SRIWIJAYA INTERNATIONAL JOURNAL OF DYNAMIC ECONOMICS AND BUSINESS
http://ejournal.unsri.ac.id/index.php/sijdeb

Impact of Hard Project Management and Team Motivation for Project Performance

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Abstract: This study focused on the impact of Hard Project Management Practices (HPMPs) and Team Motivation (TM) for successful Project Performance (PP). Further, it examines how TM mediates the link between HPMPs and PP. A qualitative data collection section sought to find challenges faced by the construction industry in Sri Lanka while exploring the association of HPMPs and PP further. Both public and private sector 131 construction projects were selected as the sample by way of the convenience sampling method. Semi-structured interviews were conducted with the managerial capacity officers. Accordingly, this research found that there is a slight impact of HPMPs on PP. But when it combines with TM the PP is boosted significantly. The mediator analysis proved that even though the construction projects have sound HPMPs, those will impair project performance if they would not consider team motivation properly. And, there are many other variables outside this model that are discussed under qualitative analysis, especially the factors/challenges which are unforeseen in the external environment.

Keywords: Hard Project Management; Team Motivation; Project Performance

Introduction

The majority of businesses employ the project approach as a common strategy for achieving organizational objectives. Project performance aspires to perfection but is frequently subject to significant restrictions on a number of parameters (Nguyen & Watanabe, 2017). It is generally acknowledged that projects consist of a complicated array of elements and procedures that work together to accomplish the overall project goals. Additionally, the growing dynamism of the modern business environment hinders the rate of success for many projects. (Tahir, 2019). It is acknowledged that if both hard project factors and practices and soft project factors and practices had a better contribution to what constitutes project success and how the variables within their control affect outcomes, both could perform better (Langer et al., n.d.).

Hard Project Management Practices (HPMPs) are crucial in construction projects to achieve established targets (Crawford & Pollack, 2004) and the roles of different stakeholders as soft practices cannot be underestimated as construction projects are essentially human-driven. Multiple stakeholders are working on construction projects with various kinds of expectations and directions throughout the project life cycle (Winch, 2001 as cited by Larsson, Eriksson, & Pesämaa, 2018). Among various stakeholders, the project team plays a significant role. The motivation of the project teams is a must for the purpose of reaching the predetermined goals and objectives, and developing the commitment and willingness of participants for the project's success (Larsson, Eriksson, & Pesämaa, 2018). A study done in Sweden found that team motivation (TM) affects project performance (PP), while the HPMPs may really contribute; but the influencing power of HPMPs will seriously depend on the partially mediating factor called "team motivation" as construction projects are strictly human-driven (Larsson, Eriksson, & Pesämaa, 2018). Therefore, this study tries to determine how HPMPs with the mediation of TM impact PP in Sri Lankan construction projects. Some prior work has examined such issues of PP but the focus was more on various other technical factors (Wilson F, 1999 as cited by Crawford & Pollack, 2004). Thus, this study has major implications for the industry since the role of TM is rarely reported in project management studies.

The rest of the paper is organized as follows. We review the literature relating to HPMPs, TM and PP. Then, we examined many research studies on these concepts to identify how they are interrelated. Next, we discussed how these concepts were used in the Sri Lankan construction industry. Based on this analysis, we highlight what we have identified and offer a future research agenda that highlights project management knowledge that may be progressively developed with different intervening factors. Practical Implications are provided for the successful application of project management practices.

Literature Review

Hard Project Management Practices

According to the philosophical basis, the term "hard" is defined as objectivist, and scientific and "soft" is defined as subjectivist and social. (Martin A. A, 2000 as cited by Crawford & Pollack, 2004). "Hard" methods are rooted in positivist and realist philosophies, emphasizing the search for objective knowledge, while the "soft" approaches stem from interpretive and constructivist schools of thought, emphasizing the inter-subjective creation of knowledge (Midgley G, 2000 as cited by Crawford & Pollack, 2004). Traditional measurements such as cost, time and quality constraints in project management are involved with hard project management (Crawford & Pollack, 2004) and scholars revealed that soft aspects are organizational culture, leadership styles, people and their skills, relationships and interactions, teamwork and shared values. Crawford, L., & Pollack, J. (2004) described hard and soft dimensions framework consists of seven dimensions scale such as goal clarity, goal tangibility, success measures, project permeability, number of solution options, participation and practitioner role, and stakeholder expectations. The applications used to make strict planning and control in construction projects, and HPMPs will generate impaired process performances if the management does not promote the TM factor frequently (Larsson, Eriksson, & Pesämaa, 2018). According to (Karrbom Gustavsson & Hallin, 2014 as cited by Larsson, Eriksson, & Pesämaa, 2018) the processes

which generate the expected outcomes smoothly according to the predictions consider good projects, simply fulfil the hard project management paradigms' requirements under strong controlling mechanisms which help to get the established goals.

