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**Project Managing in Post-Conflict Environments:  
An Exploration of the Resource Profiles of Sri Lankan Non-Governmental  
Organizations involved in Development Projects**

**Yogarajah Nanthagopan & Nigel Williams**

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**Abstract**

The aim of this study is to examine the configuration of project resources in organizations operating in a post-conflict country environment using a Resource-Based View (RBV) perspective. Data collection was undertaken using a quantitative survey study of Non-Governmental Organizations (NGOs) involved in development projects in Sri Lanka, which obtained 445 responses. An Exploratory Factor Analysis and subsequent Confirmatory Factor Analysis were performed to identify and confirm the Project Management (PM) resource profile composition of these organizations. The study identified resource profiles incorporated items at the team, organizational and collaborative social resource levels and did not differ significantly by organization type. This suggests that the current focus of PM RBV research that implicitly uses a competitive advantage derived framework may need to be adapted for contexts such as Post conflict environments. For organizations seeking to deliver projects in developing countries, the findings indicate that relational capacity in the form of a collaborative social resource may be required to adapt team and organizational resources to post conflict environments.

**Key words:** PM Resources, Resource-Based View, Post-Conflict Environment

**1. Introduction**

As conceptualized, the resource based view models organizations as a combination of resources. These resources can be tangible or intangible (sometimes referred to as capabilities). In Project Management, the resource based view has been used to examine the nature and interactions of codified and tacit deployed in project delivery. Early work in this area classified the type and characteristics of resources (Jugdev and Thomas, 2002). Later work examined capabilities (Davies and Brady, 2000) which can support project operational performance, that is the delivery of stakeholder requirements via project or strategic/dynamic capabilities which enable reconfiguration of resources to meet project

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4 requirements. Subsequent work examined the interaction of resource types such as the co  
5 creation of capabilities via interaction of these entities (client and contractor) in the context  
6 of complex project delivery (Zerjav et al., 2018). While most of this work has been  
7 conducted on firms located in developed countries, in developing countries the research has  
8 also explored the capabilities of single firms along with the nature of the project resources  
9 deployed by the firms. Further, a significant stream of the RBV in PM research utilizes the  
10 conceptualization of Barney (1991) which seeks to identify the competitive advantage of  
11 organizations. This approach may not necessarily be adapted into project settings where  
12 organizations hold far more complex relationships than oppositional competitive  
13 relationships.  
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23 Post conflict environments may require organizations to evolve approaches beyond seeking  
24 competitive advantage. Post-conflict countries are defined as being the previous setting for  
25 an intra-state conflict, such as a civil war. These environments are distinct from the settings  
26 in which international development projects may be delivered as armed conflicts may occur  
27 in both developed (Northern Ireland) and developing countries (Sri Lanka). The conflict  
28 has ended and these countries have begun the decades-long process of establishing peace  
29 by achieving milestones, such as the ending of violence, disarmament and facilitating  
30 economic recovery (Brown et al., 2011). Unlike other countries, post-conflict countries face  
31 the distinctive challenges of community recovery and risk reduction (Collier et al., 2008).  
32 Communities hosting former combatants may not wish to work together on regional or  
33 national collaborative activities, such as projects (Lake, 2017). A related issue is that the  
34 negotiations for employment or contracts to deliver projects may reignite internal conflict  
35 in communities composed of former combatants from opposing sides, further increasing the  
36 difficulty of project delivery (Barakat and Zyck, 2009). Organizations in these settings who  
37 are seeking to deliver projects to communities may require distinct capabilities to meet  
38 these requirements. Organizations involved in projects delivered in post conflict countries  
39 have additional responsibilities to those involved in traditional international development  
40 projects due to the nature of the context. Post conflict countries have a history of violence  
41 and latent stakeholder tensions that can return to violence. Organizations need to be  
42 sensitive to these challenges and may need to develop resources and capabilities to ensure  
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4 that projects can be delivered without a return to conflict. Specifically, they may adopt  
5 communication and collaborative approaches to working in communities where groups may  
6 have been previous combatants. Organizations seeking to deliver projects in post-conflict  
7 countries may be required to transform internal processes. Evidence from infrastructure  
8 projects in Kosovo and Iraq indicate that smaller delivery teams are best for reducing the  
9 risk of inflaming local tensions into violence (Pelton and Hunter, 2004). Project teams in  
10 these countries may also need to develop reciprocal support relationships with communities  
11 in order to deliver activities where formal support from the state may be inconsistent  
12 (Kadirova, 2014). For example, civilian organizations may be contracted by foreign  
13 military personnel who require adaptation of existing processes to match military  
14 procurement practices and success criteria (Kremers et al., 2010). This suggests that firms  
15 involved in projects may develop particular resource types individually or develop  
16 combinations of resources (resource profiles) to meet these contextual requirements.  
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28 Appendix 1 provides a summary of extant work on using the RBV in project firm settings.  
29 To date, however, no extant work has examined the project capacities or resource profiles  
30 of a category of firms in post conflict countries which can identify the  
31 resources/capabilities developed by firms in order to meet the requirements of the external  
32 environment. The aim of this study is therefore to empirically examine the configuration of  
33 project resources in organizations operating in a post-conflict country environment. In this  
34 way, it extends extant work on the RBV (Resource Based View) in Project Management  
35 using both the capabilities and resources approach which has examined single firms or  
36 projects to identify the resource composition of a population of a specific type of  
37 organization (NGOs) in an underexplored country context (post conflict).  
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NGOs delivering projects in these environments are required to develop appropriate project management capacities to deliver beneficial outcomes in an environment with damaged infrastructure, divided communities and reduced state capacity. Sri Lanka was the setting for a violent civil war over 30 years (Government of Sri Lanka, 2017). The country is now recovering and local and international Non Governmental Organizations (NGOs) have been participating in the recovery process as well as economic and institutional development (Nanthagopan et al., 2019; DeVotta, 2005). By understanding how NGOs are configured in post-conflict domains like Sri Lanka, the setting of this research, can provide useful insights for project organizations, especially national and international NGOs seeking to work in post-conflict contexts.

This paper provides empirical verification of the types of project capacities that are deployed in a post conflict resource/institutional environment. It suggests that future theoretical development in project management using the resource based view could take a Penrosean perspective which suggests that resource profiles and configurations by firms result in emergent capabilities. These resources can be collective which overcomes the constraint of competitive advantage posed by the Barney approach. While we know of the value of tangible resources and collaborative social resources have been theorized, this approach seeks to provide quantitative empirical evidence of the importance of collaborative social resources as well as their association with other resource types in organizations involved in project delivery.

## **2. Literature Review: Post Conflict Country Environment and Project Management Resources**

Unlike it's application in business settings, the Resource-Based View (RBV) application in Project Management does not seek to explain how resources lead to competitive advantage but rather how resources/capabilities are used to perform project activities or reconfigure resources in order to meet complex, evolving stakeholder requirements. Project Management (PM) resources are defined as elements that support project operations, including PM knowledge, skills, systems, processes, culture, tools or techniques (Carnes et al., 2016). RBV research has two dominant paradigms. The first, based on the work of

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4 Barney (1991), identifies ownership or control of resources with the distinctive  
5 characteristics of value, rarity, inimitability and organizational support (VRIO), enabling  
6 organizations to perform activities in a manner that distinguishes them from others. This  
7 perspective has been applied in project management to classify project resources (Jugdev  
8 and Thomas, 2002) into tangible (formal project management methodologies, tools and  
9 techniques, databases, project management investments) and intangible (knowledge  
10 exchange, mentoring, shadowing). A similar categorization was used to classify project  
11 resources in infrastructure (Parker et al., 2015) and resources applied in information system  
12 projects (Ghapanchi et al., 2014). Research has also used this perspective to identify the  
13 relationship between these resources and project success (Almarri and Gardiner, 2014) and  
14 the impact of gender on organizational project performance (Baker et al., 2019).  
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## 25 **2.2 The Resource Based View and Project Capabilities**

26 Resources have also been identified in the project capabilities approach which are defined  
27 as capabilities required for successful project delivery (Davies and Brady, 2000). This work  
28 has been extended to identify operational project capabilities and strategic/dynamic supplier  
29 project capabilities (Davies and Brady, 2016). Related work has examined these  
30 capabilities from the perspective of the project owner (Winch and Leiringer, 2016) and  
31 client (Zerjav et al., 2018) in complex projects. Further work has examined the role of  
32 owner capabilities in social housing projects in a developing country (Gulino et al., 2020).  
33 While this latter work identifies strategic, commercial, governance and transformational  
34 capabilities that are required at differing stages of the project life cycle, overall, the project  
35 capability school of thought is not conceptually distinct to the VRIO school as applied in  
36 projects. Appendix 1 summarises extant research in the RBV and organizations and these  
37 studies they posit that the possession or development of particular organizational elements,  
38 capabilities in one view and VRIO resources in another, enable the delivery of project  
39 outcomes. In international development, the competency perspective of the RBV has been  
40 used to conceptualize the development of dynamic NGO competencies in post disaster  
41 reconstruction (Von Meding et al., 2009) as well as to empirically examine the  
42 competencies of nonprofits involved in post disaster rebuilding projects (Marshall et al.,  
43 2017).  
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4 In environments where there are more complex dynamics beyond competition, an  
5 alternate conceptualization may be required. Penrose (1959) suggests that distinctive  
6 resource combinations provide beneficial outcomes, not individual resource characteristics.  
7 In this perspective, organisational activities and outcomes are created by combination and  
8 reconfiguration, not merely by ownership of resources (Helfat and Lieberman, 2002;  
9 Bryson, 2004; Sowa et al., 2004; Paradkar et al., 2015). Unlike the Barney (1991) view,  
10 intangible project resources, such as knowledge, can be integrated and shared across  
11 organizations (Newell et al., 2006). Intangible resources in this view are also referred to as  
12 capabilities, interpreted as a 'know-how' resource (Bryson, 2004; Sowa et al., 2004;  
13 Paradkar et al., 2015; Carnes et al., 2016; Davies et al., 2016). Therefore, the term  
14 'resources' is applied in this study to mean resources and capabilities.  
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25 Organizations seeking to deliver projects in Post Conflict countries may need to adapt  
26 existing processes in order to compensate for institutional voids and post-conflict tension  
27 (Murphy et al., 2018). This implies that organizations may have to develop or acquire new  
28 resources in order to perform these adaptation activities. Organizations may also have to  
29 work with stakeholders in order to encourage community participation in project evaluation  
30 to ensure that trust is maintained in these fragile locations for future activities (Rossignoli et  
31 al., 2017). These findings suggest that organizations may have to develop collaborative  
32 resources with local stakeholders in order to deliver projects in post-conflict countries.  
33 Previous research has identified three types of capacity/resource for project organizations in  
34 post conflict countries, which are team, organisational and collaborative social (Nathagopan  
35 et al., 2016).  
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### 46 **2.3. Levels of PM Resources**

47 PM resources have been examined at multiple levels. Initial research identified two  
48 resources at the team and organizational levels (Jugdev and Mathur, 2006a). Later work  
49 classified resources into three levels: team, organisational and collaborative social/ inter-  
50 organizational (Nanthagopan et al., 2016). Each level can incorporate both explicit and tacit  
51 resources (Mathur et al., 2007; Mahroeian and Forozia, 2012).  
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### 2.3.1. Team PM Resources

Existing work has identified tacit and explicit team resources, such as project management practices, project orientation programs, project management expertise, peer learning, field visits, informal meetings, personal coaching, training and mentoring and on-the-job training (Dainty et al., 2005; Jugdev and Mathur, 2006a; Rose et al., 2007; Gorse and Emmitt, 2009; Mathur et al. 2013; Ofori, 2014). Team values and competencies are intuitive knowledge which has been built over some time within the teams (Ghosh and Scott, 2009) and deeply rooted in team values, context, experience and practice (Cook and Brown, 1999).

