

Post Disaster Housing Reconstruction after 2014 Gaza Strip's Conflict: Influencing Factors



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Abstract

Housing reconstruction projects are complex in nature because of the many stages and also the many stakeholders they have. The objective of this study is to investigate the main factors influencing the reconstruction process of the housing sector following the Gaza Strip conflict in 2014. A literature review was conducted and factors affecting housing reconstruction were extracted. A questionnaire was developed by identifying the most important and reliable factors that achieve the research objective. Seven sets of factors were identified to facilitate the analysis of 64 factors with the help of a pre-test for the questionnaire with the help of the Ministry of Public Works and Housing in the Gaza Strip. 98 questionnaires were distributed, but only 90 questionnaires were collected. SPSS was used to analyze factors and relative important index (RII) was the tool that ranked the factors. The main influencing group was "Factors Related to Institutions Involved in Reconstruction Projects", but at the bottom of the ranking was the "Governmental Factors".

The study concluded that the factors associated with institutions such as the international organization are the main key to support housing reconstruction in the Gaza Strip, which is clear in the case of the Gaza Strip as a developing country. The increasing efficiency of reconstruction will be illustrated by highlighting factors related to institutional participation, such as differences in experience among participants, especially engineers, sustainable machinery support, manpower with different experience, understanding of legislation and policies by engineers, each participant should have a good practice to manage any issue of reconstruction and a prepared a plan to mitigate the risk of post-disaster in the future. And other important factors for the other groups were determined for more efficient work when reconstruct such as having efficiency of the management of the government, emergency plans by the parties who concern of reconstructing the Gaza Strip, fitting between donors conditions and beneficiaries' needs, prepared program by the government to deal with these projects, effective role of municipality, effective disaster assessment to figure out the appropriate amount of funds, efficiency in defining the responsibilities for every participant in these projects and considering the justice when giving the priority to reconstruct to the beneficiaries.

Keywords: Post disaster; Gaza Strip; Housing reconstruction; Challenged factors; Influencing factors

Introduction

Post disaster housing reconstruction is taking a good place in the world's interest due to the repeated natural disasters such as earthquakes, tsunamis and in other cases it is man-made causes, such as the conflicts, which increased the interest of having reconstruction after disasters. The Gaza Strip is one of those areas which had a man-made disaster. 3 conflicts in 10 years and the biggest one was on the third of July 2014, so the necessity of having a reconstruction appeared to be urgent. But Enshassi, et al. [1] said that financial issues are the first key to control the housing reconstruction process in the Gaza Strip. Anyway, the barriers of the post disaster reconstruction are everywhere, but the differences are in the type of challenges. Ismail, et al. [2] showed that community participation, assessment, funding and quality of work are the main challenges of the post disaster reconstruction in many countries around Indonesia. That's why some development plans should be prepared for such disasters insect, some temporary construction should be done after catastrophes to help people

to have some settlement [3]. The Gaza Strip is a crowded country full of buildings. According to the Palestinian Central Bureau of Statistics (PCBS, 2017) there were 403,259 housing units and 186,156 Building in the Gaza Strip. And according to General Directorate of Customs Security [4] many of housing reconstruction had been done during the last 5 years. About 800-1100 housing units should be prepared annually in the Gaza Strip to follow the previous situations before the conflict occurring, due to Ministry of Public Works and Housing MPWH [5]. The conflict's results in 2014 were a catastrophe. Table 1 shows the volume of destruction in the Gaza Strip after the conflict [6]. The 100,000 people had become homeless.

Previous numbers show how important the reconstruction is. But in the Gaza Strip the reconstruction process is very slow and full of issues such as being behind the schedule or over the budget and in many cases, reconstructions could not be started or cannot be finished. This research is going to figure out the main factors

that affect the reconstruction process for the housing sector in the Gaza Strip. There is an urgent need to know the factors affecting housing reconstruction in the Gaza Strip to make some suggestion for those departments who concern in these projects.

Table 1: Amount of houses and mosques destructive in the conflict of 2014 Euro-MED [16].

Item	Total Number	Partial Destruction	Full Destruction
Destructive houses	31799	17132	14667
Mosques houses	171	62	109

Problem Statement

A large number of homes were counted after the conflict in the Gaza Strip. But during the years of housing reconstruction in the Gaza Strip, most housing reconstruction projects were behind schedule, over budget, having manpower issues and many issues of project-related assets, and that led to lose the trust of the donors in addition to the beneficiaries.

Research Objectives

- i. Identify the main influencing factors that affect housing reconstruction after disasters.
- ii. Rank the main influencing factors that affect housing reconstruction after disasters.

Research significant

This research aims to identify the factors affecting the reconstruction of housing in the Gaza Strip and then find out the most important factors in terms of impact on this type of projects. In this way, it is possible to identify the real reasons that led to increased time in the implementation of many projects in advance as well as reasons for increased budget and why there are many obstacles to the implementation of the reconstruction of efficient housing projects. In this research, it made efforts to facilitate responsibility for housing reconstruction projects in the Gaza Strip, whether donors, the project implementers or beneficiaries of the project. This can reduce conflict between parties as well as ease of planning and ease of implementation by contractors and enhance the trust of donors.

