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A REVIEW OF PROJECT MANAGEMENT FOR POST-DISASTER RECONSTRUCTION PROJECT: FROM INTERNATIONAL NGOs (INGOs) PERSPECTIVE

Dzulkarnaen Ismail [a], Taksiah A Majid [a], Ruhizal Roosli [b], Hj Noorazam Ab Samah [c]

[a] Faculty of Civil Engineering, Universiti Sains Malaysia Penang, Malaysia.
[b] Housing Building and Planning, Universiti Sains Malaysia Penang, Malaysia.
[c] Mercy Malaysia, Universiti Sains Malaysia Penang, Malaysia.

Keywords

Post-Disaster Reconstruction

Project Management

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A B S T R A C T

Post-disaster reconstruction (PDR) is a complex and highly demanding process that involves a number of different and well-coordinated courses of action. Therefore, it is vital that these complex activities are well planned. The objective of this research is to study the post-disaster reconstruction complexity, the phases of PDR, the project classification, the parties involved in PDR, the needs of project management approach on PDR, and suggest the most critical success factors highlighted by previous authors in this field. The goal of this research is to improve project management practice in PDR project specifically for International Non-Governmental Organizations (INGOs) that participate in the phase of Post-Disaster Reconstruction.

1 INTRODUCTION

In recent years, natural disasters happened frequently around the globe and responsible not only for heavy loss of lives but also create a greater property loss. The average reported losses rose from around $US 50 billion a year in the 1980s to almost $US 200 billion a year in the past decade, totaling $US 3.8 trillion from 1980 to 2012 (World Bank, 2013). The post-disaster reconstruction (PDR) initiative is part of a sequence of four identifiable post disaster periods: emergency, restoration, reconstruction, and betterment construction (Ismail, Majid, Roosli, & Samah, 2014).

Post-disaster reconstruction projects often deals with uncertainties (Hayles, 2010; Sun & Xu, 2011) complexity (Boano & García, 2011; Bello, 2006; Ye & Okada, 2002) consider one of the most challenging tasks to be deal with those involved in reconstruction of disaster-affected areas. This study were mean to investigate using literature review techniques the post-disaster reconstruction complexity, the phases of

PDR, the project classification, parties involved in PDR, the needs of Project Management approach on PDR, and suggest the most critical success factors highlighted by previous authors in this fields.

2 POST-DISASTER RECONSTRUCTION (PDR)

This section will explore the characteristics of the PDR, the complexity and uncertainties of PDR to relate with the subject being research. Post-disaster reconstruction and rehabilitation is a complex issue with several dimensions. Post-disaster reconstruction projects often deals with uncertainties (Hayles, 2010; Sun & Xu, 2011) complexity (Bello, 2006; Boano & García, 2011; Wardak, Coffey, & Trigunarsyah, 2012; Ye & Okada, 2002) consider one of the most challenging tasks to be deal with those involved in reconstruction of disaster-affected areas. According to Masurier, Rotimi, & Wilkinson (2006) there was little difference between the routine construction process and the reconstruction process where the parties involved during routine construction projects were also involved during the reconstruction and using existing relationships may eased the process.

Reconstruction should be defined, planned, and implemented in stages (Roosli, Vebry, Mydin, & Ismail, 2012). Yi & Yang (2014) suggested that Post Disaster Reconstruction (PDR) require existing tools or new tools to be adapted, that if not well planned and implemented, can create further vulnerabilities in a disaster-affected community (Chang, Wilkinson, Potangaroa, & Seville, 2010b). Planning for reconstruction from a disaster must be realistic and reflective. There are thus few data on how effective such planning is in reducing the delays in reconstruction (Alexander, 2004). Without a plan, it is impossible to predict or expect a successful recovery (Ye & Okada, 2002).

Each disaster had its uniqueness during reconstruction efforts, every disaster provides an opportunity to study different approaches adopted in housing reconstruction, their success and related issues (Karunasena & Rameezdeen, 2010). Therefore, integrated reconstruction management is the key to accelerate reconstruction process and to improve human settlement environment (Ye & Okada, 2002) thus a successful project is one that is delivered on time and managed within the budget (Kandelousi, Ooi, & Abdollahi, 2011). The next section will discussed further the relationship between phases of PDR, the project classification of PDR and parties involved in PDR for better understanding on the issues and impact of disaster for NGOs involved in PDR projects.