### 2.3.2. Organisational PM resources

Organisational PM resources incorporate both tacit and explicit elements (Lusthaus et al., 1995; Lusthaus et al., 1999; De Vita et al., 2001; Connolly and Lukas, 2003). Codified organisational PM resources as written documents and transferable means in forms such as audio, video and software. They are generated by the deployment of team PM resources (Cook and Brown, 1999). Previous research has identified: staff capacity-building programs, shared project vision, objectives and policy, effective project coordination and leadership, project organisational structure, effective project communications and processes for sharing knowledge (Gunnarson et al., 2000; White and Fortune, 2002; Jugdev and Mathur, 2006a; Raymond and Bergeron, 2008; Hurt and Thomas, 2009; Richman, 2011; Caniëls and Bakens, 2012; Kaleshovska, 2014).

### 2.3.3. Collaborative Social PM Resources

In addition to team and organizational resources, PM resources comprise formal know-what (explicit) and informal know-how (tacit) elements that provide the organisation with new knowledge (Burn, 2000). These resources are interactive and relational in nature and enable organizations to adapt to the country environment in which they operate (Grant, 1996). These resources are aligned to the Penrose view of the RBV as they may not be owned or controlled by a single organization but can be shared among organizations (Liu and Liu, 2008). In project organizations, Nanthagopan et al. (2016) identified these resources as formal collaborative social PM resources and informal collaborative social PM resources.

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Formal collaborative social resource refers to the ability of the organisation to receive knowledge and advisory recommendations from external networking sources. These include NGOs intra and consortium meetings, project advisory participation from government bodies and from donors, joint project formal interactions and official information releases. Informal collaborative social resource refers to the ability of the organisation to obtain knowledge from informal external interactions. These include networking relations with stakeholders, informal interactions, beneficiary integration in projects, a community of practice through online social networks and project marketing.

#### **2.4. PM Resources and Organizations**

While research has examined the tools organizations use in development projects (Golini, et al., 2015), little research has examined the impact of country resource environments on project resource profiles of organizations. Project organizations operate within-country contexts and are required to configure internal resources in order to perform activities despite challenges that may exist in external environments. While existing literature identified a 3-level resource structure, this configuration has not been validated using empirical statistical research. Further, project organizations are not homogeneous (Kilby, 2006) and include organizations with international linkages and domestic community-focused enterprises. These linkages may result in varying firm governance structures. It is not certain if differences in organization types influence the nature of resources owned or controlled by the organisation.

### **3. Methodology**

The study aims to examine the configuration of project resources in organizations operating in a post-conflict environment. Therefore, descriptive research and survey design were selected to study the characteristics of project resources in a large number of randomly selected local and international NGOs operating in Sri Lanka. The survey design incorporated a survey instrument, which followed the approach of previous researchers for assessing PM resources in private, public and non-profit organisations (Pact *OCA Handbook*, 1996; Judgev and Mathur, 2006b). These previous standard questionnaires were already well-tested in the field survey and therefore improve the validity and reliability of



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4 the present study (Mathers et al., 1998). The researcher selected the 'in-person' method of  
5 data collection, which increases the credibility of data collection and makes it possible for  
6 respondents to give immediate clarification of vague answers (Bowling, 2005).  
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### 10 11 **3.1. Sample Selection**

12 NGOs were selected as the organizations to be examined as they have a long history of  
13 providing development activities via projects in post-conflict countries. The organizations  
14 selected for this study have been registered with the National Secretariat of Non-  
15 Governmental Organizations. Both local and international organizations have been working  
16 in post-conflict situations. Comparatively, both organizations have similar characteristics in  
17 terms of project operations in the areas in which they operate, types of projects and  
18 objective of their operations. In the field, in many cases both organizations work together  
19 and hold sector and consortium meetings to discuss their projects and progress. NGO  
20 managers share their skills with organizations and many local NGO managers were trained  
21 by international organizations. Therefore, the skills of the managers of both organizations  
22 are complementary and transferable. However, when considering financial capacity,  
23 international organizations have large funds and many local NGOs were funded by  
24 international NGOs to implement projects in the communities.  
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37 The population is the 1,426 NGOs registered with the National Secretariat for NGOs, of  
38 which 1,042 are local and 384 are international NGOs (National Secretariat for NGOs,  
39 2014). For this research, the sample size was 500 local and international NGOs (35% of the  
40 population). The study population consisted of local and international NGOs identified as  
41 project organisations; therefore, a stratified random sampling technique was used to select a  
42 sample in equal proportion from each stratum to represent the sample to the population.  
43 This helps the researcher to select a randomised probabilistic sample from the population  
44 and increase the generalisability of the survey findings to the population (Levy and  
45 Lemeshow, 2009). The researcher first randomly selected 500 NGOs from each stratum in  
46 equal proportions. Subsequently, the researcher contacted 500 NGO managers, one  
47 manager from each NGO, who have been directly involved in development projects; for  
48 example, Livelihoods, Infrastructure, Relief and Disaster Management and Women  
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4 Development. Of the managers contacted, 463 indicated interest in participating in the  
5 survey study; however, 18 questionnaires were eliminated due to incomplete data, leaving  
6 445 questionnaires to be used for further data analysis. The study was conducted in the  
7 period from February to November 2015.  
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### 11 12 13 **3.2 Sample Characteristics**

14 Table 1 shows the sample characteristics of the study. The total response from the sample is  
15 445 NGO managers, of which 325 are from local NGOs, and 120 are from international  
16 NGOs. Local NGOs managers represent 73% of the sample size and 27%, represents the  
17 international NGOs managers. Education of selected NGO managers is organised as high  
18 school, bachelor's degree, postgraduate degree and doctoral degree. The NGO managers  
19 holding a bachelor's degree represent 45% of the sample, with higher education at 32% and  
20 postgraduate degree at 22%. Doctoral degree contributed the least representation (1%) in  
21 the sample. Some 77% of NGO managers responded that they had followed PM courses,  
22 while 20% said they had not followed any PM courses and 3% did not respond. The table  
23 further classifies the sample characteristics of local and international NGO managers.  
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Characteristics	Local NGOs' Managers		International NGOs' Managers		Total	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
<b>Total Responses from the Sample</b>	325	73	120	27	425	100
<b>Age</b>						
18 - 27	58	13	26	6	84	19
28 – 37	134	30	45	10	179	40
38 – 47	72	17	32	7	104	24
48 – 57	42	9	12	3	54	12
Above 57	19	4	05	1	01	5
<b>Years' Experience in NGO Projects</b>						
0-5	115	26	46	10	161	36
6-10	101	23	42	9	143	32
11-15	58	13	19	4	77	17
16-20	22	5	07	2	29	7
More than 20	29	6	06	2	35	8
<b>Education</b>						
High School	99	22	43	10	142	32
Bachelor's Degree	155	35	44	10	199	45
Postgraduate Degree	66	15	30	7	96	22
Doctoral Degree	03	1	02	-	05	1
Missing data	02	-	01	-	03	-
<b>Gender</b>						
Male	161	37	81	18	242	55
Female	163	36	38	9	201	45
Missing data	01	-	-	-	02	-

<b>Type of Project</b>						
Livelihoods	57	13	12	3	69	16
Infrastructure	25	6	11	2	36	8
Relief and Disaster Management	27	6	09	2	36	8
Water and Sanitation	19	4	11	3	30	7
Health and Nutrient	24	6	14	3	38	9
Training and Education	49	11	19	4	68	15
Protection	16	4	09	2	25	6
Social Mobilisation	37	8	09	2	46	10
Capacity Building	24	5	08	2	32	7
Women Development	19	4	08	2	27	6
Gender Equity	16	4	04	1	20	5
Others	10	2	05	1	15	3
Missing data	02	-	01	-	03	-
<b>Project Management Courses</b>						
<b>Attended</b>						
Yes	237	53	105	24	342	77
No	79	18	10	2	89	20
Missing data	09	02	05	1	14	3

Source: Survey data

**Table 1: Sample Characteristics of the study (N=445, NGO Managers)**

### 3.3. Data Analysis

Two data analysis techniques were used; exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Byrne, 2010). Statistical software packages were used to analyse the final survey data. The Statistical Package for Social Sciences (SPSS v16) was used for the preliminary and EFA analyses (Hopkins, 2008) and Analysis of Moment Structures (AMOS v21) was used for the advanced analyses of the measurement model and to confirm the identified factors from the exploratory factor analysis (Byrne, 2013).

EFA is applied either to explore the structure among a set of variables and determine the latent structure or as a data reduction method (Conway and Huffcutt, 2003; Cramer, 2003). In previous studies related to RBV, the EFA technique is applied to identify the latent structure of organisational or PM resources (Jugdev and Mathur, 2006a; Jafari and Rezaee, 2014). In this study, EFA is used to test the concepts and to identify the critical PM resources of NGOs (Lewis-Beck, 1994). CFA is applied to evaluate the overall measurement model based on *a priori* theory or the results of EFA and it is also widely used to study the associations between a set of observed variables and their underlying latent constructs (Bryne, 2013; Brown, 2014). The CFA technique is applied in previous RBV research to confirm the measurement model of organisational resources (Wahjudono et al., 2013; Jafari and Rezaee, 2014). The present study consists of latent constructs of PM resources and CFA is used to examine the measures of constructs.

Further, a construct validity test is performed to examine how well it measures the construct it claims to be measuring (Brown, 1998; Hair et al., 2006). The study data are ordinal in nature, so are not likely to meet the strict assumptions of the EFA and CFA. Appropriate statistical tests were performed to check the parametric requirements. The researcher used similar tested instruments (questionnaire, survey) to ensure the quality of data collection. Additionally, the dependent latent variables have been tested by previous researchers and performed with parametric tests (Ika et al., 2012). Therefore, this practice has improved the measurement properties (Embretson, 1996; Harwell and Gatti, 2001).

### 3.4. Operational Model

The PM resources are classified into three levels; team, organisational and collaborative social, with resources and measures in each level explained in Table 2. Measurement of Team PM resources is achieved using Questions Q1 to Q10, Organisational PM uses Questions Q11 to Q20 and Collaborative social PM resources uses Questions Q21 to Q30. The survey instrument is attached in Appendix 1.

