et al., 2015c), it was confirmed that the efficacy of owner-contractor collaboration depends on the extent of both parties' ability at inter-organizational level to establish relational attitudes toward collaboration (joint commitment, mutual trust, and relational norms). Moreover, the results also suggest that the ability to perform better in projects is mediated by teamworking quality consisting of five task-related (communication, coordination, balance contribution, aligned effort, and mutual support) and two behavior-related (cohesion and affective trust) interactional mechanisms between the owner's team and the contractor's team.

However, how to sustain and consistently drive the real collaborative attitudes and behavior for achieving the desired outcomes remains of enduring practical difficulty. This is because a collaborative relationship (including various prescriptions like integrated project team, partnering, and alliance) requires that the people at senior management and project team level of both parties possess different attitudes and behavior than those in traditional arm's length relationships. It is also important to recognize the dynamic nature of collaborative relationship over the project life cycle. As Hartmann and Bresnen (2011) emphasize that collaborative working is a fluid concept which emerges from individual and organizational interactions. They suggest that the practitioners need to abandon their 'old routines and behavior' (unlearning) besides 'learning new knowledge and adjusting to working processes' (p.12). These learning and unlearning processes are best understood through the practitioners' reflection process. Practitioners deal with situations of uncertainty, instability, exceptionality, and value conflict through reflection-in-action (Schön, 1983). Reflection therefore gives the practitioners ability to recognize the state and source of problems thus help the practitioners in finding the way to improve their working relationship. This implies the need for a means of assessing how well the owner and contractor and the teams are working together and how this changes over time.

This article presents RElational CAPability assessment tool (RECAP) for the project practitioners to identify and improve key specific aspects of their collaboration, so that together they can formulate specific interventions, in a constructive way to improve the ongoing (and potentially future) relationship. The RECAP stems from the earlier performed studies, i.e.: the practitioners' perspectives on the essence of project-based collaboration reported in Suprapto et al. (2015a); and the empirical testing of the predictive model reported in Suprapto et al. (2015b; 2015c).

The aim of this article is twofold: to present and to demonstrate the validity of RECAP for project practitioners in real-life projects. The rest of this article is structured as follows. First, RECAP is presented. Next, the validation results by means of pilot applications are presented. Finally, the overall validity and future applications of RECAP is discussed and concluded.

Relational capability assessment tool (RECAP)

RECAP was derived from a series of studies aiming to identify ways to improve owner-contractor collaboration in projects. A review of relevant literature identified six general relationship factors: relational attitudes, teamworking, team integration, joint working procedures, owner-contractor capability, and contract functions (Suprapto et al., 2012). Later, in Suprapto et al. (2015a), it was shown that five of the six general factors (exclu-

ding contract functions) were perceived by 30 project practitioners as salient factors for improving owner-contractor collaborative relationships. In the survey study (Suprapto et al., 2015b; 2015c), the general factors were categorized into: i) relational attitudes which include senior management commitment and relational norms; ii) collaborative practices which include team integration and joint working procedures; iii) teamworking quality which consists of inter-team communication, coordination, balanced contribution, aligned effort, mutual support, cohesion, and affective trust; iv) front-end definition; and v) joint teams capabilities which consist of owner's team capability and contractor's team capability. The statistical analysis of a sample of 113 responses provided empirical support for teamworking quality and front-end definition as direct predictors to project performance. The other factors, relational attitudes, collaborative practices, and teams' capabilities were found to be the indirect predictors to project performance through teamworking quality.

Because the purpose of RECAP is to measure relational capability in owner-contractor collaborative relationship and not on the 'individual capability' of each party, the teams' capabilities is excluded in the assessment. The criteria included in RECAP are therefore categorized into 4 relational capability criteria: relational attitudes, and teamworking quality, good collaborative practices, and front-end definition; and 2 performance criteria: project performance and relationship continuity. All criteria are not assessed directly but broken down into sub-criteria (except for the front-end definition and relationship continuity) which are then assessed through 2 to 6 indicators. Overall, RECAP consists of 17 sub-criteria (13 relational sub-criteria and 4 performance sub-criteria) and 72 indicators. All criteria, sub-criteria, and corresponding definitions are listed in table 1.