3 THE PHASES OF POST-DISASTER RECONSTRUCTION

Phases in natural disaster management are identified in different terms which give similar insights. Figure 1 shows the Total Disaster Risk Management applies to all the phases of the disaster management cycle that are i) emergency response & recovery, ii) rehabilitation & reconstruction, iii) prevention/mitigation and iv) preparedness. This is in line with the Hyogo Framework for Action (HFA) introduced at the 2005 UN World Conference on Disaster Reduction in Kobe, Japan (MERCY Malaysia, 2014).

From the TDRM cycle, it can be noticed that the rehabilitation and reconstruction begins soon after the emergency phase has ended (UNISDR, 2009). Typical construction projects are quite often viewed as having four phases that are initiation, planning, execution and closure and not much differ from PDR phases.

Fengler et al., (2008) had clearly highlighted three phases of post-disaster reconstruction, which similar to Shaw (2003) and Jones (2006) as illustrated in Figure 2, are as follows:

In addition, Sun & Xu (2011) had identified each of activities involved in reconstruction which include plan, design, purchasing, construction, examination and completion. The six stages are as follows:

Fig. 1 The Total Disaster Risk Management (TDRM) Cycle (Salleh, 2012)

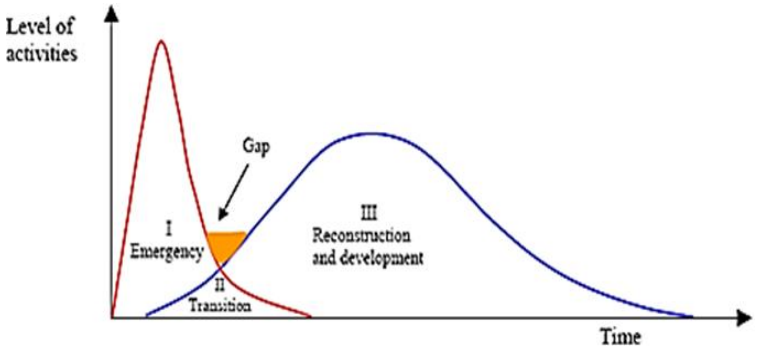

Fig. 2 Implementation phases of post-disaster reconstruction (Fengler et al., 2008)

(a) Plan

Planning stage of reconstruction is commonly take lengthy time to understand the context of disaster, to coordinate among agencies, to identify disaster victims or beneficiaries resolve land problem (Hidayat & Egbu, 2010) cost-vs.-effect and efficiency (RDC, 2011) incorporates risk-reduction measures (Boen, 2006) and financing plans (World Bank, 2013). This factor is vital for a successful planning and execution of the rehabilitation and reconstruction.

(b) Design

At the design stage, indicators must be established (UNCHS, 2001) to help clarify the logical framework of the programme or project beside looking at the land size, location and overall facilities (Karunasena & Rameezdeen, 2010) also consider owner driven approach (Davidson, Johnson, Lizarralde, Dikmen, & Sliwinski, 2007; Ratnayake & Rameezdeen, 2010) in order to meet the needs of the beneficiaries.

(c) Purchasing

Issues like purchasing of lands (Hosseini & Izadkhah, 2008; J. Shaw & Ahmed, 2010), purchasing or hiring plant (Lu, Shen, Asce, & Yam, 2008) materials purchasing (Chang, Wilkinson, Potangaroa, & Seville, 2011b; Silva, 2010) were highlighted among most of the NGOs involved in PDR. Catholic Relief Services, an NGO working in PDR had come out with a purchasing policy to ensure all goods and services are at the best terms consistent with the required quality and delivery, and at the lowest total cost (CRS, 2011).

(d) Reconstruction

According to (Masurier et al., 2006) routine construction processes have proved enough for small-scale disasters but the greater degree of coordination is required for programs of reconstruction. The process of reconstruction chosen by NGOs and other organizations in Aceh as identified by Boen (2006) and K,

Oyedele, & Cleland (2009) are: (i) whether assigning a contractor to build the houses or (ii) providing the fund, but leave the purchasing of materials and hiring of construction workers to the beneficiaries.

(e) Examination / Monitoring and Evaluation (M&E)

Monitoring and evaluation is critical to support emergency recovery and reconstruction needs, both as a management information tool and as a longer-term learning process for prioritizing and managing post-disaster recovery and reconstruction efforts (World Bank, 2013) by assessing the progress of reconstruction, and providing early warning signals for corrective action as needed (Fengler et al., 2008).

