

IMPROVING PROJECT PERFORMANCE THROUGH WORKER PARTICIPATION IN ALLIANCE PROJECTS

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Worker participation has a direct influence on construction project performance and is a major factor of productivity in construction. Alliance principles emphasise the significance of developing a culture for innovation with worker participation. Therefore, this study identifies the existing worker participation practices and their limitations in a typical alliance project. The study uses the case study approach with semi-structured interviews with alliance management and a questionnaire survey with middle level management to assess their perceptions on worker participation. The study reveals that regular worker performance appraisals, worker training and provision of project performance information to workers are important worker participation practices required in an alliance project. The way project teams are acknowledged and rewarded to increase participation also appears to be an area that considering the selected case study project can be developed further. In addition it would seem advantageous for the project to build worker participation practices from the very beginning rather than midway through a project.

Keywords: alliance project, bottom-up approach, case study, worker participation.

INTRODUCTION

A current trend in construction aims at an effective integration of key stakeholders which positively contribute to a project's performance. Consequently, there is evidence of increased relational type contracts in construction. However, many relational type contracts have not been as successful as expected (Maqsood, Walker, & Finegan, 2007) because they have not fully addressed the needs of the business, people and processes. Due to the labour and knowledge-intensive nature of the industry, the people factor plays an important role. However, involving and empowering individuals of the wider project team has not been an extensively researched topic especially in relational type construction projects.

Additionally, Egan (1998) stated that the construction workforce is undervalued and frequently treated as a commodity rather than the industry's single most important asset. Morton (2002) stated that the workforce could be a main source of productivity improvement which could be equally effective as the adoption of new systems. Moreover, Mossman (2009) pointed out that since only site operatives create value for end users, it is vital to engage them in site management tasks. Since workers are close to a process, they often have suggestions that can be used to improve the process.

Recently, researchers have shown an increased interest in improving construction practices by applying core principles of current production management theories such

as total quality management, lean and business process re-engineering. These concepts require the increased participation and autonomy of employees as a necessary component for improving the efficiency and effectiveness of organisations (Eriksson, 2010). Despite of the improvement initiatives offered by those concepts, there is an absence of an explicit consideration of the human resource implications of adopting production management theories in the construction management field (Green, 2002).

Alliance principles declare that participants need to develop a culture of innovation. Innovation is one of the important key performance indicators for most of the alliance projects (Love, Davis, Chevis, & Edwards, 2011) and one of the main themes of alliancing is continuous improvement. Worker participation positively affects innovation and continuous improvements. However, worker participation practices in alliance projects have not surfaced yet in the scientific literature and these practices are not explained in any alliance manuals or guidelines. The work presented here is part of an on-going doctoral research study which tries to explore the improvement opportunities in alliance contracts with a lean perspective. The aim of this paper is to identify a spectrum of worker participation practices in alliance projects and how to improve those practices.

The paper is organised as follows. After this introduction section, the next section gives an overview of the worker participation practices in construction and alliance projects. Then, after presenting the research methodology, the study reviews the existing worker participation practices in a selected alliance case study project. The analysis focuses on finding different procedural and organisational practices to improve collaboration of the wider project team to the advantage of a project. Finally, after the discussion of a questionnaire analysis more general conclusions are drawn.

LITRERATURE REVIEW

The people factor and process improvements are positively related themes because worker participation has a significant potential to improve project performance (Maqsood *et al.* 2007). Though worker participation has been a well-researched area, its understanding has been limited in project management research and especially in construction. The omission of the people factor within the construction context was pointed out by many authors. Hence, the following sections deal with the worker participation practices in construction with the view of exploring the current practices in new alignment methods specifically in alliance projects.

What is worker participation?

A worker participation culture was initiated through a worker suggestion system (Fairbank & Williams, 2001). At present different terms exist to explain a worker participation culture since it is constantly being renewed by researchers and practitioners. However most of the terms are referring to similar principles with varying practices. Basically, it is a culture that gives workers the opportunity to participate in substantive decisions, the skills to make this participation meaningful, and the incentives to encourage skills acquisition (Appelbaum, 2000). The identified worker participation practices in previous literature are classified into five variables (power, information, reward, knowledge and relationship) as shown in Table 1 which will be used as a guide for assessing worker participation in an alliance project.