Concepts	Variables	Indicators	Measure
<b>PM Resources</b>	Team Level	Casual conversations and informal meetings	Q1
		Brainstorming sessions	Q2
		Field visits	Q3
		On-the-job training	Q4
		Job shadowing and mentoring	Q5
		Success and failure stories	Q6
		Team cohesion and trust	Q7
		Team values	Q8
		Team PM expertise	Q9
		Team best PM practices	Q10
	Organisation Level	Effective PM office	Q11
		PM methodology, standards and process	Q12
		PM tools and techniques	Q13
		PM information system	Q14
		Project monitoring and evaluation mechanism	Q15
		Staff capacity-building programs	Q16
		Formal meetings for sharing knowledge	Q17
		Effective project communications systems and technology	Q18
		Defined organisational PM culture	Q19
		Supportive organisational leadership to PM	Q20

		Project advisory from government bodies	Q21
		Project advisory from donors	Q22
		NGOs intra and consortium meetings	Q23
		Official information releases	Q24
	Inter- Organisation Level	Joint project formal interactions	Q25
		Joint project informal interactions	Q26
		Networking relations with stakeholders	Q27
		Beneficiary integration in projects	Q28
		Project marketing	Q29
		The community of practice through online social networks	Q30

**Table 2: Operational Model of PM Resources**

#### 4. Data Analysis

##### 4.1. Independent Sample t-test of Local and International NGOs.

The independent sample t-test is performed for local and international NGOs to establish whether population mean values are equal or not. Table 3 shows the results of the independent sample t-test of all variables of PM resources. The results explain the mean values of all variables (except two) are not significantly different (p values are greater than 0.05) between local and international NGOs. This finding indicates the resource profiles of local and international Organizations do not differ and are the same in a post-conflict environment. Therefore, it is appropriate to integrate the data of local and international NGOs for further multivariate analysis.

	t-test for Equality of Means				
	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Casual Conversations & Informal Meetings	1.408	445	.160	.254	.180
Brain Storming Sessions	1.073	445	.284	.165	1.073
Field Visits	3.596	445	.000	.521	3.596

On-the-Job Training	1.096	445	.274	.189	1.096
Job Shadowing and Mentoring	.900	445	.369	.127	.900
Success and Failure Stories	.957	445	.339	.130	.957
Team Cohesion and Trust	.404	445	.686	.060	.404
Strong PM Discipline	.478	445	.633	.070	.478
Team PM Expertise	1.338	445	.182	.192	1.338
PM Best Practices	1.809	445	.071	.262	1.809
PM Office	.735	445	.463	.107	.735
PM Methodology, Standards and Process	.059	445	.953	.008	.141
PM Tools and Techniques	.608	445	.544	.084	.139
PM Information System	3.329	445	.001	.583	.175
Monitoring and Evaluation Mechanism	1.283	445	.200	.191	.149
Staff Capacity Building programs	.984	445	.326	.153	.155
Formal Meetings for Sharing Knowledge	.393	445	.694	.059	.150
Effective Project Communication	1.459	445	.145	.214	.146
Supportive Orgn Culture to PM	-.129	445	.897	-.018	.142
Supportive Leadership to PM	.064	445	.949	.009	.149
Project Advisory from Government Bodies	.445	445	.657	.078	.175
Project Advisory from Donors	.204	445	.838	.032	.159
NGOs Intra and Consortium Meetings	.556	445	.578	.090	.162
Official Information Releases	1.325	445	.186	.236	.178
Joint Project Formal Interactions	1.339	445	.181	.229	.171



Joint Project Informal Interactions	-.223	445	.823	-.037	.167
Networking with Stakeholders	.869	445	.385	.137	.158
Beneficiary Connections in Projects	1.248	445	.213	.167	.133
Project Marketing events	1.365	445	.173	.212	.155
Community of Practice through Social Networks	1.185	445	.237	.223	.188

**Table 3: Independent Sample t-test of Local and International NGOs**

#### 4.2. Exploratory Factor Analysis (EFA)

EFA was used to identify critical PM resources at each level since the three levels of PM resources were identified in the literature review. EFA was performed using the Principal Axis Factoring (PAF) method for each proposed factor separately in order to identify the optimum number of items for each factor (Field, 2005) as it is focused on shared variance and is unique to individual measurements (Warner, 2007).

##### 4.2.1. Item (Indicator) Selection of Team PM Resource

Ten items (Q1-Q10) are included in the team PM resource. EFA led to the retention of one factor and the eight best items have been selected. Table 4 contains the results of EFA. In the first step, items Q1 and Q4 were eliminated as their factor loadings are less than 0.55. EFA was performed for a second time. During the second run, the researcher identified eight good items with factor loadings greater than 0.55. The Cronbach's alpha value for these eight items is 0.899, which is greater than the standard value of 0.7. The total variance explained by the factor is 59%. The Kaiser–Meyer–Olkin Measure of Sampling Adequacy is 0.917, which indicates sampling adequacy is superb. The data within this factor returned a significance value of less than 0.001, which indicates that the data is acceptable for FA.

Factor Question Number	Items	Step 1 (10 Items)		Step 2 (8 Items)	
		Loadings	Cronbach Alpha if item deleted	Loadings	Cronbach Alpha if item deleted
Q1	Casual Conversations and Informal Meetings	<b>0.395</b>	<b>0.892</b>	<b>Item eliminated</b>	
Q2	Brainstorming Sessions	0.688	0.869	0.685	0.890
Q3	Field Visits	0.639	0.871	0.610	0.896
Q4	On-the-Job Training	<b>0.471</b>	<b>0.885</b>	<b>Item eliminated</b>	
Q5	Job Shadowing and Mentoring	0.629	0.874	0.631	0.894
Q6	Success and Failure Stories	0.759	0.866	0.764	0.884
Q7	Team Cohesion and Trust	0.771	0.865	0.775	0.883
Q8	Team PM Values	0.803	0.863	0.814	0.879
Q9	Team PM Expertise	0.718	0.868	0.721	0.887
Q10	Best PM Practices	0.809	0.862	0.817	0.879
Cronbach's Alpha			0.883		0.899
Eigen Value		5.124		4.722	
Percentage Variance Explained		51.241		59.024	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.920		0.917	

**Table 4: Factor Matrix: Team PM Resource of NGOs**

#### 4.2.2. Organisational PM Resource

Ten items, Q11 through Q20, were used to assess organisational PM resource. Table 5 contains the results of EFA. Only one item, Q14, had a factor loading value of less than 0.55 and nine indicators were selected to proceed to the next stage of CFA. The Kaiser-

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Meyer–Olkin Measure of Sampling Adequacy value of 0.939 shows the sampling adequacy is excellent, and the significance value of less than 0.001 indicates that the data is acceptable for FA.

Factor Question Number	Items	Step 1 (10 Items)		Step 2 (9 Items)	
		Loadings	Cronbach Alpha if item deleted	Loadings	Cronbach Alpha if item deleted
Q11	PM Office	0.731	0.896	0.739	0.907
Q12	PM Methodology, Standards and Process	0.771	0.894	0.774	0.905
Q13	PM Tools and Techniques	0.799	0.892	0.797	0.903
Q14	PM Information System	<b>0.432</b>	<b>0.916</b>	<b>Item Eliminated</b>	
Q15	Project Monitoring and Evaluation Mechanism	0.692	0.898	0.687	0.910
Q16	Staff Capacity-Building Programs	0.688	0.898	0.686	0.910
Q17	Formal Meetings for Sharing Knowledge	0.722	0.896	0.727	0.907
Q18	Effective Project Communication System and Technology	0.740	0.895	0.741	0.906
Q19	Defined Organisational PM Culture	0.756	0.895	0.764	0.905
Q20	Supportive Leadership to PM	0.773	0.892	0.760	0.905
Cronbach's Alpha			0.907		0.916
Eigen Value		5.605		5.404	
Percentage Variance Explained		56.055		60.050	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.936		0.939	

**Table 5: Factor Matrix: Organisational PM Resource of NGOs**

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**4.2.3. Best Item (Indicator) Selection of Collaborative Social PM Resource**

Ten items, Q21 through Q30, were used to assess collaborative social PM resource. Two indicators, Q24 and Q30, were eliminated as their factor loadings were less than 0.55. The Kaiser–Meyer–Olkin Measure of sampling adequacy is 0.862, which shows sampling adequacy is good and the significance value of less than 0.001 indicates that the data is suitable for FA. Table 6 contains the results of EFA.

Factor Question Number	Items	Step 1 (10 Items)		Step 2 (8 Items)	
		Loadings	Cronbach Alpha if item deleted	Loadings	Cronbach Alpha if item deleted
Q21	Project Advisory from Government Bodies	0.561	0.825	0.571	0.845
Q22	Project Advisory from Donors	0.695	0.814	0.699	0.831
Q23	NGOs Intra and Consortium Meetings	0.687	0.812	0.678	0.833
Q24	Official Information Releases	<b>0.279</b>	<b>0.850</b>	<b>Item Eliminated</b>	
Q25	Joint Projects Formal Interactions	0.577	0.821	0.567	0.845
Q26	Joint Projects Informal Interactions	0.612	0.820	0.615	0.839
Q27	Networking with Stakeholders	0.725	0.812	0.725	0.829
Q28	Beneficiary Integration in Projects	0.675	0.817	0.676	0.835
Q29	Project Marketing Events	0.706	0.813	0.704	0.832
Q30	The Community of Practice through Online Social Networks	<b>0.442</b>	<b>0.837</b>	<b>Item Eliminated</b>	

Cronbach's Alpha		0.837		0.854
Eigen Value	4.310		4.011	
Percentage Variance Explained	43.102		50.133	
Kaiser–Meyer–Olkin Measure of Sampling Adequacy.	0.873		0.862	

**Table 6: Factor Matrix: Collaborative Social PM Resource of NGOs**

### 4.3. Confirmatory Factor Analysis (CFA)

CFA was used to determine whether the data fits the proposed hypothesised structure of PM resources (Cramer, 2003). Model fit can be achieved in two steps (Hair et al., 2006). The first is the overall assessment of model fit and the second is the construct validity that investigates how well the concepts are designed for measurement. The objective of the measurement model extends beyond examining the relationships between the latent factors to warranting that the individual latent constructs are adequate for investigating the relevant concepts (Fornell and Larcker, 1981; Hair et al., 2006).

Kline (2005) notes that convergent validity and discriminant validity are important measures for estimating a construct. In general, the construct validation process participates in deriving the measurement model with the presence of both convergent and discriminant validity (Liao et al., 2007). Convergent validity is the extent to which items of the latent construct share a proportion of variance (Anderson and Gerbing, 1988; Hair et al., 2006). This is measured by considering factor loadings, construct reliability and average variance extracted (Fornell and Larcker, 1981; Hair et al., 2006). CR and average variance extracted were calculated using Validity Master (Microsoft Office Excel 2010) (Fornell and Larcker, 1981).

#### 4.3.1. Summary of Comparison of Measurement Model Specifications for PM Resources (Goodness-of-fit Indices of CFA Models)

In this section, the researcher compares the four alternative models of PM resources and finally identifies the best model of PM resources based on measurement results. Three latent factors are drawn, namely, team PM resources (TPR), organisational PM resources

(OPR) and collaborative social PM resources (CPR). Appendix 2 shows the measurement results of the first three alternative CFA models.

Table 7 contains a summary of the results for goodness-of-fit indices among the four models of PM resources. The normed chi-square decreased gradually from Model 1 (3.140) to Model 2 (2.742), to Model 3 (2.210) and Model 4 (1.782). Next, the RMSEA decreased through the models (Model 1 – 0.069, Model 2 – 0.063, Model 3 – 0.52 and Model 4 – 0.042). Lastly, the CFI increased across the models (Model 1 - 0.909, Model 2 - 0.948, Model 3 - 0.969 and Model 4 - 0.985). These values indicate that Model 4 is a better fit than the previous models (Carmines and McIver, 1981; Wheaton, 1987; MacCallum et al., 1996; Hu and Bentler, 1999). Finally, parsimonious measures of AGFI increased gradually from Model 1 (0.831) to Model 2 (0.884), to Model 3 (0.927) and Model 4 (0.950). However, the PNFI shows slight variations as this measure was adjusted to losses in degrees of freedom over Models 1 to 4 (Mulaik et al., 1989).