(f) Completion

Among the problem emphasize by an NGOs in this stage are delay of the completion due to land matters and improper coordination (Johnson, Lizarralde, & Davidson, 2006), weak database management (Steinberg, 2007) quality control of a complete house reconstruction (Ochiai & Shaw, 2009) with the issuance certificates of completion (CRS, 2011). Figure 3 summarised the finding of post-disaster reconstruction stage.

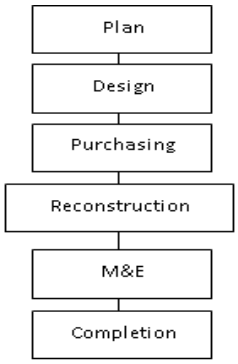

Fig. 3 post-disaster reconstruction stage

4 POST DISASTER RECONSTRUCTION (PDR) PROJECT CLASSIFICATION

The relationships between construction project parties and issues in each reconstruction activities and project classification were discussed in this section. Based on Sun & Xu (2011), there are five major reconstruction types were discussed in details considering the view from other authors in PDR. Table 1 summarised the finding of post-disaster reconstruction project classification.

(a) Ecological Construction

Post-earthquake reconstruction plans cover many fields which include ecological rehabilitation (Caiyu Sun & Xu, 2011). BRR (2006) for Aceh reconstruction recommended that sea defense using mangroves to enable housing developments to be protected. Other (Claudia Schneider, 2012) suggested on construction materials issues on the quarry of soil not to jeopardise ecologically sensitive areas, agricultural lands or other livelihoods sources.

The ecological construction, therefore includes water balance, landscape and biodiversity, optimal arrangement for land utilization, ecological conservation priority (Pei-jun, Hong, Ping, & Wu-guang, 2000).

(b) Industrial Construction

Damage to the built environment can be classified broadly as affecting residential, commercial, industrial, infrastructure (water, waste disposal, electric power, fuel, telecommunications, and transit), or community services (public safety, wellness, education) sectors (Lindell, 2011). According to the study carried out by (Ye & Okada, 2002) after a damaging earthquake, attention should be paid to recover most effective industrial sectors.

The industrial reconstruction type should include constructing warehouses (CRS, 2011), constructing factory (Barakat, 2003), and water and sewage treatment plants (Taylor, Seneviratne, Baldry, & Pathirage, 2013).

(c) Infrastructure

The coordination of housing and infrastructure reconstruction is difficult in a post-disaster environment. Following a disaster, there is an immediate community need for essential infrastructure to be returned to a safe and operational state within the shortest possible timeframe (Norling, 2013). Among different activities, the creation of temporary shelters, identifying special zoning areas, restoring lifelines and infrastructures were the priority issues (R. Shaw & Goda, 2004).

The reconstruction and rehabilitation of infrastructures categories might include improving and extending utility services (physical infrastructures) such as water supply, sewerage, drainage, electricity and telephones, and public facilities (Mayo, Zaidi, & Hussain, 2006).

(d) Public construction

Study by (Mayo et al., 2006) reveals the situation in Bagh Town, with an estimated population of around 32,000 portrayed a devastating picture as out of a 6385 housing stock, 3364 houses completely collapsed and almost all public buildings, urban infrastructure, and educational institutions wiped away by the earthquake.

A statistical assessment of Aceh reported by Silva (2010) showed the damaged in public buildings i.e Health facilities: 693 units (66% destroyed) - School buildings: 1,662 units (46% destroyed) - Government buildings: 1,412 units (70.6% destroyed) - Markets/kiosks: 1,416 units (75% destroyed).

(e) Residential construction

As stated by Chang, Wilkinson, Brunsdon, Seville, & Potangaroa (2011) the fundamental issue in post-Wenchuan earthquake reconstruction was repairing and rebuilding urban and rural residential houses.

In Aceh, the damage caused by the tsunami is devastating and almost all the houses were washed away due to permanent flooding in some residential areas (Ochiai & Shaw, 2009). As claimed by Ahmed, (2011) housing/residential is usually the element that is most extensively damaged or lost, and often represents the greatest share of loss in the total impact of a disaster.

