Prioritizing Human Resource Management Factors for Construction Project Success: An Application of the Nominal Group Technique in Sri Lanka

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Abstract

This study examines the most influential Human Resource Management (HRM) factors affecting construction project success in Sri Lanka. Although construction projects depend heavily on people, existing research rarely identifies which HRM factors matter most. To address this gap, the study used the Nominal Group Technique (NGT) with ten industry experts to prioritize 42 HRM factors identified from literature. The NGT method enabled structured idea generation, ranking, and consensus building. Results revealed seven key HRM factors, with *Recruitment and Selection, Communication,* and *Training and Skill Development* ranked as the most critical for project success. *Proper Leadership, Reward Management,* and *Work-Life Balance* were also found important, while *Health and Safety,* though essential, was ranked lower due to existing regulatory compliance. The findings highlight the need for strategic HRM practices to improve workforce quality, strengthen communication, enhance skills, and support employee well-being. The study provides practical guidance for construction companies to improve project performance and contribute to the recovery and long-term development of Sri Lanka's construction industry.

Key Words: Construction Industry, Construction Project Success, Human Resource Management, Nominal Group Technique (NGT), Sri Lankan Construction Industry

Introduction

The industrial branch of manufacturing and trade related to building, repairing, renovating, and maintaining infrastructures is referred to as construction industry (Hussain, Paulraj, and Nuzhat, 2021). Construction industry consists of all the people, work and processes involved in manufacturing or producing homes, houses, other buildings, roads, bridges, and other related infrastructure facilities (Opatha, Olivia, Perera, 2024). Construction industry includes organizations which do business in terms of projects, and Human Resource Management (HRM) plays a significant role in determining these projects' success which leads to the success and growth of the organizations engaged in the construction industry.

Construction projects are people-intensive and demand the effective alignment of HRM practices with project objectives. While financial and technical factors are often emphasized in project success, growing evidence suggests that HRM plays an equally critical role (Lingard and Francis, 2005; Loosemore et al, 2011). Yet, little is known about which HRM factors are most influential in ensuring construction project success, particularly in developing country contexts such as Sri Lanka. To address the gap of little knowing of most critical HRM factors which ensure construction project success, this study was carried out by employing the Nominal Group Technique (NGT) to systematically identify and prioritize key HRM factors influencing construction project success.

Empirical Gaps and Importance of NGT Analysis

Although HRM in construction has been widely studied, much of the literature relies on surveys or case-based interviews. Participatory consensus methods such as NGT remain underutilized in construction HRM research (Chan et al, 2020; Jayasinghe et al, 2024). NGT offers unique advantages, including structured brainstorming, equal participation, and ranking of priorities. Previous HRM studies emphasize the lack of robust consensus-building tools in identifying critical success factors (Delbecq and Van de Ven, 1971; Harvey and Holmes, 2012). This study contributes to filling that gap by applying NGT to construction HRM.

Industry Context and Relevance

Sri Lanka's construction industry is a major contributor to GDP and employment but faces ongoing challenges such as skills shortages, poor workforce retention, and project inefficiencies (Herath, 2021; Manoharan et al, 2022). HRM is central to addressing these challenges, yet most firms still rely on informal practices. Mal management including HRM was a major reason for low productivity in organizations operating in Sri Lanka (Akuratiyagamage and Opatha, 2004), and this cause is applicable for present time too. A serious contextual need of improving the quality and quantity of the construction industry in Sri Lanka exists. Sri Lanka is a country having a great potential for its economic and social development though it is a developing nation (Opatha, 2021). During the last decade, unfortunately owing to political unrest and economic crisis, the Sri Lankan construction industry showed a decline, and however, signs of recovery and expansion started to show in this year. Hence, there is a need for empirical findings which can be utilized to avoid construction project delays and increase quality and quantity of successful completion of

construction projects. By using NGT, this study engages professionals directly in prioritizing HRM interventions, ensuring that the findings are both contextually relevant and practically actionable.