<b>Indices</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<b>Absolute Measures</b>				
Chi-square	854.1	362.0	192.2	90.82
Degree of freedom	272	132	87	51
Normed Chi-square	3.140	2.742	2.210	1.782
GFI	0.859	0.911	0.947	0.967
RMSEA	0.069	0.063	0.52	0.42
P-Close	<0.05	<0.05	>0.05	>0.05
SRMR	0.051	0.041	0.037	0.031
<b>Incremental Measure</b>				
NFI	0.872	0.922	0.945	0.966
NNFI (TLI)	0.899	0.940	0.963	0.980
CFI	0.909	0.948	0.969	0.985
<b>Parsimony Measure</b>				
AGFI	0.831	0.884	0.927	0.950



PNFI	0.791	0.795	0.783	0.746
<b>Fitting Summary</b>	<b>Poor Fit</b>	<b>Mediocre Fit</b>	<b>Good Fit</b>	<b>Excellent Fit</b>

**Table 7: Summary of Comparison of Goodness-of-fit Indices**

#### **4.3.2. Final Validated CFA Mode01 4: Three Levels of PM Resources**

A complete description of Models 1 to 4 is presented in Appendix 2. Model 4 was created by fixing the over-estimation and minimising the high cross-loading indicators (MacCallum et al., 1996). Each factor consists of four indicators. Team PM resources consist of items Q2, Q6, Q7 and Q8; organisational PM resources consists of items Q11, Q12, Q13 and Q18; and collaborative social PM resources consists of Q22, Q23, Q27 and Q29.

The results for absolute fit indices show the normed chi-square ( $\chi^2 / df$ ) value of 1.782, GFI is 0.967, RMSEA is 0.042, p-close value is greater than 0.05, and SRMR is 0.031. The incremental indices results reveal a NFI of 0.966, a TLI of 0.980 and a CFI of 0.985. Parsimonious fit indices results indicate that AGFI is 0.950 and PNFI is 0.746. The normed chi-square value is less than two and the other three indices show good values which confirm the model fits well (Wheaton, 1987; Hu and Bentler, 1999; Byrne, 2010). Therefore, this model is accepted. (See Figure 1 and Table 8).

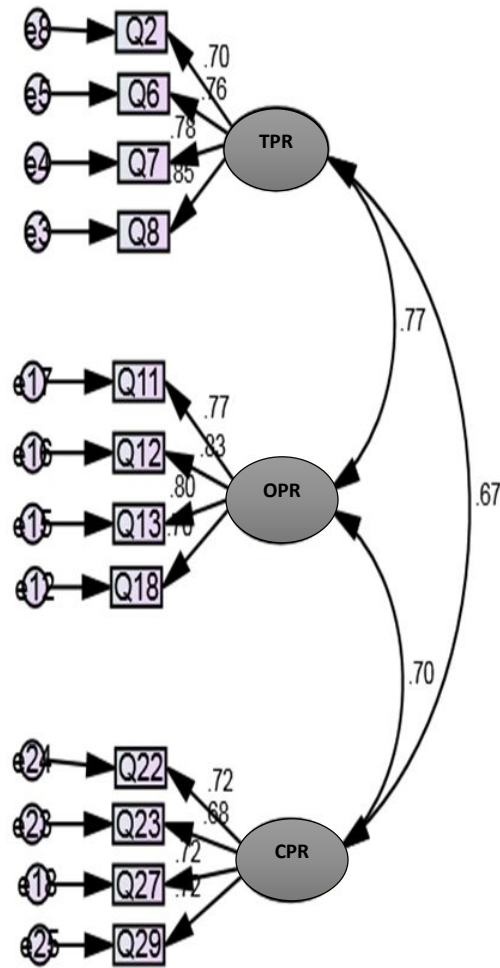


Figure 1: CFA Model 4

Construct	Item	Standardised		
		TPR	OPR	CPR
Team PM Resource (TPR)	Q2	0.70		
	Q6	0.76		
	Q7	0.78		
	Q8	0.85		
Organisational PM Resource (OPR)	Q11		0.77	
	Q12		0.83	
	Q13		0.80	
	Q18		0.70	
Collaborative Social PM Resource (CPR)	Q22			0.72
	Q23			0.68
	Q27			0.72
	Q29			0.72
Average Variance Extracted (AVE)		<b>0.60</b>	<b>0.61</b>	<b>0.50</b>
Construct Reliability (CR)		<b>0.86</b>	<b>0.86</b>	<b>0.80</b>
Absolute Fit Index	$\chi^2 = 90.82$ , $df = 51$ , $\chi^2 / df = 1.782$ , GFI = 0.967, RMSEA = 0.42, p-close > 0.05, SRMR = 0.031			
Incremental Fit Index	NFI = 0.966, TLI = 0.980, CFI = 0.985			
Parsimony Fit Index	AGFI = 0.950, PNFI = 0.746			

Table 8: Estimates for the CFA Model

#### 4.4. Standardised Factor Loading of Items of PM Resources

The independent sample t-test (as discussed in section 4.1) finding revealed there is no significant difference between the PM resource for local and international NGOs. The standardised factor loading of items in all three levels of PM resources of both combined local and international NGOs tabulated in table 9.

Items in Three Levels of PM Resources	Standardised Factor Loadings ( $r^2$ )
<b>Team PM Resources</b>	
Brainstorming Sessions	0.70
Success and Failure stories	0.78
Team Cohesion and Trust	0.79
Team PM Values	0.82
<b>Organisational <i>PM Resources</i></b>	
Effective PM Office	0.77
PM Methodology, Standards and Process	0.82
PM Tools and Techniques	0.80
Effective Project Communication Systems and Technology	0.72
<b>Collaborative Social PM Resources</b>	
Project Advisory from Donors	0.73
NGOs Intra and Consortium Meetings	0.67
Networking with Stakeholders	0.71
Project Marketing Events	0.72

\*Significance at 0.001 level

**Table 9: Standardised Factor Loadings – Items in Three Levels of PM Resources**

## 5.0. Findings

### 5.1. Team PM Resource

Previous Project Management and NGO research identified a range of team resources. The EFA and CFA confirmed four items (Table 9) as the most important team PM elements with high standardised regression estimates ( $r^2$ ); those identified resources are brainstorming sessions, success and failure stories, team cohesion and trust, and team values.

Brainstorming sessions are tacit since the knowledge gathered cannot be fully documented or articulated (Leonard-Barton, 1992; Egbu, 2004; Jugdev and Mathur, 2006b). Research in private sector organizations has identified the know-how resource as important (Jugdev and Mathur, 2006b; Mathur et al., 2007; Jugdev et al., 2013). Findings in this study (standardised factor loading ( $r^2$ ) = 0.70,  $p < 0.001$ ) suggests that it is also a critical resource in team PM resource in NGOs. For organizations in this study, these tacit resources may be complementary to providing team resources in an emerging market context for project organizations. Similarly, discussing success and failure stories can be considered a tacit asset as discussions held in the events cannot be fully documented. Previous research emphasised this is the knowledge resource of organisations for effectively sharing knowledge (Cameron, 2007; Ritchie, 2011). Team members can jointly develop this know-how factor (Jugdev and Mathur, 2006b; Mathur et al., 2007; Jugdev et al., 2013). The present study shows that success and failure stories scored a high standardised factor loading ( $r^2$  = 0.78,  $p < 0.001$ ) in team PM resource. Therefore, the findings recommend it as another critical resource in the team PM resource in NGOs.

Existing research highlighted cohesion, trust and shared PM values as key resources in organisations for productive teamwork (Hempel et al., 2009; Mach et al., 2010). While this is rarely discussed in literature as a crucial PM resource, respondents in this study recognised cohesion as a critical resource (standardised factor loading ( $r^2$ ) = 0.79,  $p < 0.001$ ) and shared PM values (standardised factor loading ( $r^2$ ) = 0.82,  $p < 0.001$ ) as important elements in team PM resources.

## 5.2. Organisational PM Resource

The literature on private sector organisations discussed a significant number of PM resources identified as important explicit PM resources for organisations (Richman, 2011; Ika and Lytvynov, 2011; Kaleshovska, 2014). The EFA and CFA confirmed four elements are critical for organisational PM resource with high standardised regression estimates ( $r^2$ ) and identified these resources as effective PM office, PM methodology, standards and process, PM tools and techniques and effective project communication systems and technology. Table 9 shows the standardised factor loading of each item explained in organisational PM resources.

First, an effective PM office is considered a critical explicit resource in organisational PM resources, a resource that has been extensively discussed in the literature (Hill, 2004; Jugdev and Mathur, 2006a; Hobbs and Aubry, 2007; Martin et al., 2007; Aubry and Hobbs, 2011; Mathur et al., 2013). Further studies revealed that the PM office supports successful project execution and high project performance (Dai and Wells, 2004; Kaleshovska, 2014). The present NGO study shows that effective PM office scored a high standardised factor loading ( $r^2 = 0.77$ ,  $p < 0.001$ ), confirming the value of this explicit resource in both a developing and developed context by organizations.

Second, PM methodology, standards and process are identified as a key resource in organisational PM resources in the PM literature (Gunnarson et al., 2000; White and Fortune, 2002; Mathur et al., 2007; Fortune et al., 2011; Mathur et al., 2013; Golini and Landoni, 2014). Further, it supports managing quality projects (Milunovic and Filipovic, 2013) and PM success of the organisation (Labuschagne and Steyn, 2010). However, this does not contribute to the project success of an organisation (Wells, 2012). The present study shows that this resource (standardised factor loading ( $r^2$ ) = 0.82,  $p < 0.001$ ) is most explained compared with other resources in organisational PM resources in NGOs and is considered a critical resource for NGOs.

Third, PM tools and techniques are revealed as key organisational PM resources (Fox and Spence, 1998; Thamhain, 1999; Kloppenborg and Opfer, 2002; Jugdev and Mathur, 2006b; Mathur et al., 2007; Benser and Hobbs, 2008; Fortune et al., 2011; Mathur et al., 2013).

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3 Previous studies revealed that PM tools and techniques contribute highly to successful  
4 project operations (White and Fortune, 2002; Patanakulet et al., 2010; Fortune et al., 2011).  
5 The present study shows that PM tools and techniques scored a high standardised factor  
6 loading ( $r^2 = 0.80$ ,  $p < 0.001$ ) in the organisational PM resource and is recommended as a  
7 critical resource for NGOs.  
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13 Finally, effective project communication systems and technology are identified as an  
14 important resource in organisational PM resources in the PM literature (Verma, 1995;  
15 Mathur et al., 2007; Relich and Banaszak, 2011; Mathur et al., 2013; Cervone, 2014).  
16 Further, project communication systems contribute to the quality and productivity of  
17 project team and project success of organisations (Relich and Banaszak, 2011; Cervone,  
18 2014). This study recognises this as an important resource for improving effective  
19 communication among team members; therefore, the study recognises this as a critical  
20 resource (standardised factor loading ( $r^2$ ) = 0.72,  $p < 0.001$ ) in the organisational PM  
21 resources of NGOs. The PM information received very low variance because operating  
22 NGOs in Sri Lanka may not use sophisticated project management software.  
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### 31 32 **5.3 Collaborative Social Resource**