Table 1 Post-Disaster Reconstruction Project Classification

No	Project Classification	Type of Project	Sources
1	The ecological construction	Water balance, landscape and biodiversity, optimal arrangement for land utilization, ecological conservation priority.	(Pei-jun et al., 2000) (Claudia Schneider, 2012) (Caiyu Sun & Xu, 2011).
2	The industrial reconstruction	warehouses constructing factory, water and sewage treatment plants, and etc.	(Barakat, 2003), (Lindell, 2011), (CRS, 2011), (Taylor et al., 2013)
3	The reconstruction of infrastructures	Improving and extending utility services (physical infrastructures) such as water supply, sewerage, drainage, electricity and telephones, and public facilities.	(R. Shaw & Goda, 2004), (Mayo et al., 2006), (Norling, 2013)
4	Public reconstruction	Health facilities, School buildings, Government buildings, Markets/kiosks.	(Mayo et al., 2006), Silva (2010)
5	Residential reconstruction	Housing, Shelter	(Ochiai & Shaw, 2009), Ahmed, (2011),

5 PARTIES INVOLVED IN POST-DISASTER RECONSTRUCTION PROJECT (PDR)

Consequently, the success of an aid projects in PDR from planning to completion stage depends on the parties understanding (Kennedy, Ashmore, Babister, & Kelman, 2008), partnership and mutual trust (Chang, Wilkinson, Brunsdon, et al., 2011; Ophiyandri, Amaratunga, Pathirage, & Keraminiyage, 2013) and they share common objectives (Alexander, 2004). The roles of parties involved in post-disaster reconstruction should be carefully arranged (Hidayat & Egbu, 2010) for the performance of reconstruction activities. A study carried out by Hassan, Bakar, Osman, & Bulba (2009) found that parties involvement had affected on the schedule overrun in the rehabilitation and reconstruction project in Aceh (refer table 2) below:

Table 2 The Parties that Contribute to Schedule Overrun (Hassan et al., 2009)

No.	Parties	Frequency	Percentage
1	NGOs	6	15.38
2	Contractors	16	41.03
3	Consultant	4	10.26
4	Local Authority	4	10.26
5	BRR	2	5.13
6	Community participation	7	17.95
7	Others	0	0
	Total	39	100

This section will highlighted the general views of parties involved in PDR, their roles and responsibilities. The parties involved in PDR therefore are:

(a) Government / Local Authorities

In Aceh, it was found that the differing recovery objectives between NGOs and the local government to some extent delayed further effective collaboration at a later phase of reconstruction (Chang, Wilkinson, Potangaroa, & Seville, 2011a). Some issues highlighted which regards to government influenced in PDR

include government-driven resourcing approach (Chang et al., 2010b), management ability (Chunling Sun & Bi, 2010), assistance and assessment (Arslan & Ünlü, 2008; Ochiai & Shaw, 2009), inconsistency in funding of housing (Freeman, 2007), changes of policy (Ibanez, 2007; Karunasena & Rameezdeen, 2010) total integrated response (King, 2002) and lack of technical expertise (Mls & Mslis, 1999).

(b) Counterparts aid organization (Local NGOs)

Local counterparts with specific expertise should be represented especially in the area of assessment (Barakat, 2003), local potential resources and capacities (Chang, Wilkinson, Potangaroa, et al., 2011a), the selection of the construction site (Davidson et al., 2007) training activities, awareness raising activities, workshops, exchange visits (R. Shaw, 2006) as well as project financing (World Bank, 2004). This become vital for NGOs which reconstruction and rehabilitation activities is not their traditional area of specialization (like Red Cross, Oxfam, Care, German Agro Aid, Muslim Aid, and many others), but as money was available and housing was seen as the biggest and most obvious basic need, they felt obliged to engage in this sector (Steinberg, 2007).

(c) Aid Organisation (International NGOs)

In the wake of recent natural disasters, NGOs have become progressively involved in the permanent reconstruction of affected communities (Meding et al., 2009). According to (Soelaksono, 2009) during the rehabilitation and reconstruction stage of Aceh there were 124 International NGOs, dozens of United Nations (UN) organizations and 430 local NGOs. Some of their roles are providing housing, food, clothing, medicine, and financial assistance to disaster victims (Lindell, 2011). A study carried out by (EPC, TCG, & LLC, 2004) found that the NGO's role are to:

1) Organize themselves into self-help groups or sub-committees, for example, for construction, livelihood/ income generation, monitoring, information; dissemination, savings and credit, groups to run community centers for women and children, and other groups, as needed.
2) Design/formulate project proposals, and seek funding from and follow up with the government and other donors, local and international, to complement local resources;
3) Identify reconstruction options (involving housing construction, livelihood, etc.) to assist the community in making informed decisions;
4) Execute, coordinate, and monitor village reconstruction projects.