Previously the studies related to construction management promote HPMPs to facilitate minimize change and reach the expected performance of construction projects (Dvir & Lechler, 2004; Doloi et al., 2011; Menches et al., 2008 as cited by Larsson, Eriksson, & Pesämaa, 2018).

Team Motivation

According to (Clark, 2003) there are various motivational strategies that work for everyone and they are equally important in TM. TM can also be created with an environment that fosters teamwork and collective initiatives to reach team goals. Meanwhile, Bandura, (1997) as cited by Clark, (2003) reveals that there are two concerns called expertise and collaboration in TM. The expertise and collaboration that happen through appropriate monitoring, will be quite a difficult and critical task if there are inter-organizational projects and especially, in construction projects which have such a nature, having multiple stakeholders with different expectations, common targets but naturally with temporary teams (Larsson et al., 2018). In projects, TM is quite different from any other situation, since their complex nature and diverse mix of individuals that must be integrated into an effective project. In some situations, teams might be immature as they have different levels of knowledge and skills, role conflicts, uncertainties and complexities. Therefore advanced authoritative management practices with credible leadership should be there with proper controlling and planning mechanisms (Clark, 2003). According to Clark, (2003) TM is simply active participation in achieving common goals until the targets are completed. Few scholars, (Park, Spitzmuller, & Deshon, 2013) have done a study focusing their attention on six key areas that are important for TM such as team design, team needs, team goals, team self-regulation, team efficiency and team affect, for the purpose of providing an appropriate theoretical framework and they proposed overemphasized conceptual similarities between motivation constructs at the individual and team level. There are many antecedents and consequences of motivation exist such as: using the knowledge and skill maximum, making people initiate, energize and continue their experiences for the team goals (Clark, 2003). TM does not directly influence project performance; successful performance incorporates motivation and expert knowledge in work-friendly environments (Clark, 2003). Valuing the team goals, working conditions and incentives make team members motivated. But the motivation factors for individuals are different to each other, as it is a complex mind-related concept. Meanwhile, the motivation factors that affect a person will be different when the same person works with a team (Clark, 2003). Common factors that lead to team demotivation are, changing team goals, unnecessary rules and policies, work barriers, constant competition and negative feedback. (Clark, 2003).

Project Performance

The successful PP depends on some of the macro factors like economic and political stability, business environment and associated risk management (Takim & Akintoye, 2002). Further, for meeting stakeholders' requirements with successful PP, it should be addressed the procurement oriented, process-oriented and results-oriented criteria throughout the project life cycle (Takim & Akintoye, 2002). The performance of a construction project is

determined by many factors such as Construction cost, Construction time, Defects, Client satisfaction (product), Client satisfaction (service), Profitability, Productivity, Safety, Cost predictability, Time predictability, Cost for design predictability and Time for design predictability (Egan, 1998 as cited by Takim & Akintoye, 2002). According to (Blasini & Leist, 2013) there are eleven success factors of PP; individual knowledge and competence, process knowledge, integrated performance management, information quality, system quality, service quality, process quality, ease of use, usefulness, management support and incentive system. The indicators such as timeliness, cost per unit and cost for rework can also be used to assess the performance of a construction project. (Larsson, Eriksson, & Pesämaa, 2018). But these parameters cannot asses the causes of cost and time overruns in construction projects. Therefore, many studies have identified numerous mediators such as motivation, commitment, cohesiveness, project leadership and ownership (Tahir, 2019).