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34 The EFA and CFA selected four items, namely, project advisory from donors, NGOs intra  
35 and consortium meetings, networking with stakeholders and project marketing, which were  
36 found with high standardised regression estimates ( $r^2$ ) as dominant elements of  
37 collaborative social PM resources. Table 9 shows the standardised factor loading of each  
38 item that explained collaborative social PM resource.  
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45 First, project advisory from donors is considered an important collaborative social PM  
46 resource. This is an explicit resource since advisory commonly takes place from the donors  
47 formally through meetings or written manuals (Agg, 2006; Coston, 1998). This supports the  
48 project teams in acquiring donors' expert advice and requirements for executing projects  
49 (Pact, 2012). Further, donors' advisory is very helpful for NGO team members for  
50 organising their projects effectively (Lipsky and Smith, 1990). Donors share their  
51 experience and expertise with the project teams to plan and implement projects well;  
52 additionally, they provide much monitoring and evaluation support to project teams, which  
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3 highly support project success in NGOs. The study shows that project advisory from donors  
4 scored a high standardised factor loading ( $r^2 = 0.73$ ,  $p < 0.001$ ) in collaborative social PM  
5 resources and is therefore considered a critical resource in NGOs.  
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10 Second, NGOs intra and consortium meetings are considered a key resource in  
11 collaborative social PM resources. This is an explicit resource since these meetings are  
12 usually formal and recorded as documents. The intra and consortium meetings are highly  
13 helpful for team members to know PM practices among the NGOs and set common  
14 standards for implementing community development projects (Bennett, 2014; Currión and  
15 Hedlund, 2011). Further, NGO staff commonly attend consortium and cluster meetings,  
16 which helps them to share their project experiences among NGOs' staff members and to  
17 learn about every NGO project in their region. Therefore, it is much easier for NGOs to  
18 organise their projects among NGOs, as well as share knowledge and skills of project  
19 practices to help improve staff capacities of NGOs. The study shows the standardised factor  
20 loading of NGOs' intra and consortium meetings is  $r^2 = 0.67$  ( $p < 0.001$ ) in collaborative  
21 social PM resources and is recognised as a critical PM resource for NGOs.  
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32 Third, networking relations with stakeholders is revealed as an important resource in  
33 collaborative social PM resources. Networking with stakeholders means that project staff  
34 members have informal interactions discussing project activities with project stakeholders.  
35 This takes place through informal meetings, telephone conversations or other informal  
36 events. Findings in this study (standardised factor loading ( $r^2$ ) = 0.71,  $p < 0.001$ ) suggest it is  
37 also a critical resource in collaborative social PM resources.  
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44 Finally, project marketing is identified as an important resource in collaborative social PM  
45 resources. Project marketing events take place through inauguration meetings, awareness  
46 programs, home visits, exhibitions, theatre programs and community meetings in NGOs.  
47 Mostly, these kinds of event take place formally and stakeholders' views are recorded as  
48 documents for project management team discussions. However, whole discussions and  
49 subjective feelings of stakeholders cannot be effectively presented as documents in all  
50 cases. Therefore, this resource has highly tacit characteristics and is a resource rarely  
51 discussed in PM literature within the context of PM resources. However, this study  
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3 recognises this as a critical systemic knowledge-based resource that may facilitate  
4 adaptation to external environments (Miller and Shamsie, 1996). The study shows that  
5 project marketing events scored a high standardised factor loading ( $r^2 = 0.72$ ,  $p < 0.001$ ).  
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## 10 **6.0 Discussion**

11 This paper extends existing work to examine the structure of PM resource profiles in NGOs  
12 and makes two contributions to the literature. The first is that it identifies that resource  
13 combinations, a Penrose perspective rather than resource types may support operational  
14 project capabilities. The second is that it identifies the possible impact of the post conflict  
15 country context on the project resources and capabilities of firms.  
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22 For the first contribution, earlier work classified project management as a strategic firm  
23 asset (Jugdev, 2004), the characteristics of PM resources (Jugdev and Mathur, 2006b) along  
24 with the associations between PM resource characteristics and PM process outcomes  
25 (Perkins et al., 2019). More recent work has explored the nature of strategic resources in a  
26 single sector of organizations (Energy) in a region (Al-Hanshi et al., 2020). This study  
27 extends these contributions to identify the resource combinations of tangible and intangible  
28 resources in organizations post-conflict country environment. This is in contrast to the  
29 Barney (1991) approach that is embedded in the PM literature (Appendix 1) that would  
30 suggest specific resource characteristics would be valuable to organizations and provide  
31 additional support for the adoption of a Penrose (1959) perspective to the RBV in project  
32 management. In the Barney (1991) view, local and international NGOs would have  
33 different profiles as they vary in their access to resources that may have distinctive  
34 characteristics. Since the findings of this research indicate otherwise, it suggests that  
35 resource combinations, a Penrose (1959) perspective, rather than individual resource  
36 characteristics, support the delivery of project activities by organizations which is a  
37 theoretical contribution to project management research (Müller and Klein, 2018).  
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51 For the second contribution, using this Penrosean perspective provides an avenue to  
52 identify the possible role of the post conflict country context in shaping organizational  
53 resource characteristics and combinations. While research has examined the coevolution of  
54 company/customer capabilities within the context of a project and the path of development  
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3 of the capabilities of a project based organization over time, extant research has not  
4 identified the role of country environments in shaping the project resources and  
5 capabilities of firms. The findings (Table 3) indicate there was little difference in resource  
6 profiles between international and local NGOs in Sri Lanka, a post-conflict country. If PM  
7 resources were simply generated by the firm, international organizations would have  
8 radically different resource profiles to local firms. International firms may have had a  
9 higher level of codified PM resources such as Maturity models while local firms may have  
10 relied on tacit or informal resources. This extends existing work that has identified  
11 operational and dynamic capabilities of project supplier firms by suggesting that these  
12 capabilities are present in a number of firms operating in a given setting rather than  
13 individual firms involved in complex project delivery (Zerjav et al., 2018).  
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24 This finding suggests that the external environment performed a shaping role and required  
25 all firms to adapt to the complex patterns of relationships that exist in post-conflict country  
26 settings (Millar, 2017). For example, the findings for explicit organizational level PM  
27 resources of effective PM offices contradict the findings for team resources, which may  
28 reflect the differences between daily interaction with local Sri Lankan communities and  
29 managing relationships with external international bodies. Sri Lankan NGOs are also  
30 required to maintain interactions with community stakeholders who may prefer relational  
31 means of communication and interaction over codified information exchange via  
32 documents. NGO teams may rely on relational, informal coordination and communication  
33 strategies for working together in the Sri Lankan environment. At the same time, NGOs are  
34 required to maintain formal relationships with funding agencies, governments and  
35 international bodies who monitor and evaluate their activities. These organizations will  
36 require formal updates and codified information resources (Golini et al., 2015).  
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48 In a country context where competition may inflame latent tensions, formal project  
49 capacities or capabilities may serve a positive signalling role to join collaborative activities,  
50 such as large-scale programs rather than a “negative” attempt to demonstrate competitive  
51 advantage over rivals (Davies and Giovannetti, 2018). In a post-conflict country, these  
52 formal competencies demonstrates a given NGOs investment in resources to support  
53 collaboration with stakeholders, such as international military forces who have defined  
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3 structures that require defined project communication and coordination systems. In this  
4 way, they enable extended patterns of collaboration with multiple stakeholders without  
5 creating conflict in communities.  
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10 These ideas are supported by the findings of both networking relations with stakeholders  
11 and project marketing both being important collaborative social PM resources. NGO  
12 project staff members have informal networking relationships with grassroots level  
13 organisations, relevant government departments and beneficiaries. These differing repeated  
14 interactions among stakeholders has been recognized in previous research as an approach  
15 for establishing working relationships and shaping emergent project outcomes (Missonier  
16 and Loufrani-Fedida, 2014). These approaches are valuable as researchers have found that  
17 deterministic stakeholder identification and analysis frameworks are of limited value in  
18 environments with complex relationships, such as post conflict countries (Jepsen and  
19 Eskerod, 2009).  
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29 Organizations in this study may have to maintain “dual personalities” that meet the needs of  
30 both host communities and external parties. The issue of ambidexterity has been examined  
31 from the perspective of intangible resource deployment in IT projects (Turner et al., 2015).  
32 The resource profiles identified in this study may provide evidence of socialized control  
33 processes in a post-conflict project setting. These adaptations are countrywide as  
34 organizations in this study, both local and domestic, develop ambidextrous resource  
35 profiles that can serve both local communities and international bodies.  
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43 For organizations seeking to deliver projects in developing countries, the findings indicate  
44 that organizations seeking to operate in post-conflict environments develop relational  
45 collaborative social resources to adapt team and organizational resources to overcome  
46 resource and institutional constraints. The findings indicate that in post-conflict country  
47 environments, informal internal mechanisms, such as brainstorming sessions and success  
48 and failure stories, are used to transfer accumulated experience within organizations (Xue  
49 et al., 2016). An analysis at the resource profile level of organizations in this study indicates  
50 team PM competencies, such as team best practices, are not a critical element in Sri Lankan  
51 organizations, which contrasts with existing findings from the literature (Ofori, 2014).  
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## 7. Conclusion

The lessons learnt from NGOs can be of value to other organisations seeking to operate in post-conflict environments. The findings from this research reveal that organizations in Sri Lanka establish resource profiles that meet domestic and external requirements. For the management of these organizations, recognition of the inherent contradictions of this strategy can enable the optimization of resource profiles, improving organizational efficiencies.

Specifically, in team PM resources, brainstorming sessions and success and failure stories are considered knowledge-sharing activities through team interactions that enable stronger sharing of PM knowledge and skills within teams. Team cohesion and trust and team PM values were considered team cultural characteristics, encouraging teams to work together with a common interest and mutual understanding towards project objectives. The management implications of enhanced team resources may result in formalisation of internal processes, such as information sharing and procedures. However, lower reliance on collaborative resources may reduce an organization's ability to engage with the needs of host communities. NGOs may need to explore methodologies, such as Agile, and techniques, such as design thinking, that explicitly incorporate customer/stakeholder feedback. While there is a tendency to consider agile methodologies as the antithesis of formal planning, several hybrid approaches provide both flexibility and oversight (Marques and da Cunha, 2019).

The findings from this research suggest that the emerging management for a stakeholder's perspective may be more appropriate in a post-conflict environment. Similarly, NGOs working collaboratively with others may need to adopt governance strategies that allow flexibility while still providing the monitoring and control required by external bodies. In organisational PM resources, effective PM office, PM methodology, standards and process, PM tools and techniques assist in improving the project operations through providing advice, and appropriate methods and means, respectively. The study confirms the importance of collaborative social PM resources that comprise a mixture of formal and informal knowledge-sharing activities with external bodies. Therefore, for project organizations seeking to deliver outcomes in these contexts, collaborative social PM

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3 resource is a very significant resource for transferring knowledge across stakeholder  
4 networks. At the same time, the collaborative means promotes team members' future  
5 project operations through knowledge transfer, not only between immediate participants but  
6 also among stakeholders.  
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11 Overall, the study has used insights from NGOs involved in international and local  
12 development projects to extend current knowledge of PM resources. While NGOs are  
13 distinctive, the critical PM resources identified here may be of value to private and public  
14 organizations seeking to develop project resource profiles adapted to emerging markets. For  
15 these organizations, the development of collaborative social capacities may enable  
16 adaptation to a new host environment, supporting the subsequent development of  
17 appropriate team and organizational capacities. Organizations may also need to adopt new  
18 evaluation approaches that explicitly recognize the dual nature of operating in these  
19 environments. Private and Public organizations seeking to work in post conflict  
20 environments may need to adapt existing project processes to incorporate participatory  
21 evaluation approaches that enable the incorporation of community input. These  
22 organizations may also go beyond quantitative metrics to collect qualitative user feedback  
23 in the form of narratives and stories.  
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36 There may be distinct differences in resource profiles between local and international  
37 Private sector organizations, in contrast to the findings of this research. Local organizations  
38 may have community relationships and may develop informal resources. They may not  
39 develop formal project resources unless they are working with an international client such  
40 as a foreign military that requires formal communications. In contrast, international  
41 organizations may have to develop collaborative social capacities as they are required to  
42 both adapt to the post conflict environment and report to external parties. Further, they may  
43 be required to provide accountability for sustainability and other domains that may not yet  
44 be widespread practice in post-conflict countries (Thompson and Williams, 2019).  
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53 The path of development of these capabilities in international private organizations may be  
54 of interest for future research. The trajectory of resource profile development may not be  
55 linear or deterministic; that is, from informal to formal. Previous research has identified  
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that project resource improvement initiatives in Private organizations in Iran may be linked to other broader organisational development activities which may not follow a life-cycle process of development (Kwak et al., 2015).