Level of worker participation in construction projects

The construction site workforce is one of the most important variables to project progress (Morton, 2002) because of the high labour and knowledge intensive nature of

the industry (Richards, 2006). Despite the importance of the people factor, due to the temporary nature of construction projects (Eriksson, 2010), the industry believes that people development and participative approaches are not important (Green, 2002). Furthermore, the fluid organisation and fragmented nature lead to weakening the relationship between management and workers which is a crucial for worker participation. Conversely, the industry informally relies on the contribution of workers to transfer experience from one project to the next. Therefore workers' insight is important in developing new projects and continuous improvement in current projects.

There are numerous examples of worker participation being used successfully in other industries, but less in construction (Briscoe & Dainty, 2005). Worker participation in problem solving groups occurs in only 21% of construction cases (Green, 2002). There is a large volume of published studies describing the motivation of construction workers are minimal (Ng, Skitmore, Lam, & Poon, 2004). The high labour turnover in construction is caused by little opportunity for training and it will ultimately affect skills shortages. Consequently the lack of labour skills and high labour turnover are also denoted as major reasons for low productivity in construction. Therefore the implementation of people development and participative approaches will enhance the ability of organisations to retain employees (Yankov & Kleiner, 2001). In the short term the resignation of a trained worker from a company can be considered as a loss to the company, but such training will improve the industry as whole.

In summary, the worker participation practices are essential for construction. Yet, the industry has neglected to take advantage of its workforce, which means there is a considerable amount of untapped productive potential waiting to be released.

Level of worker participation in alliance projects

After recommending reintegration of fragmented functions through different reports, Egan (1998) and Latham (1994), a significant number of collaborative agreements have emerged. These innovative project delivery systems especially alliancing offer many advantages over traditional project delivery systems. The alliance projects identified key elements which are required to promote collaborative relationships among project participants like high performance teams, reward and risk sharing schemes and problem solving systems (Hauck, Walker, Hampson, & Peters, 2004).

Alliance projects are adopted for high risk and large projects. For large projects, each management level needs to delegate authority to their subordinate which requires trust with subordinates. These bottom - up practices are the source of new ideas which will be a competitive advantage to a project. However, findings disclose that worker participation practices exist in alliances but these practices mainly focus on the management level and less on the operational level (Cheung & Rowlingson, 2005). The alliance literature is also more concentrated on the highest level of the organisation where goal alignment and good relationships are crucial. However, a bottom-up support is also critical to maintain relationships in alliances.

Despite the above gaps existing in the alliance literature, recent alliance projects have also revealed worker participation practices such as the provision of training and more flexible quality of work life issues which address the needs of both management and workers. The Australian National Museum alliance project used a new organisational framework with solution building teams to encourage the suggestions for encountered problems (Hauck *et al.* 2004). This project used an innovative workforce performance review which was developed based on time, cost, design integrity and quality indicators of the main alliance (Walker, Peters, Hampson, & Thompson, 2001). The

agreement included the performance based payments made upon five performance indicators, which were measured weekly for all site workers. For operational level worker participation practices, numerous examples were cited in a waste water treatment plant alliance project (Cheung & Rowlingson, 2005). This project conducted a full day workshop arranged for all operational staff with an alliance coach at the pre-alliance stage. The case study project identified the importance of building strong relationships with the operational levels that are carrying out the actual site work and implemented a few new practices such as the induction programme and informal social occasions. The Manukau Harbour Crossing Alliance Project in New Zealand also adopted a reward system for the project team for process improvement suggestions (Alliancing Association of Australasia, 2011).

Additionally, continuous improvement through worker participation is a core lean principle which identifies the inability to utilise the knowledge and skills of employees as the eighth waste. This waste involves losing time, skills, ideas, improvements and learning opportunities by not listening to workers. Lean theory suggests improving participative culture by different tools like improvement suggestions, rewarding mechanisms and multi-skilling.

In summary, worker participation practices are required in high risk and complex projects with a high level of technology. There is a trend in construction projects of an increasing implementation of such practices. However, these practices vary with the alliance management and project teams. Therefore this study provides details of best practices to implement for construction projects which could be used as a guideline for future alliance projects. The worker participation practices listed in previous research studies have been reclassified to refer to alliance projects.