Pilot applications of RECAP

Three different projects with different project phases and performance levels were used to demonstrate RECAP:

- Project Alpha is a new product development project of a high-tech company (Owner A). The project took more than 3 years with around 700 FTE. The market in which the Owner A is operating is characterized by low volume and high value with high product complexity and time pressure. For the development of a new product, the owner outsourced one major part to an engineering and manufacturing company (Contractor A). At the time of the interviews, the project was almost completed. Despite the fact that the project was their first experience together, both parties indicated that they have worked collaboratively and have delivered satisfactory results.

- Project Beta is a construction project of a new production unit within an existing oil refinery. The owner (Owner B) is an oil refinery subsidiary of an international oil company in Western Europe and the contractor (Contractor B) is an international engineering and construction company. The project faced several scope changes and had the project managers from both sides replaced during the early execution phase. The project was completed in 2012, one year behind schedule, and exceeding the agreed budget by 24%. The facility constructed was eventually delivered within acceptable quality.

- Project Charlie is a construction project of new refinery facilities. The owner (Owner C) is a subsidiary of a different international oil company in Western Europe and the contractor (Contractor C) is a different international engineering and construction company. At the time of interviews, the project was in the front-end engineering and design (FEED) phase so the project outcomes are still unknown.

By doing so, the applicability and the usefulness of RECAP can be tested under different situations. For each project, two participants (project managers or equivalent), each representing the owner or the contractor were interviewed. During an interview, the participant was handed the assessment form and asked to assess his/ her current project by assigning an appropriate rating score from 1 to 5 (very poor – poor – moderate – good – very good) for all 72 indicators. After completing the assessment, the data was immediately entered into a spreadsheet template producing a number of graphs, score levels per sub-criteria and criteria. The score for each sub-criterion was calculated by averaging the scores of its indicators. Then, the score for each criterion was calculated by averaging the scores of its sub-criteria. After reviewing the assessment results, the participant was then asked to provide comments and suggestions regarding: the practicality of RECAP, the usefulness of the assessment result for managerial actions or interventions and suggestions for further improvement of RECAP.

Assessment results: Project Beta

For illustrative purpose, only the assessment results of one project (Project Beta) are presented here. The score levels by criteria and sub-criteria from Owner B and Contractor B were compared side-by-side including the score gaps. It provides an overview of the levels of the collaboration by criteria and sub-criteria in the eyes of both sides.

The assessment scores by criteria shown in figure 1 indicate that Contractor B rated almost all criteria rather lower than Owner B (except for the perceived relationship continuity). In general, both Owner B and Contractor B perceived the overall level of the collaboration in this project unsatisfactory as the score levels for all criteria are ranging from 2.7 to 3.7. Also shown in figure 1, both parties' perceptions were quite in line with respect to all criteria with the score gaps between the parties relatively low from 0.1 to 0.5 points.

In contrast to the scores by criteria, the score levels and gaps by sub-criteria shown in Figure 2 indicate more variability over various sub-criteria. The scores per sub-criterion under relational attitudes suggest that both Owner B and Contractor B perceived moderate level of senior management commitment (3.4 and 4.0),