The findings from this study also provide a theoretical contribution to Project Management research. This work suggests that a Penrosean perspective (as discussed in section 1.1) in which resource combinations, not characteristics, provide value can be considered for theoretical development in project management research. Future project management research could explicitly consider the compatibility and complementarity of project resources deployed by organizations, along with coordination processes that enable resource reconfiguration.

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Appendix 1: Summary of Extant Work on Using the RBV in Project Management

<b>Extant Works of RBV in Project Management</b>	<b>Authors and Year</b>
PM as processes, they do not have physical characteristics as do other organisational resources such as machineries and buildings. Rather, these processes are based on intangible knowledge assets; explicit (codified) and tacit knowledge assets also called ‘know-what’ (codified) and ‘know-how’ (tacit)	DeFillippi and Arthur, 1998 Fernie et al., 2003
To date, PM literature has focused on codified knowledge assets, the findings reveal the tacit PM knowledge assets in firms.	Ulri and Ulri, 2000 Kloppenborg and Opfer, 2002
PM organisational resources include both explicit resources such as policies, rules and standards and tacit resources such as norms, values, and routines.	Ekinge et al., 2000
PM team resources are defined as explicit (codified) or tacit elements within teams. Tacit PM team resources consist of items based on informal sharing of knowledge including casual conversations, mentoring, stories, brainstorming, and shadowing that address ways in which participants exchange tacit knowledge.	Jugdev and Mathur, 2006
Explicit PM team resources consist of codified knowledge assets for example professional certifications and written documents of PM practices.	Mathur et al., 2007
the project management stream of research findings indicates that intangible project management assets such as tacit knowledge, communities of practice, job shadowing and mentoring contribute to competitive advantage	Jugdev et al., 2007;

<p>In project management, explicit knowledge resources take the form of standards, methodologies and procedures. In project management, tacit knowledge resources take the form of team PM skills, knowledge-sharing activities and lesson-learning sessions</p>	<p>Jugdev et al., 2011</p>
<p>Organisational PM resources have been defined as the extent to which the PM knowledge is distributed, as well as the composition of this knowledge.</p>	<p>Mahroeian and Forozia, 2012</p>
<p>The traditional emphasis in project management has been on tangible resources (e.g. tools and techniques, templates, software and project management offices). More recent project management research that builds on RBV and the VRIO framework moves attention to intangible project management resources.</p>	<p>Mathur et al., 2013, 2014.</p>
<p>The Resource-based View of the firm is a strategic management theory that is widely used by managers in project management. It allows them to spread resources according to alignment with strategy, to identify the value of such resources and required capabilities for the competitive advantage of the organization.</p>	<p>Almarri, K. and Gardiner, P., 2014.</p>
<p>RBV emphasizes development of a firm's resource-base and strategic assets, and Resource development theory focuses on external resources and management of environmental dependencies</p>	<p>Parker, D.W., Parsons, N. and Isharyanto, F., 2015.</p>
<p>The study identified three levels of PM Capacity: Team PM Capacity, Organizational PM Capacity and Collaborative Social PM Capacity, a Capacity that has not yet been identified in the literature which supports adaptation to the complex, uncertain environments in which some NGOs operate.</p>	<p>Nanthagopan, Y., Williams, N.L. and Page, S., 2016.</p>
<p>Findings indicate that PM is captured by varying degrees of a rational adaptive approach, which is</p>	<p>Papke-Shields, K.E. and</p>

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<p>positively correlated with PM success and use of PM tools/techniques. These results suggest that strategic planning characteristics can be effectively incorporated into a generalized PM framework, yielding potentially useful insights regarding the relationship of PM behaviors to eventual project success.</p>	<p>Boyer-Wright, K.M., 2017.</p>
<p>The PM resources have valuable, rare and inimitable characteristics. This has influence over the project performance of the organisations.</p>	<p>Perkins, D., Mathur, G. and Jugdev, K., 2019.</p>
<p>The analysis shows that at the project level, <i>Value</i> and <i>Organisational support</i> attributes of resources were positively related to competitive advantage and both impacted by dynamic capabilities and innovative environment. However, the <i>Rareness</i> and <i>Inimitability</i> attributes showed less evolution. The results suggest a desire by project-oriented organizations to replace the <i>Rareness</i> and <i>Inimitability</i> attributes within VIRO with two alternative attributes, namely <i>Unique exploitation</i> and <i>Timely availability</i> of resources.</p>	<p>Al-Hanshi, M.A.M.O., Ojiako, U. and Williams, T., 2020.</p>
<p>The theoretical contribution is a contextualized model of public value creation linking resources, capabilities and public value. The model explains how Benefits Management practices and hence value can be interrelated in a public healthcare IT system and realized through an action research project. The resource-based value approach especially identified (the need for) exact metrics.</p>	<p>Svejvig, P. and Schlichter, B.R., 2020.</p>
<p>Explicit knowledge is more related to project management efficiency and impact on teams, while tacit knowledge has also been related to present impact on business. The main tools and techniques regarding knowledge management in project contexts were also identified.</p>	<p>Emiliano de Souza, D., Favoretto, C. and Carvalho, M.M., 2021.</p>

**Appendix 2 – Survey Instrument**

**Project Managing in Post-Conflict Environments:  
An Exploration of the Resource Profiles of Sri Lankan NGOs Involved in  
Development Projects**

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**Project Management (PM) Resources**

PM resources can be defined as PM knowledge (explicit/tacit) elements that support effective project operations, including PM knowledge, skills, systems, processes, culture, tools and techniques.

For each question, there are seven (7) possible answers (**1- Strongly Disagree, 2- Disagree, 3- Somewhat Disagree, 4- Neither agree nor disagree, 5- Somewhat Agree, 6- Agree and 7- Strongly Agree**) to choose from. Please circle the answer which you believe best fits the projects you have been involved in your organization.

**A: Team PM Resources**

Team PM resources consider the PM knowledge and skills that are accumulated and shared within the team to deliver good project outcomes. The PM resources, such as team informal meetings, on-the-job trainings, team trust, and team PM expertise, are collectively known as team PM Resource.

		Strongly Disagree								Strongly Agree	
		↑									↑
	<b>Team PM Resource</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>			
1	We discuss project experiences among our team members in casual conversations and informal meetings.	1	2	3	4	5	6	7			
2	Our group brainstorming sessions help us to discuss important project problems and find appropriate solutions.	1	2	3	4	5	6	7			

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3 We regularly have field visits to observe and discuss  
4 the progress of our projects. 1 2 3 4 5 6 7  
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9 4 On-the-job training is not helpful in improving our  
10 PM skills. 1 2 3 4 5 6 7  
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14 5 Job shadowing (learning by observing the works of an  
15 expert) and mentoring sessions help to improve our  
16 project works. 1 2 3 4 5 6 7  
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21 6 We learn project experiences through discussing  
22 success and failure stories. 1 2 3 4 5 6 7  
23  
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26 7 Our team members are always working with mutual  
27 understanding and trust. 1 2 3 4 5 6 7  
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31 8 Our team values promote strong PM discipline. 1 2 3 4 5 6 7  
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35 9 Our team has very good expertise in applying PM  
36 knowledge, skills, tools and techniques. 1 2 3 4 5 6 7  
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40 10 We always abide by best PM practices. 1 2 3 4 5 6 7  
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### **B: Organizational PM Resource**

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44 Organisational PM resource is the PM knowledge and skills that are incorporated and  
45 shared within the organization. The PM resources, such as PM office, methodology,  
46 standards, processes, tools, techniques, and formal knowledge sharing activities, are  
47 collectively known as organizational PM resource.  
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		Strongly Disagree							Strongly Agree	
		↑							↑	
		1	2	3	4	5	6	7		
<b>Organizational PM Resource</b>										
11	We have an effective PM office/unit which supports all of the ways to implement projects effectively and efficiently.	1	2	3	4	5	6	7		
12	We have sound PM methodology, standards and processes when it comes to managing our projects.	1	2	3	4	5	6	7		
13	We effectively use PM tools and techniques to manage our projects.	1	2	3	4	5	6	7		
14	Our PM information system is not sound to effectively provide information among our team members.	1	2	3	4	5	6	7		
15	Our monitoring and evaluation mechanisms are effective in tracking the projects.	1	2	3	4	5	6	7		
16	The organization invests in capacity-building training programs for developing our PM knowledge and skills.	1	2	3	4	5	6	7		
17	We are accustomed to having several formal meetings to discuss and share projects experiences.	1	2	3	4	5	6	7		
18	We have very effective project communication systems and technology.	1	2	3	4	5	6	7		
19	The organizational project culture is well-defined and promotes project works within an organization.	1	2	3	4	5	6	7		
20	The organizational leadership provides adequate support and motivation to the project teams.	1	2	3	4	5	6	7		



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3 **C: Collaborative Social PM Resource**  
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5 Collaborative social PM resource can be a process of participation outside the organisation  
6 through which people, groups and organisations work together to share PM knowledge and  
7 skills to achieve the desired results. PM knowledge can be shared through formal or  
8 informal ways of interactions with external bodies.  
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	<b>Collaborative Social PM Resource</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
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16								
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18								
19	21							
20	We receive highly important support for our projects							
21	from government bodies, including advisory and	1	2	3	4	5	6	7
22	technical support.							
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26	22							
27	Project donors support us through meetings,							
28	discussions and standard manuals.	1	2	3	4	5	6	7
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31	23							
32	NGOs' Intra forums and consortium meetings help us							
33	to share project experiences amongst the staff of							
34	NGOs.	1	2	3	4	5	6	7
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38	24							
39	We lack official information-sharing among NGOs							
40	through websites, social media, and/or other means.	1	2	3	4	5	6	7
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43	25							
44	We have combined projects with other organizations							
45	and share our project experiences through formal							
46	meetings.	1	2	3	4	5	6	7
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50	26							
51	Our joint projects with partner organizations promote							
52	informal discussions to generate appropriate solutions	1	2	3	4	5	6	7
53	to project issues.							
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27 Networking relationships, which include face-to-face discussions and informal meetings with stakeholders, help us to share PM knowledge and skills. 1 2 3 4 5 6 7

28 We have joint discussions and meetings with project beneficiaries in project cycle activities. 1 2 3 4 5 6 7

29 Our project marketing events, such as project awareness and inauguration programs, help us to gather useful knowledge from the community for implementing projects. 1 2 3 4 5 6 7

30 We participate in our community of practice through online social networks (e.g. Twitter /NGOs websites) to discuss project issues. 1 2 3 4 5 6 7

**Demographic Information**

Please complete the information below. This demographic information is private and confidential, and analysis will be conducted on the aggregate data only and will not be used on an individual basis.

a. Type of Organization: 

Local NGO <input type="checkbox"/>	International NGO <input type="checkbox"/>
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b. Age of Respondent:

c. Experience in NGO projects:   
(Years)

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Type of Project you have been involved in:  
(Select one which most suits you)

<input type="checkbox"/>	Livelihoods	<input type="checkbox"/>	Health & Nutrition	<input type="checkbox"/>	Capacity Building
<input type="checkbox"/>	Infrastructure	<input type="checkbox"/>	Training / Education	<input type="checkbox"/>	Women Development
<input type="checkbox"/>	Relief & Disaster Management	<input type="checkbox"/>	Protection (Human Rights, child protection etc.)	<input type="checkbox"/>	Gender Equity
<input type="checkbox"/>	Water and Sanitation	<input type="checkbox"/>	Social Mobilization	<input type="checkbox"/>	Others
<input type="checkbox"/>	Male	<input type="checkbox"/>	Female	Please Specify.....	
<input type="checkbox"/>		High School		Bachelor's Degree	
<input type="checkbox"/>		Postgraduate Degree		Doctoral Degree	
Any Project Management Courses / Certifications      Yes <input type="checkbox"/> No <input type="checkbox"/> Please Specify :.....					

d. Gender:

e. Education:  
(Select the highest level only)

Please provide your

valid email address in the box below if you wish to receive the results of the survey.