NGT Methodology

The Nominal Group Technique was first proposed by Delbecq and Van de Ven (1971) as a structured method for group decision-making. It combines individual idea generation with collective prioritization. The NGT is considered as a group method of drawing out ideas from a small group of experts, usually from 5 to 15 on a specific topic and it can be utilized for identifying reasons or aspects of an issue and prioritizing the generated items or ideas (Werther, Davis, Shwind, Das, and Miner, 1985; McShane, Glinow, and Sharma, 2008). When traditionally interacting and possibly brainstorming groups are compared, the NGT is a technique that has tendency to generate more and better-quality ideas in behavioural decision making (Barki and Pinsonneault, 2001; Frankel, 1987). Empirical evidence supports NGT's reliability in producing consensus-driven outcomes compared to unstructured group discussions (Harvey and Holmes, 2012). Some of the recent studies done in Sri Lanka have adopted the NGT. One study (Opatha and Rathnayake, 2018) was carried out in Airline sector and two studies (Opatha, 2019; Samarasinghe, 2021) were carried out in education sector.

A total of 42 HRM factors (as shown in Table 2.5) were selected from a comprehensive literature review, encompassing various aspects of HRM, including leadership, training, employee well-being, organizational culture, and workforce management. Each expert was asked to select seven HRM factors they believed were the most influential in ensuring construction project success. These selected factors were then ranked from 1 to 7, with 1 being the most important and 7 being the least important among their chosen seven. To ensure a quantitative assessment, a weighted scoring system was applied, where the most important factor received 7 points, the second most important received 6 points, and so forth, with the least important receiving 1 point. After compiling the total scores for each factor, they were ranked in descending order, revealing the most influential HRM factors in construction project success.

Data Collection and Analysis

A total of 42 HRM factors (derived from literature; see Table 1.0) were presented to participants. Each expert selected seven factors, ranked them, and assigned scores (7 points for the most important to 1 point for the least important). Scores were aggregated and ranked in descending order. All the ten experts selected for the study were enthusiastic to provide the support needed.

Table 1. Possible HRM Factors Identified by Basing the Literature Reading for Study

1. Top management support	21. Reward Management
2. Communication	22. Number of Staff allocation
3. Top Management Recognition	23. Stakeholder Management
4. Proper Leadership	24. Participative Management

5. Training and Skill development 6. Work environment 7. Clear roles and Responsibilities 8. Clear directions 9. Organizational Culture 10. Organizational hierarchy 11. Career planning 12. Pay management 13. Incentive management 14. Welfare management 15. Grievance Management 16. Labor relations 17. Flexibility 18. Laws and Social values 19. Flexible job assignments (e.g. job rotation, ability to perform job, and job enrichment) 20. Performance Management and Evaluation	25. Health and Safety Management 26. Job habits of staff 27. Competencies of the project participants 28. HR Planning 29. Job Design 30. Job Analysis 31. Recruitment and Selection 32. Workplace Spirituality 33. Induction 34. Work-life balance 35. Team management 36. Employer Brand 37. Psychological contracts 38. Job Engagement 39. Job Enlargement 40. Disciplinary Procedures 41. Career Management 42. Employee Movements

Results

The results of the NGT analysis are given below. Table 2 shows the results of ranking the HRM factors based on the preferences of each HR expert.

Table 2. Results of Ranking Based on the Individual Preferences by Each HR Expert

HRM factor	Preferences							Total
	1st	2nd	3rd	4th	5th	6th	7th	
Reward Management	2	3		2	3			10
Health and Safety	2	2	2			4		10
Recruitment and Selection	6	2	1	1				10
Training and Skill Development	4	3	2	1				10
Work-life Balance	3	1	1		5			10
Communication	5	3		2				10
Proper Leadership	3	2	2	3				10

Weights from 7 to 1 were given for the preferences and the total weight for each factor is given in Table 3. Final weight and rank for the factor are also given in Table 3.

Table 3. Results of Prioritising Based on the Weights

								Final Weight	**Rank**
Reward Management	2	3		2	3				
Weight for each preference	7	6		5	4				
Total weight for each factor	14	18	0	10	12	0	0	54	5
Health and Safety	2	2	2			4			
Weight for each preference	7	6	5			2			
Total weight	14	12	10	0	0	8	0	44	7
Recruitment and Selection	6	2	1	1					
Weight for each preference	7	6	5	4					
Total weight	42	12	5	4	0	0	0	63	1
Training and Skill Development	4	3	2	1					
Weight for each preference	7	6	5	4					
Total weight	28	18	10	4	0	0	0	60	3
Work-life Balance	3	1	1		5				
Weight for each preference	7	6	5		3				
Total weight	21	6	5	0	15	0	0	47	6
Communication	5	3		2					
Weight for each preference	7	6	5	4					
Total weight	35	18	0	8	0	0	0	61	2
Proper Leadership	3	2	2	3					
Weight for each preference	7	6	5	4					
Total weight	21	12	10	12	0	0	0	55	4

Refer to Table 4. It provides a summary of the weights and ranks relevant to the factors.