Sri Lankan Construction Industry

The Sri Lankan construction industry plays a vital role in Sri Lankan economic growth and it has become the fourth highest sector for contributing GDP in Sri Lanka. (De Silva, Rajakaruna, & Bandara, 2013). The contribution of Sri Lankan construction industry to GDP is 6.8%. According to Construction Industry Development Authority, (2019) there are over 2500 firms that have registered. They are divided into main two categories according to the speciality and sub-speciality. According to the grading of the Construction Industry Development Authority, there are several grades belonging to main contractors called; CS2, CS1, C1, C2, C3, C4, C5, C6, C7, C8, and C9. Major problems identified in various studies are the significantly low level of material wastage (De Silva & Vithana, 2008), the time-consuming, labour intensive and costly paper-based tendering process (Wimalasena & Gunatilake, 2018) policy-related bottlenecks, the political instability of the country, and political interferences etc. (Kulatunga, et. al 2006; Senaratne & Wijesiri, 2008; Nagalingam, Jayasena, & Ranadewa, 2013; De Silva & Vithana, 2008; Jayasena & Weddikkara, 2012). And, recently Sri Lankan scholars focus their attention on the multi-disciplinary areas of the construction industry such as emerging knowledge-based economies, value engineering applications, construction accidents, water use efficiency and conservation (Hadiwattege, et. al 2018; Karunasena & Gamage, 2017; Karunasena, Rathnayake, & Senarathne, 2016; De Silva, Rathnayake, & Kulasekera, 2018; Waidyasekara, De Silva, & Rameezdeen, 2016. In the Sri Lankan construction industry, many studies investigated the success factors yet rare attention was given to hard and soft versions of them.

Executed HPMPs, tight planning schedules associating with timely acquisition and dissemination of relevant information encourages high levels of team motivation. Because of this the process performances are enhanced (Larsson, Eriksson, & Pesämaa, 2018). According to (Crawford & Pollack, 2004) guidance, control and other basic authoritative management practices which belonging to HPMPs will be creating a favorable environment for building up TM in a context like project management. Therefore, in H1 assumes, Hard Project Management Practices positively promote Team Motivation.

According to Larsson et al (2018) establishing a well-motivated team, the gaps between expected outcomes and actual outcomes are reduced significantly. Meanwhile, the allocation of resources for teams to achieve the goals will no matter anymore (Clark, 2003). And because of the motivation factor, the people will be able to achieve their maximum

and otherwise, it is impossible to reach the expected results without this curtail influencing factor called TM (Larsson et al., 2018). Therefore H2. Assumes Team Motivation has a significant positive effect on Project Performance

According to the hypothesis tested in a study (Larsson, Eriksson, & Pesämaa, 2018) HPMPs can impair the process performance of the construction industry if TM is not promoted. It is a proven fact in Sweden's construction industry context. Therefore, this hypothesis tested the applicability of the same scenario to the Sri Lankan context. Thus, H3. Assumes Hard Project Management has a significant relationship with Project Performance

Methods

The Measurement instrument for HPMPs and TM were developed by adopting an instrument used in a similar study (Larsson, Eriksson, & Pesämaa, 2018) and minor modifications were applied. PP is measured using the measurement indicators identified by Takim & Akintoye (2002) in a study. There were three indicators to measure PP such as Result Oriented Performance, Procurement Oriented Performance and Process Oriented Performance. The questionnaire was constructed including all these measurements together and tested in ongoing construction projects. At the end of the questionnaire, one open question was given so that the respondents could keep any suggestions or opinions. The convenience sampling method has been used and selected 131 projects as the sample. The companies in CS2, CS1, and C1 grades include both public and private sector construction projects. There were seven semi-structured interviews conducted over the phone with Project Managers, Assistant Project Managers and also with Engineers. The interview questions were designed by aligning the same questions in the survey but with some modifications suitable for interviews. For the purpose of collecting expert opinions regarding study objectives, corporate managers such as Human Resource Managers, Finance Managers have been interviewed. The interviews exposed many challenges faced by the construction industry at present which are not visible often. The study suggests the "Onion model" as a way to explore conceptually linked layers of tacit knowledge (Asher & Popper, 2019). The deductive research approach was used to build hypotheses using theories (Soiferman, 2010).

The conceptual model is shown in figure 1 which introduces the relationships between variables. Accordingly, PM depends on the HPMPs while TM mediates the relationship to strengthen or weaken the effect.