NGOs play important roles in different stages of the "disaster cycle" and different elements are recognized to its successful operation. (Hayles, 2010). The issue raised with regards to International NGOs roles in PDR are they been unable to deliver satisfactory reconstruction projects (Meding et al., 2009), badly designed, poorly constructed, inappropriate housing, and incompetence (Soelaksono, 2009).

(d) Designer

Not only work as design translator (Boano & García, 2011) architects and designers should be able to take decisions regarding the construction materials, construction system, planning and spatial requirements (Dikmen, 2005) in order to meet the needs of the beneficiaries. However, the designer has to obtain strong qualification, to take overall consideration and seize of the whole building design, and to be

able to control the overall situation in the beginning stage of design. There cannot be too much or too large change happening to the design after the building work starts (Yi-lin & Jin-e, 2010).

(e) Contractor

The contractors are responsible for all aspects of construction including labour, materials and workmanship. It was suggested that the quickest and most effective way to rebuild houses after a disaster is to employ the "donor-driven" approach, where the government or an external funding agency leads the reconstruction process with the help of consultants and contractors procured for the project (Karunasena & Rameezdeen, 2010). Incompetence of contractor (Chang, Wilkinson, Potangaroa, et al., 2011a), poor performance (Silva, 2010), run away before finishing the construction process (Davidson et al., 2007) inadequate number of building contractors (Rotimi, Le, & Wilkinson, 2006) lack of experiences (World Bank, 2004) corrupt (Wardak et al., 2012) where among the issues in dealing with contractors at PDR project which highlighted by the NGOs.

(f) Consultant

Few humanitarian organisations have the technical capabilities within their own organisation to manage construction. They were faced either with building up a team of national and international consultants with technical expertise in the built environment, procurement, logistics and finance within their own organisation or partnering with the few specialist NGOs or the private sector (Silva, 2010).

The roles and responsibilities of the consultants include to advise on procurement, project planning, and supervision (World Bank, 2004) town planning and infrastructure design and reconstruction (EPC et al., 2004) and to report on the situation and offer advice (Baroudi & Rapp, 2010). According to (Boen, 2004) funding agencies hire consultants to do the design, prepare the specification and drawings for the houses had resulted in poor quality houses giving irrational reasoning that it is in accordance with the prevailing practice of the community.

(g) Resource Supplier

Resource supplier has to provide resources like materials, equipment and labor to ensure uninterrupted construction (Kim & Choi, 2013; Patel & Hastak, 2013). Various issues on resource supplier were highlighted with regards to materials' quality (Chang, Wilkinson, Potangaroa, & Seville, 2010a; Silva, 2010) resources avaibility (Chang, Wilkinson, Potangaroa, et al., 2011b) and suppliers' pushing up prices (Jones, 2006) that lead to PDRs' performance failure.

6 THE NEEDS OF PROJECT MANAGEMENT (PM) APPROACH IN PDR

This section review a general idea of project management approach in post-disaster reconstruction, the importance of applying the concept of project management, and the contribution that project management could offer. Both restoration and reconstruction projects require a certain way of thinking to foster successful outcomes (Baroudi & Rapp, 2010). Very few researches were carried out in post-disaster reconstruction focusing on project management (Steinfort & Walker, 2007) not alone the critical success factors (CSFs) for post-disaster reconstruction (Ophiyandri et al., 2013). Project management and its related

processes are the keys to staying organized and focused and to accomplishing the solutions a community so desperately needs after being hit by a disaster (PMI, 2005). NGOs implementing reconstruction programs aware of the need to keep standards in time, cost, quality and satisfaction which demand a theoretical and practical contribution from the discipline of Project Management (Meding et al., 2009).