RESEARCH METHOD

The study aim is to gain an insight into worker participation practices in an alliance project. The used methodology is a grounded, triangulated approach. The worker participation practices in alliances were investigated initially through observation in the case study project. The second phase of the research was to investigate improvement opportunities in worker participation practices and the validation of solutions through interviews with the alliance leadership team and questionnaire surveys with the middle management.

The literature, interview and observation findings were used to formulate the questionnaire. The targeted participants were from the alliance project management as they are usually responsible for facilitating change within the project team. While workers are a vital part of the change, the research attempted to consider worker participation issues from the management perspective. The respondents of the questionnaires were asked to rate the importance of identified worker participation practices from literature review and interviews. The layout and design of the survey followed the principles of on-line survey development, as outlined by Lumsden (2007). A total of 30 copies of the surveys was distributed, of these a total of 18 were returned. Of the 18 questionnaire sampled, 30 % were from project engineers, 50 % were from site engineers, and 20 % were from supervisors. The average work experience in construction of respondents engaged in the questionnaire survey is 8.7 years, with about 54% of respondents having experienced more than one alliance project. Five interviews were conducted with members of the alliance leadership team.

FINDINGS FROM THE CASE STUDY

Background of the case study project

The project studied is a motorway replacement in New Zealand. The project is delivered by seven parties and a national government agency via an alliance approach. Several processes were identified within the project by a larger research programme undertaken by the authors to investigate improvement opportunities of the project. Initial process mapping identified that 53% of the workers' time at the alliance project is spent on waste activities which need to be eliminated. These results were fairly similar to other studies identified by Horman & Kenley (2005) which are conducted under traditional project delivery systems. Therefore, the authors believed that to eliminate waste activities there should be high levels of commitment from all employees. Consequently, current worker participation practices in alliance projects are examined and improvement opportunities are sought in the next sections.

Questionnaire finding

The importance of worker participation practices to the particular alliance project was identified as shown in Table 1.

Table 2: The importance of worker participation practices

Area	Practices	Mean	Rank
Relationship	Treat the entire workforce as equals	3.94	5
	Conduct social activities	2.89	9
Knowledge	Formal appraisal system to assess training needs	3.67	7
	Supervisors trained in people management skills	3.89	6
	Employees have job training opportunities	4.28	2
Reward and recognition	Regular employees performance appraisal	4.17	4
	Employees receive performance related rewards	2.17	11
Information sharing	Management gives project information to employees	4.39	1
	Standard job related induction programme	4.22	3
	"Feedback box" to make suggestions	2.11	12
Power	Worker involvement in lesson learned workshops	3.28	8
	Requests for employees' ideas and input	2.56	10

There are only four factors that registered a mean of above 4.0 on a scale between 1 and 5. These factors mainly focus on information sharing, training and development of workers. Moreover, another four factors only managed to register a mean score of less than 3.0. These factors concern 'power' and 'reward and recognition'. Overall, the most important worker participation practices were related to the 'information sharing' area while the lowest scores were related to the 'power' area.

Interview and field work findings

The various participation practices used by the case organisation are explained in the following section. These practices are typified by exclusion of the operative levels of the project and are aimed mostly towards middle management.

Relationship management

Relationship management is a key element in the project's high performance plan which is closely linked with the actual project plans. Several project celebration events were held to acknowledge all the project teams, including sub-contractors, for their efforts to attain key project milestones. A celebration of milestone achievements was used to recognise the workers' efforts and also to communicate project progress. All the site and office staff are required to attend weekly 'one team' sessions and all are inducted on alliance principles, values and behaviours. In the questionnaire analysis, treating the workforce equally is identified as a quite important practice but conducting social activities was identified as moderately relevant. However, Greasley *et al.* (2005) found that most workers prefer social activities and it will improve their motivation through a team belonging feeling.

Knowledge management

The case study project is investing significantly in employee training which is in line with the Druker, White, Hegewisch, & Mayne (1996) study recommendations. Most of the employees received training opportunities depending on job requirements. A novel approach called 'Keep, Stop, Start' was adopted to determine ineffective practices that should stop, effective practices that should continue and beneficial practices that should be implemented by the wider project team. Training needs are considered for the alliance leadership team to the foreman level. Most of the respondents rated such knowledge management practices as important factors.