Email:

THANK YOU VERY MUCH

### **Appendix 3 – Alternative Three Measurement Models of PM Resources**

#### **CFA Model 1: Three Levels of PM Resources**

The CFA Model 1 is drawn based on the findings of EFA, which identified the best indicators for each factor. The first factor is team PM resource, which consists of eight indicators. The second factor is organisational PM resource, which consists of nine indicators. Finally, the third factor, collaborative social PM resource, consists of eight indicators.

CFA was performed with all the identified indicators. The results for absolute fit indices indicate that normed chi-square ( $\chi^2 / df$ ) value is 3.140, GFI is 0.859, RMSEA is 0.069, p-close value is less than 0.05, and SRMR is 0.049. Next, incremental indices results are: NFI is 0.869, TLI is 0.896, and CFI is 0.909. Finally, the parsimonious fit indices results demonstrate that AGFI is 0.831 and PNFI is 0.791. The results of these three indices demonstrate poor fit of model (Hu and Bentler, 1999; Byrne, 1994; Wheaton, 1987). All the indicators have statistically significant loadings on the factors. AVE values for the latent factors of TPR and OPR are satisfactory and all latent CR values are adequate (Hair et al., 2010). (see Figure 2 and Table 11)

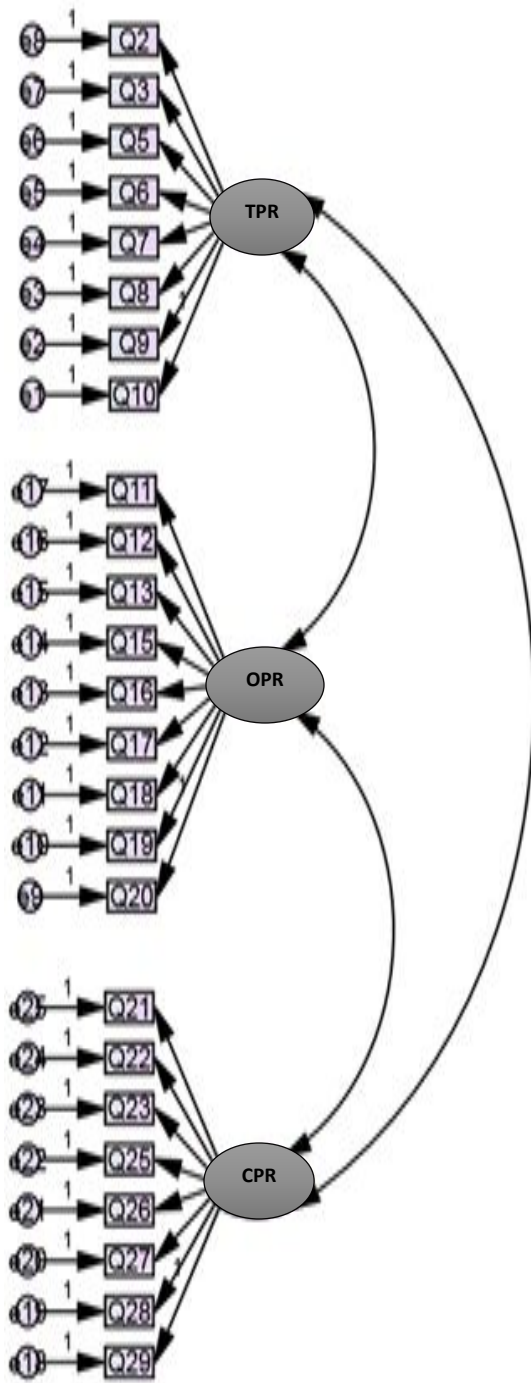


Figure 2: CFA Model 1

Construct	Item	Standardised		
		TPR	OPR	CPR
Team PM Resource (TPR)	Q2	0.67		
	Q3	0.63		
	Q5	0.62		
	Q6	0.74		
	Q7	0.76		
	Q8	0.81		
	Q9	0.76		
	Q10	0.83		
Organisational PM Resource (OPR)	Q11		0.73	
	Q12		0.77	
	Q13		0.79	
	Q15		0.70	
	Q16		0.69	
	Q17		0.72	
	Q18		0.73	
	Q19		0.77	
Collaborative Social PM Resource (CPR)	Q20			0.53
	Q21			0.70
	Q22			0.65
	Q23			0.56
	Q25			0.60
	Q26			0.72
	Q27			0.72
Q28			0.72	
Q29			0.72	
AVE		<b>0.53</b>	<b>0.55</b>	<b>0.43</b>
Construct Reliability		<b>0.90</b>	<b>0.92</b>	<b>0.86</b>
Absolute Fit Index	$\chi^2 = 854.1$ , $df = 272$ , $\chi^2 / df = 3.140$ , GFI = 0.859, RMSEA = 0.069, P-close < 0.05, SRMR = 0.051			
Incremental Fit Index	NFI = 0.872, TLI = 0.899, CFI = 0.909			
Parsimony Fit Index	AGFI = 0.831, PNFI = 0.791			

Table 11: Estimates for CFA Model 1

### **Elimination of Items**

Hair et al. (2006) indicate the statistical significance of an item alone does not indicate the item contributes to the model fit adequately. The factor loadings should be greater than 0.7 and a minimum of 0.5 is acceptable for model consideration (Hair et al., 2010; Byrne, 2010). However, the decision to remove items from the model should be made with consideration of the standardised residual covariance (SRC) values reference with theoretical sides (Hair et al., 2010; Schumaker and Lomax, 2004). Certain ranges are proposed to interpret the standardised residual covariance matrix. SRC values greater than 2.58 are considered to be large (Byrne, 2010) and values greater than 1.96 or 2.58 do not explain the model well (Schumaker and Lomax, 2004).

Table 12 shows the elimination of items consisting of high SRC values in CFA Model 1. The indicators with high SRC values, greater than 1.96, were noted for elimination. High SRCs were found in the first factor (Q3 and Q5), second factor (Q15, Q16 and Q19) and in the third factor (Q21 and Q26). Subsequently, these items with high SRCs were eliminated in order to improve the model fit and the alternative model was drawn (Schumaker and Lomax, 2004).

Items	Loadings	SRCs		Elimination and Justification
		>1.96	>2.58	
Q3	0.63	3	0	Removed / Moderate loadings + three SRCs > 1.96 (with Q27, Q28, and Q29)
Q5	0.61	3	0	Removed / Moderate loadings + three SRCs > 1.96 (with Q21, Q26 and Q6)
Q15	0.70	1	0	Removed / Moderate loadings + one SRC > 1.96 (with Q28)
Q16	0.69	2	0	Removed / Moderate loadings + two SRCs > 1.96 (with Q28 and 29)
Q19	0.77	2	0	Removed / Good loadings + one SRC > 1.96 (with Q25 and Q23)
Q21	0.54	2	3	Removed / Moderate loadings + two SRCs > 1.96 (with Q5 and Q20) + three SRCs > 2.58 (with Q2, Q8 and Q23)
Q26	0.60	1	2	Removed / Moderate loadings + one SRC > 1.96 (with Q5) + two SRCs > 2.58 (Q25 and Q27)

**Table 12: Elimination of Items for CFA Model 1**

### **CFA Model 2: Three Levels of PM Resources**

CFA Model 2 comprised screened indicators after the elimination of high SCR indicators in the first stage. In the first factor, team PM resources, the six indicators selected are Q2, Q6, Q7, Q8, Q9 and Q10. In the second factor, organisational PM resources, the six selected items are Q11, Q12, Q13, Q17, Q18 and Q20. In the third factor, collaborative social PM resources, the six items are Q22, Q23, Q25, Q27, Q28 and Q29.

The results of absolute fit indices show that normed chi-square ( $\chi^2 / df$ ) value is 2.742, GFI is 0.911, RMSEA is 0.063, p-close value is less than 0.05 and SRMR is 0.041. Incremental indices results show that NFI is 0.922, TLI is 0.940 and CFI is 0.948. The parsimonious fit indices results indicate that AGFI is 0.884 and PNFI is 0.795. The fit indices show a

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3 mediocre fit (Hu and Bentler, 1999; Byrne, 1994; Wheaton, 1987). AVE values for the  
4 latent factors of TPR and OPR are satisfactory and all latent CR values are good (Hair et  
5 al., 2010; Farrell, 2010) (see Figure 3 and Table 13).  
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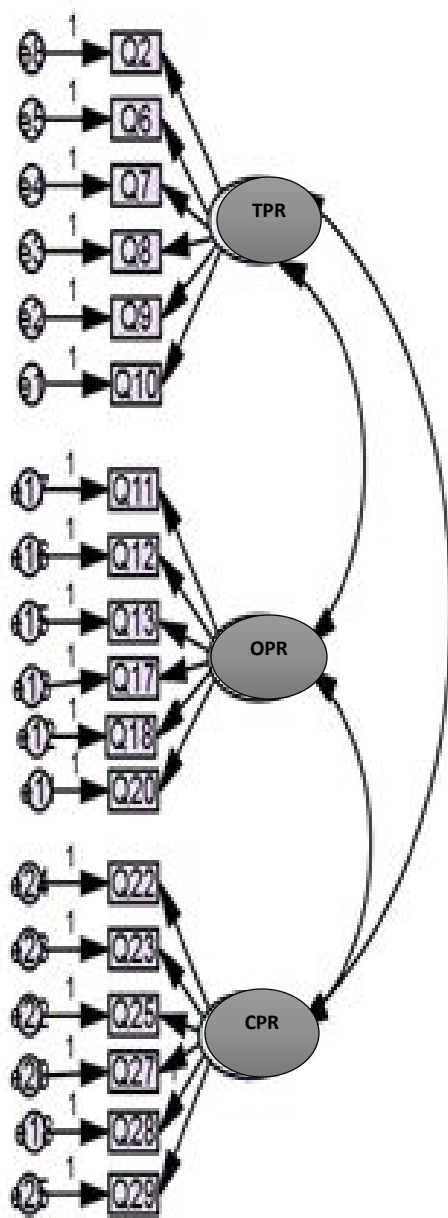


Figure 3: CFA Model 2

Construct	Item	Standardised		
		TPR	OPR	CPR
Team PM Resource (TPR)	Q2	0.67		
	Q6	0.73		
	Q7	0.77		
	Q8	0.82		
	Q9	0.76		
Organisational PM Resource (OPR)	Q10	0.83		
	Q11		0.75	
	Q12		0.79	
	Q13		0.80	
	Q17		0.72	
Collaborative Social PM Resource (CPR)	Q18		0.72	
	Q20		0.76	
	Q22			0.70
	Q23			0.64
	Q25			0.53
Average Variance Extracted (AVE)	Q27			0.70
	Q28			0.74
	Q29			0.73
			<b>0.59</b>	<b>0.57</b>
Construct Reliability (CR)		<b>0.89</b>	<b>0.89</b>	<b>0.83</b>
Absolute Fit Index	$\chi^2 = 362.0$ , $df = 132$ , $\chi^2 / df = 2.742$ , $GFI = 0.911$ , $RMSEA = 0.063$ , $p\text{-close} < 0.05$ , $SRMR = 0.041$			
Incremental Fit Index	$NFI = 0.922$ , $TLI = 0.940$ , $CFI = 0.948$			
Parsimony Fit Index	$AGFI = 0.884$ , $PNFI = 0.795$			

Table 13: Estimates for CFA Model 2

### **Elimination of Items for CFA Model 2**

CFA Model 2 presents all the indicators which have SRCs less than 1.96. However, the CFA model is not a good fit. Therefore, the modification index (MI) was applied in order to improve the CFA model fit (Whittaker, 2012; MacCallum et al., 1992). Modification indices estimate the extent to which model fit would improve through reducing specification errors (Whittaker, 2012). Specification errors occur due to the inclusion of irrelevant relations or the exclusion of relevant relations (MacCallum, 1986).