Criteria	Sub-criteria	Definition
A. Front-end definition	1. Front-end definition	The ability to comprehend the project scope, basic design, execution plan, and roles and responsibilities (5 indicators).
B. Collaborative practices	2. Team integration	The extent to which the owner and the contractor teams are structured and integrated as a single team with no apparent boundaries (5 indicators).
	3. Joint working processes	The extent to which the owner and the contractor teams perform joint working processes (7 indicators).
C. Relational attitudes	4. Senior management commitment	How well the senior management of the owner and the contractor commit to support the collaboration (5 indicators).
	5. Senior management trust	The extent of mutual trust between firms (4 indicators).
	6. Established relational norms	Norms of no blame culture, win-win, and communication openness (7 indicators).
D. Teamworking quality	7. Communication	The extent of to which the teams communicate with each other effectively (4 indicators).
	8. Coordination	The extent to which the teams achieve synergies in coordinating interdependent activities (3 indicators).
	9. Balanced contribution	The extent to which the teams contribute their specific knowledge and expertise (3 indicators).
	10. Aligned effort	The extent to which the teams align their effort (3 indicators).
	11. Mutual support	The extent to which the teams help each other in achieving project goals (3 indicators).
	12. Cohesion	The extent to which the teams behave as one team (4 indicators).
	13. Affective trust	The extent to which the teams' members personally trust each other (6 indicators).
E. Project performance	14. Efficiency	The extent to which the project meet the planned budget and schedule (2 indicators).
	15. Quality	The extent to which the project progressed or completed safely, meeting the targeted quality, reliability, operability (4 indicators).
	16. Satisfaction	The perceived overall satisfaction and business or commercial success (3 indicators).
F. Relationship continuity	17. Relationship continuity	The perceived intention to continue the relationship in future (4 indicators).

Table 1 - Criteria and sub-criteria of the relational capability assessment tool (RECAP).

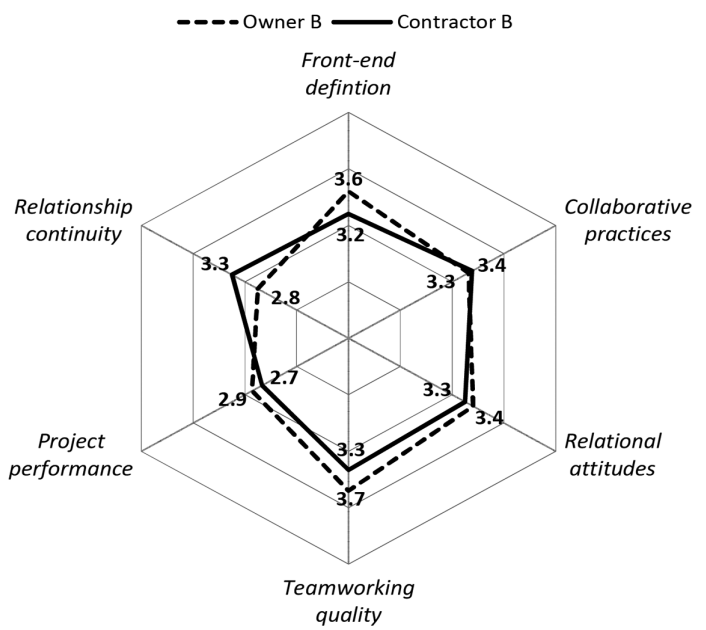

Figure 1 – Project Beta's score levels by criteria.

trust (3.3 and 2.8), and relational norms (3.6 and 3.0). This gives more insight in the details of specific misalignment in the working relationship at senior management level. The same situation also stands out from teamworking quality where the gaps were respectively 0.5, 0.7, and 1.7 points for team cohesion, balanced contribution, and team coordination. Obviously team coordination was the most problematic one as Contractor B rated it poor (2.0) while Owner B considered it almost good (3.7).

In terms of project performance, the scores per sub-criterion varied considerably. Both sides perceived the quality of the final product quite differently, as Owner B rated it at moderate level (3.3) while Contractor B considered a good level of quality (4.0). Both Owner B and Contractor B perceived the project was poorly performed (2.0 and 1.5) in terms of efficiency (schedule and cost performance). Eventually, Owner B was moderately satisfied (3.3) but not so the Contractor B (2.5). Clearly, there are considerable differences between the two as the scores gaps were 0.5, 0.8, and 0.8 points for efficiency, quality, and satisfaction.
In summary, the above assessment results indicate the

usefulness of the RECAP in a problematic project. The analyses are not only able to gauge the collaboration levels between Owner B and Contractor B in Project Beta but also most importantly can provide details about specific aspects for potential improvement, notably on relational norms, senior management trust, team coordination, team balanced contribution, and project efficiency.

Comparing the RECAP assessment results

Along with its anticipated results, the participating practitioners discerned benchmarking as one important value of RECAP. Treating the responses from the participating practitioners as new data points, the three projects can be compared against each other and with those of the survey data from Suprapto et al. (2015b; 2015c).