It is the Tsunamis that struck the South East Asia region on December 26th 2004 which triggered a surge in research interest on how to improve delivery of critical aid relief projects (Steinfort & Walker, 2007). The contractor on a new project needs to schedule only those activities or tasks that are directly involved with the actual construction. This situation becomes even more complicated in the case of reconstruction projects due to various additional factors, including space constraints (Boin, 2005), safety regulations (EPC et al., 2004), and coordination requirements (Hayles, 2010; Soelaksono, 2009). Due to the poor coordination and the disintegration among parties involved in the reconstruction phase after the disaster, the advancement of project management approaches is becoming tremendously important.

Project management play a significant role to ensure the reconstruction projects finish successfully (Baroudi & Rapp, 2010; Hidayat & Egbu, 2010) and a more effective reconstruction projects can be met (Kulatunga, 2011). As stated by (Munns & Bjeirmi, 1996) that successful project management techniques will contribute to the achievement of projects (Ismail, 2005), but project management will not stop a project from failing to succeed. In line with this view, (Caiyu Sun & Xu, 2011) added that reconstruction is complex in nature, and requires the application of a new system to form a mechanism to carry out the post-disaster reconstruction in an orderly and efficient manner.

7 PROJECT MANAGEMENT AND PROJECT SUCCESS

This section will try to explain the difference between project success and project management success. Traditionally, the definition of good project performance was defined by the project team's meeting cost, time and product quality related criteria, in which researchers like Atkinson (1999) described as Iron Triangle of project management. The combinations of several factors will determine the performance of a reconstruction project. Certain factors are more critical to a project's success than others. These factors are called critical success factors (CSFs).

The term CSFs in the context of the management of projects was first introduced by (Bullen & Rockart, 1981). It then evolved and has attracted the interest of many researchers namely Baccarini 1999, Lim et al 1999, Belassi & Tukel, 1996, Pinto and Mantel 1990, Pinto and Slevin, 1989, Wit 1988 and many others, with the aim of providing valuable insight to achieve greater results for the project management performance (Bakar, Razak, Abdullah, Awang, & Perumal, 2010). A series of discussion on project success can be seen in the project management literature. Project success is a topic that is frequently discussed by various researchers and yet rarely agreed upon (Chan & Scott, 2004; Kandelousi et al., 2011). The study of project success and the critical success factors (CSFs) are considered to be a means to improve the effectiveness of project (Chan & Scott, 2004). Project management and project success are not necessarily directly related where the techniques may help to ensure a successful implementation of the project, but if the project is fundamentally flawed from the start it would be unlikely that techniques alone could salvage it (Munns & Bjeirmi, 1996).

(Nguyen, Ogunlana, & Lan, 2004; Yong & Mustaffa, 2012) discovered from previous scholars (de Wit, 1988; Munns and Bjeirmi, 1996; Cooke-Davies, 2002) that project success is measured against the overall objectives of the project while project management success is measured against cost, time and quality/performance. In order to differentiate between the project and project management it is necessary to develop distinct definitions for the two terms. According to Munns & Bjeirmi (1996) a project can be considered to be the achievement of a specific objective, which involves a series of activities and tasks which consume resources and has to be completed within a set specification, having definite start and end dates. In contrast, project management can be defined as the process of controlling the achievement of the project objectives.

8 CRITICAL SUCCESS FACTORS (CSFS) FOR PDR PROJECTS

In this section a comprehensive review of the literature research on the success factors of project management was conducted. Several authors have identified the factors that significantly determine project management success. This study will only focus and analyze the success factors listed by previous authors and will not investigate further on success criteria for each of the factors highlighted. This is in line with (Ahmed, 2011) views, that "the criteria used for assessing success can be inconsistent because as yet there is no globally accepted standard or guidelines in this field".

Some of the topic discovered through literature reviewed which covers CSFs in PDR are: CSFs for PDR housing projects, CSFs for managing disaster related public projects, CSFs for Multiple-Small Reconstruction Projects, CSFs for International Development Projects, and CSFs in project management for PDR by INGOs. The list of the critical success factors from the various literatures were developed and can be view in table 3. This section highlights critical success factors of project management related to PDR. Based on frequency analysis (FOA), the critical success factors are then prioritized, as shown in table 4. The 19 most cited CSFs following the ranking list were found to contribute to project management success in PDR (Ismail, Majid, Roosli, & Ab, 2014).