Table 4. Summary of the Analysis

HRM Factor	Weight	Rank
Reward Management	54	5
Health and Safety	44	7
Recruitment and Selection	63	1
Training and Skill development	60	3
Work-life balance	47	6
Communication	61	2
Proper Leadership	55	4

Findings and Interpretation of the Results

The results of the NGT analysis (as shown in Tables 2, 3, and 4) highlighted seven HRM factors as the most crucial for construction project success. These findings provide insight into the strategic HRM priorities that construction companies should focus on to optimize workforce efficiency and enhance project outcomes.

The highest ranked factor was 'Recruitment and Selection', which received a total weighted score of 63 points. This ranking underscores the fundamental role that hiring the right personnel plays in ensuring project success. A well-qualified workforce is essential for maintaining efficiency, minimizing errors, and ensuring smooth operations in the construction industry, where technical expertise and coordination are crucial. Without a strategic recruitment and selection process, projects may suffer from delays, rework, and skill gaps, ultimately affecting overall productivity. This finding is in line with a classic writing made by Werther and Davis (1989, p.177) and they stress: "*Attention to the employment process may be one of the most important aspects of personnel management, and it may be one of the most important actions by a line manager. Obviously, an organisation cannot perform better than the quality of the people it employs. And when the selection process does not weed out dangerous applicants, a legal and financial exposure is likely to result.*" The term 'employment' was referred to recruitment and selection by them. A popular model of HRM cycle, i.e., the model of HRM cycle developed by Devanna, Fombrun, and Tichy (1984) is composed of four generic functions of HRM and one is selection. To enhance success of construction projects, relevant projects' chief management needs to be highly concerned with right recruitment and selection.

'Communication' ranked second with a score of 61 points, highlighting its significance in construction project management. Given the complexity of construction projects, effective communication is essential to ensure that all stakeholders, from site engineers to laborers, are aligned with project objectives. Miscommunication can lead to misunderstandings, delays, and safety hazards, ultimately impacting project timelines and budgets. A well-established

communication system fosters coordination, reduces conflicts, and enhances decision-making, making it one of the key drivers of project success. Good communication is essential to the success of the employer, the employee, and the business (Schulman and Kowadlo, 2005). Construction employees need to know what they are supposed to perform on their project-related jobs to be successful employees. Project managers are required to plan, organize, staff, lead, motivate and control, in order to perform such management functions, they do need right information at the right time from the right source. The model of HRM developed by Guest (1987) considers communication systems as an essential policy or HRM function.

The third most critical factor, 'Training and Skill Development', received a total score of 60 points. The construction industry heavily depends on skilled labor, and continuous training ensures that employees stay updated with the latest technologies, safety protocols, and best practices. Inadequate training can lead to inefficiencies, poor quality work, and increased safety risks. By investing in employee training programs, construction companies can enhance productivity, minimize rework, and encourage innovation in project execution. This finding calls for industry stakeholders, including government and private sectors, to invest in continuous skills development programs, infrastructure for vocational training, and regulatory support to standardize competency levels of managers and non-managers across the industry.

Ranked fourth with a score of 55 points, 'Proper Leadership' emerged as another vital HRM factor. Leadership is instrumental in ensuring effective decision-making, resolving conflicts, and maintaining team motivation. In a high-pressure industry like construction, strong leadership can keep projects on track, ensure proper resource allocation, and maintain workforce morale. Effective leaders play a crucial role in navigating challenges, addressing workforce concerns, and driving projects to successful completion. Moreover, transformational leadership styles that inspire and foster a collaborative team environment significantly enhance the quality of teamwork, which is a critical mediator of overall project success. Leaders who demonstrate clear communication, strategic vision, and adaptability are better equipped to align team efforts, proactively solve problems, and sustain high performance throughout the project lifecycle.