Comparing three projects with survey data as reference figure 3 shows the score ratios for Project Alpha, Beta, and Charlie on four relational capability criteria and two performance criteria. A score ratio is calculated by dividing the corresponding score level by the average score of 119 responses (obtained from 6 pilot participants and 113 survey respondents reported in Suprapto et al. (2015b; 2015c). A score ratio of 1.0 serves as the reference point or equal to the average of all 119 responses. A score ratio above or below 1.0 means the corresponding score level is better or worse than the average. As indication to what the extent one project/ response is better or worse than the others, two lines +/- 1 SD (one standard deviation) can be used as arbitrary thresholds.

Of the three projects, Project Charlie can be considered the most collaborative as well as the top performer at the phase where it presently is. Compared to the average of 119 responses, both Owner C and Contractor C perceived most criteria very high, above 1 SD of the average. The only exceptions are for collaborative practice and relationship continuity as perceived by Owner C but they remain above the average. Project Alpha is the second most collaborative performer, as both Owner A and Contractor A perceived all criteria above the average. Finally, Project Beta is the least collaborative performer. Despite the fact that the collaboration in Project Beta was not extremely below the -1 SD from the average, either Owner B or Contractor B perceived the performance and relationship continuity quite badly, near and below the -1 SD relative to the average.

Figure 3 indicates the consistency of RECAP in the three projects compared with the survey results reported in Suprapto et al. (2015b; 2015c). The score ratios of four relational criteria — front-end definition, collaborative practices, relational attitudes, and teamworking quality — for Project Alpha (Owner A and Contractor A) and Project Charlie (Owner C and Contractor C) were generally above the average of 119 responses. The corresponding score ratios of project performance and relationship continuity are also above the average. On the other hand, the score ratios of relational criteria for Project Beta (Owner B and Contractor B) were mainly below the average and so does the score ratios of project performance and relationship continuity.

The validity of RECAP

The practical use of RECAP in various project phases and outcomes was demonstrated through pilot applications in three projects. The results suggest that RECAP can be understood and used by the participating practitioners. The score levels captured the owner's and the contractor's perception regarding their relational capability and performance. The score gaps between ow-

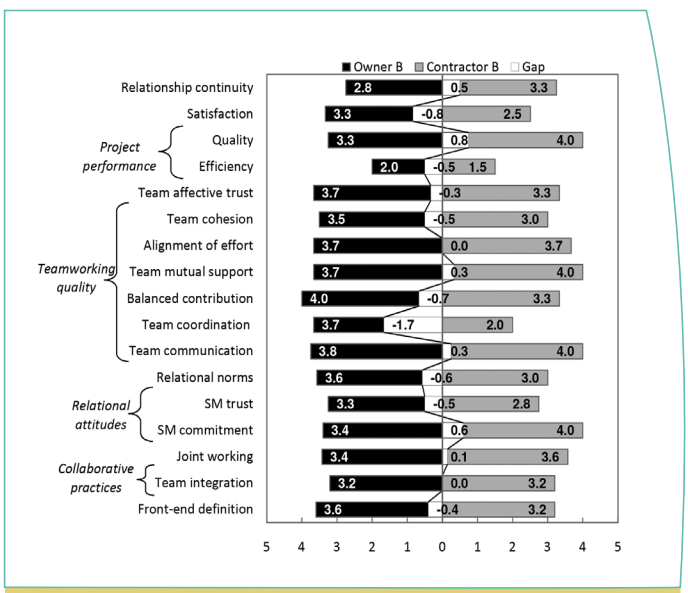

Figure 2 – Project Beta's score levels and gaps by sub-criteria.