Table 4 Prioritisation of CSFs for PDR Projects

No	Critical Success Factor	FOA	Rank
1	Better coordination and communication (project management tools)	8	1
2	Stakeholder capacity (Stakeholder; Gov., NGOs, INGOs)	8	1
3	Competencies of managers and team members (teamwork)	8	1
4	Significant level of community participation/control	7	2
5	Project Understanding (Clearly defined goals)	6	3
6	Political, Local needs and culture	6	3
7	Institutional Environment (track record, funding, financial strength)	6	3
8	Availability of Resource (Logistic planning and cost control)	6	3
9	Effective consultation with key stakeholders and beneficiaries (trust)	4	4
10	Effective time management	4	4
11	Clearly defined goals, planning, and stakeholder commitments	4	4
12	Improvement in design management	3	5
13	Appropriate reconstruction policy/strategy/act	3	5
14	Effective Quality Control	3	5
15	Facilitator capacity (training and ability to guide the community)	2	6
16	Transparency and accountability (integrity)	2	6
17	Government support	2	6

No	Critical Success Factor	FOA	Rank
18	Health, Safety and security issues	2	6
19	Continuous assessment and evaluation (performance measurement)	2	6

Table 3: Critical Success factors (CSFs) for PDR from previous studies (Ismail, Majid, Roosli, & Ab, 2014)

No	Critical Success Factor (CSFs)	Ophiyandri et al., 2013	Ahmed, 2011	Wardak et al., 2012	Kennedy et al., 2008	Chang et al., 2010b	Karunasena & Rameezdeen,	Tatum & Terrell, 2012	Patel & Hastak, 2013	Norling, 2013	Crawford et al., 2013	Jordan & Javernick-Will, 2014	Moe & Pathranarakul, 2006	Kim & Choi, 2013	Attalla et al., 2004	Ika et al., 2012	CRS, 2011	R. Shaw et al., 2002	Hidayat & Egbu, 2011	Steinfort & Walker, 2007	*Frequency*
1	Transparency and accountability (integrity)	X																		X	*2*
2	Appropriate reconstruction policy/strategy/act	X											X			X					*3*
3	Project Understanding (Clearly defined goals)	X											X	X	X	X				X	*6*
4	Effective consultation with key stakeholders and beneficiaries (trust)	X										X	X					X			*4*
5	Facilitator capacity (training and ability to guide the community)	X														X					*2*
6	Better coordination and communication (project management tools)	X							X				X	X	X	X			X	X	*8*
7	Stakeholder capacity (Stakeholder; Gov., NGOs, INGOs)	X			X						X		X		X	X	X			X	*8*
8	Significant level of community participation/control	X	X	X			X					X					X	X			*7*
9	Government support	X	X																		*2*
10	Political, Local needs and culture		X	X	X											X		X		X	*6*
11	Institutional Environment (track record, funding, financial strength)	X	X	X												X	X			X	*6*
12	Health, Safety and security issues				X										X						*2*
13	Availability of Resource (Logistic planning and cost control)					X							X		X	X			X	X	*6*
14	Effective time management									X		X						X	X		*4*
15	Competencies of managers and team members (teamwork)											X	X	X	X	X	X	X		X	*8*
16	Clearly defined goals, planning, and stakeholder commitments							X					X			X				X	*4*
17	Improvement in design management													X		X	X				*3*
18	Effective Quality Control													X	X	X					*3*
19	Continuous assessment and evaluation (performance measurement)														X			X			*2*

9 CONCLUSION

Post-disaster reconstruction (PDR) projects often deals with uncertainties and complexity, consider one of the most challenging tasks to be deal with those involved in reconstruction of disaster-affected areas. The relationships between construction project parties, each of the reconstruction phases and the parties involved in each reconstruction activity were carefully argued in this paper. It is found that project phases of reconstruction can be divided into six phases which are planning, designing, purchasing, reconstruction, monitoring and evaluation (M&E) and completion.

Project classifications included ecological construction, industrial construction, infrastructure, public construction and residential construction. Whereas the parties involved in PDR found in this study are government/local authority, counterpart aid organization (local NGOs), Aid organization (international NGOs), and designer, contractor, consultant and resource supplier. It ends with the facts that the complexities of reconstruction projects require the advancement of project management approaches to help improving the delivery of PDR projects by any agencies or NGOs as the project management approaches had proven successful in many other fields. The nineteen most cited CSFs which contribute to project management success in PDR were listed and can be a useful guide for humanitarian agencies intended to take part in reconstruction after a disaster.

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