Table 14 displays the regression weights of the indicators and factors of CFA Model 2. Some items have high cross-loading many times with other factor items and these items were considered for elimination in order to improve the model fit (Whittaker, 2012; Luijben and Boomsma, 1988). Items Q9, Q20 and Q28 respectively were considered for elimination from team, organisational and collaborative social PM resource.

Highly Cross-loaded Items	MI	Action Taken and Justification
Q9 <--- Q25 Q9 <--- Q11 Q9 <--- Q12 Q9 <--- Q13 Q9 <--- Q18 Q9 <--- Q2	6.331 6.379 11.326 4.527 6.121 9.321	Q9 highly cross-loaded with other factor items.  <b>Removed Item Q9</b>
Q20 <--- Q29 Q20 <--- Q7 Q20 <--- Q8 Q20 <--- Q10	6.131 5.902 5.836 5.972	Q20 highly cross-loaded with other factor items.  <b>Removed Item Q20</b>
Q28 <--- Q23 Q28 <--- Q13 Q28 <--- Q17 Q28 <--- Q06	6.219 6.746 4.366 7.878	Q28 highly cross-loaded with other factor items.  <b>Removed Item Q28</b>

**Table 14: Modification Index: Regression Weights – CFA Model 2**

### **CFA Model 3: Three Levels of PM Resources**

Model 3 consists of screened indicators after the elimination of highly cross-loaded indicators. Team PM resource consists of five items: Q2, Q6, Q7, Q8 and Q10; organisational PM resources consists of five items: Q11, Q12, Q13, Q17 and Q18 and collaborative social PM resource consists of five items: Q22, Q23, Q25, Q27 and Q29.

The results of absolute fit indices produce a normed chi-square ( $\chi^2 / df$ ) value of 2.210, GFI is 0.947, RMSEA is 0.052, p-close value is greater than 0.05 and SRMR is 0.037. Incremental indices results show that NFI is 0.945, TLI is 0.963 and CFI is 0.969. Parsimonious fit indices results indicate that AGFI is 0.927 and PNFI is 0.783. The fit indices give average values for the acceptable level of fit (Hu and Bentler, 1999; Byrne, 1994; Wheaton, 1987). AVE values for the latent factors of TPR and OPR are satisfactory and all latent CR values are very good (Hair et al., 2010; Farrell, 2010) (See Figure 4 and Table 15).

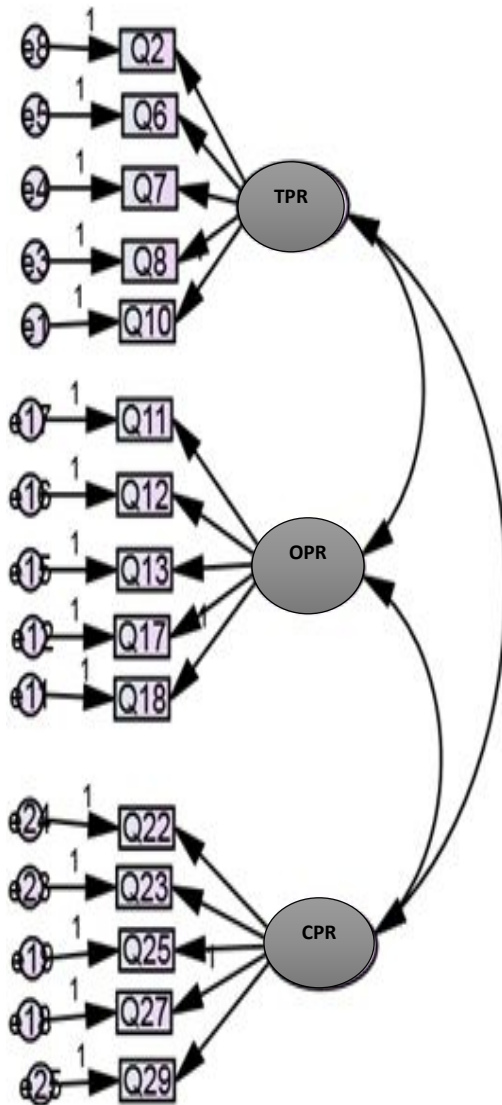


Figure 4: CFA Model 3

Construct	Item	Standardised Factor		
		TPR	OPR	CPR
<b>Team PM Resource (TPR)</b>	Q2	0.70		
	Q6	0.75		
	Q7	0.78		
	Q8	0.83		
	Q10	0.80		
<b>Organisational PM Resource (OPR)</b>	Q11		0.77	
	Q12		0.81	
	Q13		0.80	
	Q17		0.71	
	Q18		0.72	
<b>Collaborative Social PM Resource (CPR)</b>	Q22			0.71
	Q23			0.67
	Q25			0.53
	Q27			0.72
	Q29			0.71
<b>Average Variance Extracted (AVE)</b>		<b>0.60</b>	<b>0.58</b>	<b>0.45</b>
<b>Construct Reliability (CR)</b>		<b>0.88</b>	<b>0.87</b>	<b>0.80</b>
<b>Absolute Fit Index</b>	$\chi^2=192.2$ , $df = 87$ , $\chi^2 / df = 2.210$ , $GFI = 0.947$ , $RMSEA = 0.52$ , $p\text{-close} > 0.05$ , $SRMR = 0.037$			
<b>Incremental Fit Index</b>	NFI = 0.945, TLI = 0.963, CFI = 0.969			
<b>Parsimony Fit Index</b>	AGFI = 0.927, PNFI = 0.783			

Table 15: Estimates for CFA Model 3

### Elimination of Items for CFA Model 3

Table 16 contains the regression weights of indicators and factors of CFA Model 3. Model 3 shows the fit is reasonable for acceptance. To improve the model further and fix the over-estimation of indicators (Hair et al., 2006), three more highly cross-loaded items, Q10, Q17 and Q25 respectively, from team, organisational and collaborative social PM resources have been considered for elimination.

Highly Cross-loaded Items	MI	Action Taken and Justification
Q10 <--- Q27	4.741	Q10 highly cross-loaded with other factor items.  <b>Removed Item Q10</b>
Q10 <--- Q12	4.513	
Q10 <--- Q13	8.037	
Q10 <--- Q18	4.495	
Q17 <--- Q29	5.725	Q17 highly cross-loaded with other factor items.  <b>Removed Item Q17</b>
Q17 <--- Q12	5.655	
Q17 <--- Q2	4.961	
Q25 <--- Q18	5.872	Q25 highly cross-loaded with other factor items  <b>Removed Q25</b>
Q25 <--- Q12	5.998	

**Table 16: Modification Index: Regression Weights – CFA Model 3**

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Reviewers' Comments	Respond to the Reviewers
<p>1. From my point of view the research problem is not clearly stated. Is it that NGO project performance is weak in international development settings and in particular post-conflict settings? If yes, give the reader a sense of how worse it is... Then, is it that there is a lack of knowledge on PM resource profiles for NGOs in charge of the delivery of these post-conflict projects? Saying that there is little to no empirical research done on PM resource profiles in international development NGOs without any background is a bit contrived. Please tell us what the knowledge gap (what we are yet to know) is and what the knowledge stock (what we know) is about the subject topic?</p>	<p>Thank you, the comment, The aim of this study is to empirically examine the configuration of project resources in organizations operating in a post-conflict country environment. Our current knowledge stock is based on an examination of the characteristics of resources or capabilities held by firms (Appendix 1). This paper fills a knowledge gap to identify the resource profile composition of a population of a specific type of organization (NGOs) in order to identify the impact of the context on project resource development.</p>
<p>2. What sets apart post-conflict projects from other international development projects? What does such specificity mean for managing post-conflict projects including the development of project resource profiles by the NGOs who deliver them? On what conceptual grounds, can we suggest that their project resource profiles are different and what bearing would this have on their project management? Without</p>	<p>Thank you for the comment. Organizations involved in projects delivered in post conflict countries have additional responsibilities to those involved in traditional international development projects due to the nature of the context. Conflicts can occur in both developed (Northern Ireland) and developing countries. Post conflict countries have a history of violence and latent stakeholder tensions that can return to violence. Organizations need to be sensitive to these challenges and may need to develop resources and capabilities to</p>

<p>1 2 3 this conceptual positioning, it would be difficult to see what 4 this research adds to the literature. 5 6 7</p>	<p>ensure that projects can be delivered without a return to conflict. On a conceptual basis, it suggests that these firms will develop resources that support collaboration rather than competitive advantage.</p>
<p>8 9 3. What makes RBV a good theoretical basis for this paper? 10 How does the RBV theory fit within project settings and is there 11 any work on it? What do we know about RBV application in 12 international development project settings in particular? 13 Without such a discussion, it is difficult to assess the 14 contribution of this paper. I will return to this point. Also, to 15 what extent do NGOs who have resource characteristics hold a 16 competitive advantage in project settings, how and why? And 17 what does this competitive advantage look like in project 18 settings? These questions may deserve your attention if you are 19 to portray a convincing story. 20 21 22 23 24 25 26 27 28 29 30</p>	<p>Thank you for the comment. The RBV is an organization level conceptualization and can be applied to examine the characteristics of firms involved in Projects. Appendix 1 provides a summary of extant work on using the RBV in project firm settings. This work advances existing conceptualizations and empirical work in the RBV by 1) Adopting the penrosean perspective of distinct resource combinations, not individual resource characteristics 2) Identifying the associations among resource characteristics 3) Examining these in the context of firms involved in projects in post conflict environments.</p>
<p>31 4. Context plays a big role in international development 32 projects and even more in post-conflict situations. Does 33 context play a role at all in this research? Does the context in 34 which post-conflict projects take place has any influence 35 whatsoever on their management? Does it affect the 36 development of project resource profiles and how? What 37 38 39 40 41 42 43 44 45 46 47</p>	<p>Thank you for the comment. As described earlier, Post conflict environments are distinct from other developing or developed country environments. We identified that context may perform a shaping role as both community and international firms did not significantly differ in resource profiles. A VRIO/Barney approach would theorize that international firms may have a higher endowment of formal, codified</p>



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<p>makes the Sri Lankan context particular and is there any bearing on your findings? This discussion of context will strengthen the credibility of your findings.</p>	<p>resources which would form the basis of their “competitive advantage”. In the context of Sri Lanka, both community and international organizations had similar resource profiles.</p>
<p>5. Finally, what is the contribution of this research? To what extent does existing research supports or contradicts its findings? As its stands, the discussion focuses on a contrast between Barney and Penrose, which is great. Well done! But again we are in a project context and in particular, an international development project setting. The discussion should focus on that peculiar literature, which is deadly missing. For example, the finding that it is resource combinations, rather than individual resource characteristics, which support the delivery of project activities by NGOs is interesting. But the real question is whether the project context plays a role.</p>	<p>Thank you for the comment. This work advances existing work to make two contributions to the literature on the Resource Based view in Project Management. The first is that it identifies that resource combinations, a Penrose perspective rather than resource types may support organizational operational project capabilities. The second is that it identifies the possible impact of the post conflict country context on the project resources and capabilities of firms.</p>