Scope and limitation

The scope and limitations of the study are as follows:

- I. The scope of this research is focused on the reconstruction Process, mainly housing projects.
- II. The research population includes every party that has a direct relationship in executions the reconstruction for the housing sector in the Gaza Strip, such as local ministries, local municipalities, UN, UNDP and engineers with experiences in reconstructing the housing sector.
- III. The sample size was small due to the less parties who has a relation in reconstructing the housing sector in the Gaza

Strip. The donor party had a direct controlling and monitoring for their project at the most, and that reduce the volume of local involvement in reconstruction the housing sector in the Gaza Strip.

Background of Study

The post disaster reconstruction is the first priority when disasters end. But the regular process of construction isn't working for housing reconstruction, especially in the great big areas, in such cases; many factors should be adapted. The government should have a prepared program as preparedness for reconstructing after the sudden great disasters Rotimi et al. [7].

An effective post disaster reconstruction depends on cultural, political, environmental, economic and social elements [8]. The post-destruction, reconstruction of the 2015 Gorkha earthquake in Nepal faced factors which were a combination between positive and negative influences, some of the challenges factors were consisted of the absence of local government, weak governance, weak infrastructure, lack of preparedness, knowledge gap and manpower shortage, on the other hand some other factors played a positive role in the reconstruction process such as the good governance, integrated information, addressing technical issues, public participation along with short term and long-term strategies to tackle with technical issues [9].

Post disaster reconstruction directly affected by the location of the destructed area due to its effects on the funding amount, less in the technical manpower and resources [2]. While the community participation has a major role in the process of housing reconstruction after the disaster, it had become necessary to focus on it and collect more information about it when reconstruct [10].

Weakness in climate, social and economic studies, participation differences and weakness of institutions, undefined assessment of need and capacity, not giving the priority to mitigate disasters affects or having the appropriate safety, weak of connection between stakeholders in addition to the unrealistic decision making by using alternatives or using the appropriate chances and planning, weak of the community involvement due to the lack of permissions to use public or social infrastructure or to be involved with house designing are the main factors that affect resettlement of Sri Lanka [11].

Long term reconstruction after disasters is the hardest in comparison with short or midterms reconstruction, long term reconstruction is full with obstacles and challenges, arrangement should be identified well, due to the many phases and many requirements, especially when planning for resettlement to find out those solutions for long term development [12]. Post disaster faces a very weak term at the beginning of the planning for having a recovery or a reconstruction due to the less funding from donors, and local government in those areas, mostly faces a very shortage in resources or financing to get up from the crises [13]. NGOs can fortunate small projects of reconstructions after disasters, and for

many classified factors, projects with high volume requirements for having appropriate reconstruction projects need more funds from donors [14].

The controlling and the monitoring of the government are the key role, so the funds can reach their beneficiaries as well as it'd supposed to, otherwise the real amount of funding won't reach the beneficiaries, reconstruction won't be able to be completed and the justice will just disappear due to those who have the ability to steal those funds which came from donors or other resources [15]. Focusing on decreasing the repeated issues after a post disaster reconstruction is a main idea. Artiningsih et al. [16] showed that making a formal note as a policy and as a feedback to the government to face future disasters is a methodology for a better post disaster controlling.

Damages of the disasters need to be managed, but different phases should be applied with different emphasis [17]. In addition, post disaster reconstruction has their criteria in implication. But the same stages are exists: Response, Relief, Recovery and reconstruction and then considering the mitigation with preparedness [18]. Reconstructing in general isn't that easy or could go smoothly. Reconstruction goes through complexity and conflicts due to the requirements of the beneficiaries in sometimes [19]. Post disaster reconstruction is a hard project with high amounts of needs [17]. Due to its huge amount of requirements of the activities, that's supposed to start right after disasters [18]. Donors are one of the most important factors that affect the post-disasters reconstruction [1]. Many factors and characteristics or aspects affect the process of housing reconstructing. Construction of houses has its own properties and its own phases. Around the world, disaster's impacts can be easily shown by the great amount of damages every year [20]. The housing reconstruction is needed whenever there are crises or disasters at the residential buildings, reconstruction should be managed by preparing all its requirements: funds, schedules and also every phase that a normal construction needs. One of these factors is choosing a reconstruction type, for helping the beneficiary's owner or donor driven. Two type of funds exists, for example owner driven role in the reconstruction process affect the reconstruction more positive than the other type of donors, which is the donors driven, due to the unsuitability of the donors help. Both driven owner and donors have their own benefits and success. However, in a different way, owner driven is specialized in reconstructing by the beneficiaries themselves. The donor's driven is specialized in reconstructing by international agencies or by government [21]. More factors affect the housing reconstruction after disasters which can support or obstacle the process of housing reconstruction.

Reconstruction process presents two categories which are housed reconstruction and infrastructure reconstruction [21]. And reconstruction process has a duration of two years and in some cases, it approximated four years, depending on the country's resources [23]. Other studies established that evaluating the period of reconstruction after a disaster depends on many factors.