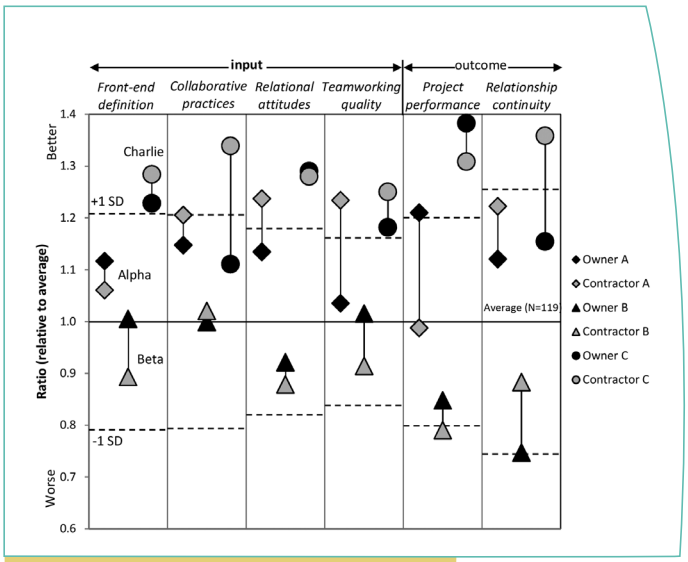

Figure 3 – Comparing three projects with survey data as reference.

ner and contractor assessment give a detailed idea which criteria and sub-criteria are in need of improvement and according to whom. It is important to note here that RECAP is not an objective measure of individual organizational or team performance but rather a deliberate proactive management instrument focused on measuring the inter-organizational and inter-team interactions embedded in a project. The score gaps by criteria or sub-criteria should not be interpreted as the differences between two parties in achieving the degree of collaboration individually but as the perceived differences of similar phenomena.

The feedbacks from the six participants indicate RECAP as a useful tool to facilitate a joint reflection involving the two parties in various project phases. Even during the front-end engineering and design (FEED) phase of a project (as indicated through Project Charlie), the project managers of both parties can already sit together and assess the relationship health of the project. A joint session can be used to present the assessment results and encourage a discussion to reflect on specific aspects of the working relationship where different parties or actors have divergent perceptions and meanings. This reflective process can facilitate individuals to enrich their interactions and stimulate constructive exchange of ideas and knowledge that can be translated into real collaborative behavior throughout the different project phases. Moreover, as indicated in Project Beta, the practitioners can also use RECAP to reflect on lessons learned from a completed project to be applied in future relationships and projects. Finally, RECAP could become a part of a company's project management procedures. It can be used to periodically assess the collaboration health and performance of the projects portfolio within the company.

Concluding remark

Collaborative relationship is central in engineering and construction projects. Although collaborative relationship has been a topical research area in engineering and construction projects, no attempt has been reported yet to develop an assessment tool for practical use independent of the formal arrangements. This article presents development and validation of relational capability assessment tool (RECAP). RECAP, in essence, is developed through a series of literature and empirical studies.

Through the pilot applications of three projects and interviews involving 6 project practitioners, RECAP was validated. It was shown that RECAP could be applied by the project practitioners to measure what it is supposed to measure: the relational aspects of collaboration in real-life projects at different stages. The assessment results, score levels and gaps in responses between the owner and the contractor were recognized by the participants as useful to discuss specific improvement of their collaboration. In addition, positive feedback has been received from all participants on the practicality and usefulness of RECAP. Not only did they perceive RECAP as practical to measure the collaboration health but they also foresee its usefulness as instrument to building awareness and facilitating constructive discussions for improving ongoing working relationships.

The positive feedbacks provided by the participating practitioners in turn supported the stability and robustness of the earlier developed framework and rigorously tested empirical model and constructs behind RECAP. RECAP could be used for any projects with any contracts because the assessment criteria/sub-criteria were generic and independent of any prescription models of collaboration as long as the senior management and project managers of both sides are willing to engage in collaborative relationship. With the focus on one-to-one (dyadic) relationship between two firms, RECAP could also be applied to assess various relationships such as the relationships between an owner and a main contractor/ sub-contractor/ supplier, between a main contractor and a sub-contractor/supplier, and joint venture partners.

Acknowledgement

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Note

The RECAP assessment form and spreadsheet template can be downloaded from: http://dx.doi.org/10.13140/RG.2.1.1035.2727

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