Reward and recognition

An effective rewards and recognition program is a key practice of a participative culture. The middle management was assessed based on the achievement of project performance indicators and the monthly updated achievements are reported on notice boards. Therefore employees who produce remarkable results are recognised in a meaningful way with integration into the project performance. Approximately half of the questionnaire respondents identified performance appraisal as an extremely important practice but evidently there is no such defined system for the site operatives. For example, giving an award of recognition to the 'crew of the month' will inspire enthusiasm among workers (Nesan & Holt, 1999).

Furthermore, in order to be truly effective, appraisal programs should be linked with reward and recognition to the employees who contribute to project success. However, interview findings show that there are no performance related rewards available in the project and 60% of the respondents declared such reward mechanisms are not a vital practice to improve worker participation. Druker, White, Hegewisch, & Mayne's (1996) study indicated that 45% and 21% of construction organisations provide performance related pay to the managerial level and the worker level respectively.

Decision and suggestion making for process improvements

Several steps have been taken to support innovation namely pre-start meeting, lesson learned workshops and suggestion box system. The questionnaire analysis found that 61% of the process leaders adopted a participative decision style to make decisions to resolve complex project issues. Greasley *et al.* (2005) noted that there is a positive correlation with the role of leaders and the psychological sense of empowerment held by the workers. The findings show that the project engineer, site engineers and supervisors are the main groups to participate in process improvement decisions and less participation of site workers and sub-contractors exists.

The suggestion box system can result in process improvements and worked as one of the main vehicles for worker participation. However, the suggestion box system was implemented and failed in the particular project. The main reasons for the failure given in the questionnaire were lack of follow up and lack of interest. Moreover, in the interviews it is identified that there are frequent informal communications with the workers and foreman to discuss improvement opportunities on site. Greasley *et al.* (2005) pointed that some managers asserted that workers could perceive this consultative approach as weaknesses of management. Therefore, there is little room for new issues to be discussed through pre-start meetings and suggestion boxes.

Information sharing

Weekly sessions called 'one-team' sessions are conducted for all office and site staff. The 'one-team' sessions have had many agendas over time such as project progress and safety issues of the entire team. While most of the subcontractors' representatives were attending 'one-team sessions' regularly, it is uncertain how this information transfer happens to subcontractor management who are working off site. The questionnaire respondents identified such information sharing session as the most important areas for successful worker participation and as a missed opportunity of not implementing in the initial stage of the project. However, Raiden, Dainty, & Neale (2008) claim that team briefings in construction were infrequent and ineffective.

DISCUSSION

Process improvement is mainly governed by people because every employee has a significant potential to improve not only their own processes, but those of others as well. Therefore there should be a positively oriented organisational context that encourages employees to participate fully in process improvements. Although, alliance projects often have a high performance plan which creates the basis for positive organisational change but no actual procedures and practices are presented. In general, alliance projects tend not to define those practices in advance but leave it to the alliance team to find the best way. Thus most of the practices are implemented on an ad-hoc basis. Therefore this study summarises the important worker participation practices that emerged from this study (Figure 1).

The concept of a high performance plan tries to get meaningful contributions from the project team through developing high levels of positive connectivity, an operating environment with defined behaviours and people development. The identified worker participation practices are mainly classified into two areas namely top- down and bottom-up approaches. Each identified practice from the study is listed under five constructs which are used in Table 1.

In the case study a high performance plan created a participative culture. Especially periodic performance appraisal and training ensured the employees' growth. Nevertheless, some of the different participative practices adopted at different project stages failed or faded during the project. For example, the "suggestion box" system was given up in the early stages of the project. This is mainly due to lack of time and energy invested into an initiative and according to Fenton-O'Creevy (2001) such a condition is not necessarily a symptom of a negative initiative. The middle management resisted the suggestion box system stating the alliance culture already removed the communication barrier and workers can discuss process issues directly with their management. Alternatively an important part of a 'suggestion box' is contribution recognition, which helps to build workers' self-esteem and motivation.