'Reward Management' ranked fifth with a total of 54 points, emphasizing the role of employee motivation in project success. Construction projects often involve demanding work environments, and employees need to feel valued and appreciated for their efforts. A structured reward system, including financial incentives, promotions, and recognition programs, can significantly improve job satisfaction, employee retention, and overall performance. Companies that fail to implement effective reward strategies may struggle with high turnover rates and decreased productivity. As per the Harvard model of HRM, rewards systems are a critical HRM policy choice (Beardwell and Claydon, 2007). Furthermore, modern reward management goes beyond traditional compensation to incorporate a total rewards approach that integrates intrinsic and extrinsic motivators, such as career development

opportunities and a positive organizational culture. Aligning reward systems strategically with organizational goals ensures sustained employee engagement and creates a high-performance culture that drives project efficiency and quality outcomes. Additionally, transparent and fair reward practices enhance employee trust and commitment, which are essential for maintaining long-term workforce stability in the challenging construction sector.

The sixth-ranked factor, 'Work-Life Balance', received a score of 47 points, reflecting growing concerns about employee well-being in the construction industry. Long working hours, high stress, and demanding schedules contribute to burnout and job dissatisfaction. Another problem called presenteeism can arise and it involves an employee working while being sick, working more than the required time, and working over actively or hyperactively in the assignment (Werapitiya, Opatha, and Fernando, 2015). By implementing policies that support reasonable work schedules, mental health initiatives, and personal time management, companies can enhance employee retention and job satisfaction. A balanced work environment ensures that employees remain engaged, motivated, and committed to long-term project goals. Excessive work hours, often exceeding 50 to 60 hours per week, create significant stress and fatigue, negatively impacting employees' physical, mental, and social health. It is required that construction organizations actively promote flexible working arrangements, provide wellness programs, and encourage time for family and personal pursuits so that absenteeism can be reduced and productivity can be increased. Addressing work-life balance is not only ethically important but also strategically critical for maintaining a sustainable, resilient, and high-performing workforce in the challenging construction sector.

Finally, **'**Health and Safety' ranked seventh with a total score of 44 points. While workplace safety is an essential aspect of HRM in construction, its lower ranking in the analysis suggests that safety measures are often mandated by industry regulations and compliance standards rather than being perceived as a discretionary HRM strategy. Nevertheless, maintaining stringent safety protocols, conducting regular risk assessments, and providing continuous safety training remain crucial to preventing workplace accidents and ensuring employee well-being. In Sri Lanka, health and safety are governed mainly by the Factories Ordinance and other related regulations, which establish employer responsibilities such as providing safe working environments, personal protective equipment (PPE), and emergency procedures. However, challenges persist with inconsistent enforcement, lack of awareness among some contractors, and insufficient institutional capacity to oversee compliance effectively. Leading construction firms are increasingly adopting internationally recognized safety management systems like OHSAS 18001 to enhance safety performance. Moreover, for the purpose of reducing accident rates and promoting long-term workforce health and productivity in this high-risk industry, to foster a proactive safety culture through employee engagement, safety audits, and transparent incident reporting is vital. It is important to create a situation where government and industry bodies strengthen collaboration to develop tailored safety policies that are feasible within the local context and rigorously enforced to protect construction employees across Sri Lanka.

Conclusion and Strategic Recommendations from the NGT analysis

The NGT analysis provides clear insights into the HRM factors that significantly impact construction project success. **'**Recruitment and Selection, Communication, and Training and Skill Development' emerged as the top three priorities, indicating that a well-qualified workforce, effective communication, and continuous skills improvement are essential for enhancing project efficiency and reducing risks. Additionally, **"**Proper Leadership, Reward Management, and Work-Life Balance' play crucial roles in creating a motivated and stable workforce, ensuring long-term employee retention and job satisfaction. Although **'**Health and Safety' ranked lower in the final list, it remains a fundamental aspect of workforce management due to regulatory requirements and its direct impact on worker well-being. The relatively lower ranking suggests that safety protocols are already well-established and are perceived more as compliance measures rather than strategic HRM priorities.

To optimize workforce management and improve project outcomes, construction companies should **'**prioritize strategic recruitment processes, establish strong communication channels, invest in continuous training, and develop effective leadership programs'. Additionally, implementing **'**reward systems and work-life balance policies' can further enhance employee satisfaction and commitment. By focusing on these key HRM factors, organizations can build a more resilient, engaged, and high-performing workforce, ensuring sustained success in the competitive construction industry. In an increasingly competitive and evolving construction industry, it is essential that current organizations integrate these HRM factors into their strategic planning in order to build a resilient, engaged, and high-performing workforce. This positions them not only for immediate project success but also for long-term sustainability and growth within Sri Lanka's dynamic construction landscape.

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