Figure I. **Conceptual Framework**
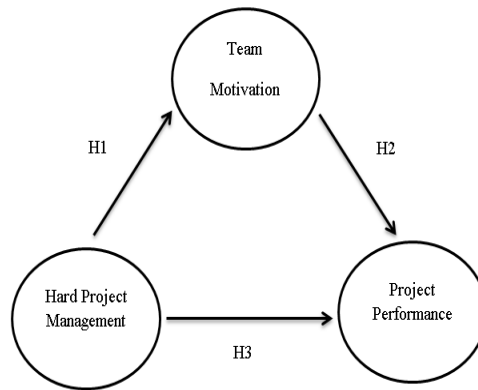
Findings

The data received from the survey went through the data cleaning process and the measurement was tested its reliability and validity.

Table I. **Reliability Statistics**

Reliability Statistics		
	Cronbach's Alpha	**N of Items**
Hard Project Management	.747	7
Team Motivation	.791	3
Project Performance	.719	8

Table I: shows the reliability statistics consists with the reliability of the questions under the three variables of the questionnaire and gained acceptable reliability.

Table II. **Skewness and Kurtosis Tests**

	Statistic	**Standard error**	**Value (statistic/S.E)**
Skewness	.223	.227	0.98
Kurtosis	.455	.451	1.01

The table II: Skewness and Kurtosis Tests is used to check normality in statistical perspective.

Table III. **KMO and Bartlett's Test**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.727
Bartlett's Test of Sphericity	Approx. Chi-Square	852.631
	df	153
	Sig.	.000

Table III shows adequate level of normality indicating approximately 0.727.

Table IV. **Hypothesis Testing by Regression Analysis**

Path	Path Coefficient	Two Tailed T Value	R²	P< or P>	Result
HPM→TM	.497	6.036	.247	P<0.05	Accept
TM→PP	.679	9.738	.461	P<0.05	Accept
HPM→PP	.199	2.140	.040	P<0.05	Accept

According to the regression analysis, the hypothesis is accepted as it is significant and there is a positive relationship between the two variables; P<0.05, path coefficient 0.497 and two tailed T value is 6.036. And in simple regression there is a 24.7% individual impact of HPMPs on TM. The second hypothesis also shows a significant (P<0.05) positive relationship between TM on PP. And the hypothesis is accepted as two tailed T value is 9.738. The effect of the independent variable on the dependent variable (TM on PP) shows as the path coefficient 0.679. Finally, the individual impact of TM on PP is 46.1%. The hypothesis is accepted as there is a significant P<0.05 relationship between HPMP and PP. At the same time, the two-tailed T value is 2.140 and the hypothesis is accepted. The individual impact of the path model of HPMPs on PP is very low showing 4%. And the path coefficient is 0.199. The impact of TM on PP shows the strongest relationship (impact) of this model. And the impact of HPMPs on PP is not at a considerable level. Finally, the all the hypotheses are accepted by the analysis and it proved the validity of the analysis.

Table V. **Total Effect of Two Models**

Mediating Variable	Direct Effect	Indirect Effect	Total Effect
HPM	0.51	-0.06	0.45
TM	-0.27	0.57	0.30

The above table V shows that TM is the strongest predictor of PP as the total effect 0.45 which is the highest. Even though HPMPs has a negative direct effect -0.27 it can be mediated to PP through TM to gain positive 0.30 total outcome. Direct effect of TM 0.51 is suppressed by HPMPs as the mediating effect is a negative effect.

Discussion

The behaviors of these three variables are quite similar as predicted. The impact of HPMPs on TM is substantial that showing 24.7%, but it does not create a huge influence. By changing HPMPs it might be an increment or at a same level, which will not create a considerable variation on TM. Meanwhile, TM on PP makes a significant impact (46.1%). But HPMPs make impact on PP is very low. It is 4%. According to the outcomes, TM plays a dynamic role in gaining profits. However, in the Sri Lankan construction industry, HPMPs are good enough according to descriptive statistics. It shows a 3.85 mean value for 5-point Likert scale factors. In this scenario, it is sufficient to make and implement HPMPs as it only creates a 4% outcome at the end. Further descriptive statistics show the levels of TM and PP too. It shows the mean values of those two variables as 3.61 and 3.23 respectively. Even though the industry maintains a good level of HPMPs the simple regression analysis says a different story.