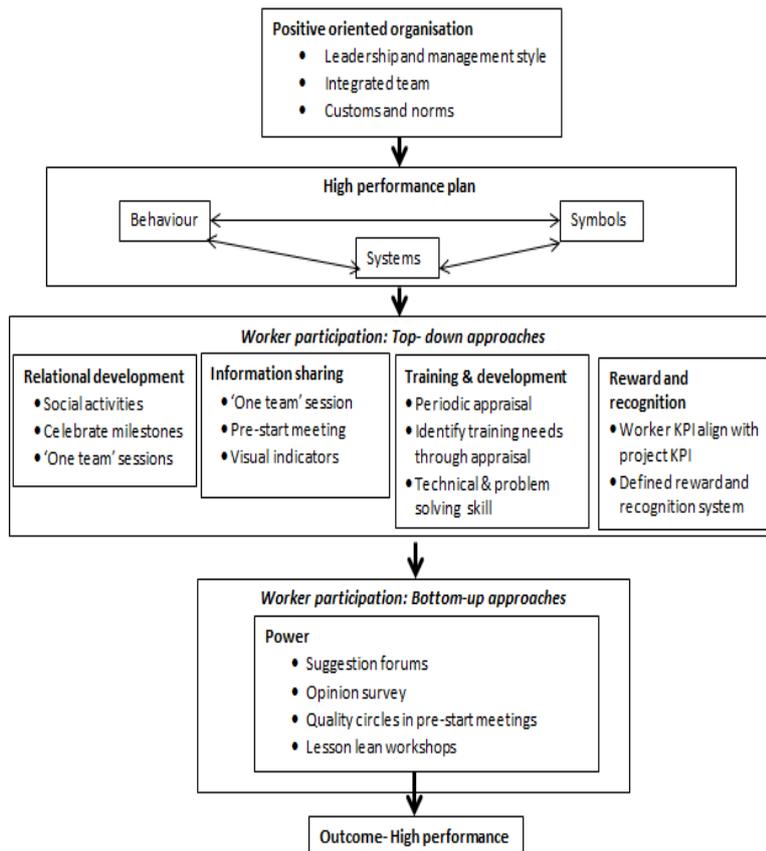


Figure 10: A conceptual model of the main practices associated with worker participation in alliance projects

Conversely, ‘one team’ sessions implemented to share project performance details among the wider project team, were introduced during the middle stages of the project. This practice gained more recognition among the project team and respondents rate it as the most important practice. Such a system will enhance the team belonging and according to Tabassi and Bakar (2009) team belonging is a powerful motivator for construction workers. Therefore the advantages of such practice were forgone in the early stages of the project.

The project implemented systems like 'pre-start meeting' and 'one team sessions' to improve communication and acquire suggestions but still there is a lack of input of the on-site operational level. Most of the process owners were focused on safety and schedule only and there was little focus on process improvement discussions. Even though the aim of these tools is to improve worker participation, there was hardly found any two-way communication between operatives and middle management. Each pre-start meeting should include a time slot whereby inputs from workers are encouraged and sought. The site operatives refrained from opening up and hesitated to come forward with their suggestions which could be due to the lack of recognition. Hence, constant encouragement through a recognition system, visual indicators of performance and continual feedback seems to be required to overcome these obstacles.

CONCLUSIONS

The literature suggests there is a necessity to implement soft human resource management policies based on worker participation and commitment to improve the construction industry performance. The research findings support the construction

literature, which suggests alliancing projects encourage a high level of connectivity among project teams and serve as vehicles to improve open participative practices. However, certain worker participation practices in alliance projects have not been subject to widespread assessment through empirical research. As a result, alliance participants can lack knowledge and confidence in implementing worker participation schemes. Therefore through a case study project a number of important successful worker participation practices were identified. However, the practices found were executed in different phases of the project, but to obtain the maximum outcome of these practices, they should have been implemented in the initial stage of the project. Getting the culture right at the beginning and inducting people effectively are important. Furthermore, the results revealed that a significant amount of informal participation is present in an alliance and resistance can exist against formal worker participation and reward systems. In order to implement successful worker participation systems, the project needs to have supporting staff which could be realised through project team selection and training geared towards a high performance culture. This means that alliance project organisations need to appreciate the implications of worker participation to effectively identify and integrate the project resources and technologies, and dynamic capabilities for successful worker participation. This research, in broad terms, provides insights into worker participation practices in construction alliances and specifically recommends application of those practices in the early stage of projects in an appropriate way. Also, it recommends worker participation initiatives should become management's daily routine, rather than considering them as extra activities.

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