The mediator analysis provides an interesting outcome regarding the overall model. In the model, the mediator effect has been checked by using two paths. The first path is checking the indirect effect on PP via HPMPs. And the second one is testing the indirect effect via TM. When HPMPs are playing as the mediator, the direct impact TM on PP is 0.51 and it shows -0.06 indirect impact of HPMPs on PP. In the HPMPs are working as suppresser for the model. Meanwhile, the second path analysis shows a significant negative direct effect of -0.27 of HPMPs on PP. But the indirect effect of 0.57 of the mediator TM is pretty high.

According to the overall effects of these two models of the path analysis, the TM as the predictor provides a 0.45 total effect on the model. And when it comes to HPMPs the predictor of the model the overall total effect is 0.30. That means TM generates good effects on PP whether it is the predictor or the mediator. But HPMPs generate negative effects on PP and it is playing as a suppressor in this model.

This finding is greatly support to the literature and specially the research study done in Sweden on "The importance of hard project management and team motivation for construction project performance" Swedish construction industry (Larsson, Eriksson, & Pesämaa, 2018) reveals that well-executed HPMPs impair PP without a proper concentration on TM.

However, considering the total effects (0.45) of this particular model it is better to make TM as the predictor of this model. As a mediator, HPMPs suppress the model but it is not a considerable amount (-0.06). TM is well playing as a mediator (0.57) but then HPMPs generate more negative effects and reduce the total effect by 0.15. According to the qualitative analysis, this research found many perspectives regarding industry trends and industry issues. Shortage of skilled and unskilled workers, high construction costs, competition with foreign construction firms, and reducing the level of construction volumes are highlighted as the main issues.

Corporate management of construction firms and other parties expressed that the level of HPMPs are at significantly good level in the industry as all the projects has to be followed the given instructions and tools and techniques. Planning and information are done as the requirements, but as the experts' opinions there are few significant problems have to be considered that causes for this downward pattern of the construction industry. The major unforeseen factor is weather, a factor no one can control. The second major factors are the external environmental factors such as political and economic influences. Dramatic changes in tax rates, due to unreasonable tax amendments affect the contractors. The material cost also increased simultaneously due to this. Meanwhile, the contractors with a high level of capacity who can invest in massive constructions are unable to gain good profit margins from those and there is a tendency to mitigate those losses by bidding and involving with small and medium-scale projects. That has generated a bad influence on small and medium-scale construction firms as they can place their bid that a much lower level. The small construction firms can't compete with them and that layer of construction projects is declining. These material costs and newly introduced taxes not only generate negative influence but also, influence to remove the medium and small layer of construction firms. The other, crucial problem is a shortage of skilled and unskilled labour.

The unstable supply of the labour force is again challenging. The employee retention ratio is very low and the projects have to seek labor frequently.

Conclusion

According to the findings, the roles of HPMPs and TM are differently affecting to PP. HPMPs are essentially required for gaining profits and in the Sri Lankan construction context, the prevailing HPMPs are considerably good. But according to the model the HPMPs do not generate significant effect on PP. But the TM is playing a different role. The TM generates positive energy on PP. When TM exist as the predictor the effect on PP is higher, concluding that TM is acting as a good mediator to generate better PP. The best way is to get an approach to start the PP enhancement process with TM. Using the strategies to motivate the team firms can progress their' HPMPs practices as well. It will enhance teamwork as a motivated team and also enhance adaptation to different environments. Even though a firm has good capacity and strategies, fighting unforeseen factors is the biggest challenge. Survival is a problem as these factors such as political influences and their vulnerable behaviour without a proper policy.

According to this study, the factors that affect the PP can be categorized into two controllable and uncontrollable These controllable factors can be used in manageable action to reach the project goals. Especially factors which cause the personal development of individuals such as; training and development, welfare activities, solutions for grievances, safety and insurance, and performance appraisals are quite important. Human resource management strategies for upgrading teamwork and employee satisfaction should be promoted. Accordingly, future researchers may study Project Risk Management, Project Performance Management, and Sustainability Management as dependent variables with HPMPs. This will open up grounds for the scholars to test dual mediations and potential interactions among several other predictors. This study provides practical implications which need to be incorporated into project settings to maintain a better work culture and explain how HPMPs can be blended with TM to derive higher PP. The policy makes can consider that labour force-related issues which result on the motivation of employees. Consequently, a significant impairment has occurred in the project performance.

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