It's a little bit complicated to have a direct number of years to finish reconstructing, in some cases there is a need to finish as fast as possible to resettle the beneficiaries [24]. Post disaster reconstruction needs stakeholders at the beginning. Stakeholders who are going to join the reconstruction process in particular, need to be in a higher degree of responsibility and have a major effort, in addition to understand the legislation and policies, improving the transportation, marketing and depending on sustainability mechanism whenever planning starts [25].

Delay, work quality, community participation, funded reconstruction being weak, resourcing, preliminary assessment, lack of coordination, corruption and build back safer, land issues, policies, overruns of cost and a shortage of technical staff are the challenge factors of the post disaster reconstruction from INGOs perspective [26]. Reconstruction stage with permanent houses can be presented in a stage called the post disaster reconstruction [23]. The 3 M's are common factors which can be considered as restricting factors in the reconstruction process after disasters. The 3 M's are manpower, material and machine. Any shortage or weakness of the 3 M's will affect the reconstruction process after disaster very badly [27].

Evaluating the requirements of the reconstruction leads to an efficient reconstruction [28]. For an effective post disaster reconstruction, organizations of the country which have a direct relationship with the reconstruction should have a clear set of responsibilities and should have a clear relation with the government [28]. Studying the future and predict what can or can't be expected when starting reconstructing, focusing on the development ideas, having the appropriate information and knowledge, using modern technology of reconstruction and surveying, and better communication and coordination between participants of the post disaster reconstruction projects is a key to better housing reconstruction [14].

Challenges factors affect the period of housing reconstruction

Hosing reconstruction is a major part of the reconstruction process, which got affected by many factors as well as any part of the reconstruction. Some of the main issues of post disaster reconstruction are the long period of reconstruction in comparison with the logical period of reconstruction. Not finding a suitable land to be built and also the constraints that affect the construction industry are critical issues [21]. Kitamoto et al. [29] explained how high amount of care it need when the area Citadel of Bam, Iran was constructed, due to its importance as a heritage area, 8 years is a long time, but it's worth it. Post disaster housing reconstruction has a critical pre-reconstruction stage due to its influences by effective communication, transparency and accountability, government role and support, community view, facilitator capacity and community's shares [30]. Questions such as who make decisions, with whom and what are the influencing resulted from these decisions are the key to good Plano, which can reduce the delay matter) [31]. Tafti & Tomlinson [32] suggested consid-

ering the development beside the humanitarian concerns in post disaster reconstruction, in addition to submitting the justice distributions of a housing recovery.

Factors affect post disaster housing management

Tacking in account the vulnerability and adaptive capacity are the main factors to have a good result in managing the development when rebuilding the houses in Sri Lanka after the Tsunami of 2004 [33]. A conclusion of researches established that many factors affects the success of project management when reconstruct after disasters, such as the delay, resourcing, poorly funded reconstruction, preliminary assessment, lack of coordination, corruption and Build back better/safer, policies, quality of works, land issues, cost overruns, a shortage of technical staff and community participation [26]. Reconstruction after disasters is a very complex phase needs a management in high quality to reach a high successful phase [26]. The built environment is a critical zone in defining the management of post disaster housing reconstruction due to its complexity that increases the challenges of the process [34]. Managing a post disaster project needs different participants who have different experience and knowledge, an unplanned group of the project can become as a barrier to an efficient project [35].

Planning for Post disaster recovery as a first will enhance the management phase in all the stages, including the reconstruction stage, for example elements that reduce the risks of disaster should be considered in the design and construction phase [36]. Sri Lanka faced a very poor management due to the large number

Table 2: Results of pre-testing the questionnaire.

I	Factors	Note	Modified Factors
A.	Management factors		
1	The efficiency of management process in the organization	Selected	
2	The management of housing reconstruction after disasters should keep going, with the existence of the built environment when planing	Selected	
3	The management of housing reconstruction after disasters should consider the delay of the process for different reasons when planing	Selected	
4	Adaptive Capacity of the area of housing reconstruction is a factor for a good management process	Modified	Adaptive Capacity of the area of housing reconstruction when planing
5	Tacking in account the vulnerability of the environment of housing reconstruction is a factor for a good management process	Selected	
6	Being ready for management process when it needs	Modified	Plans for housing reconstruction management should be prepared
7	Risk mitigation should be as a priority when managing housing reconstruction projects	Selected	
8	Efficiency of the assessment of the requirement for post disaster reconstruction	Selected	
9	The existence of the material of the reconstruction	Selected	
10	The good Corporation between organizations	Added	
11	The good Cooperation between the basic resources of the reconstruction	Added	
12	Emergency plans to support the management of the reconstruction	Modified	
13	The existence of special management mechanism for such a project	Modified	Using the regular mechanism in such a project
14	Efficiency of the management of the government	Selected	
15	Differences in politics of the reconstruction between different organizations	Added	

of homeless who need a resettlement after the disaster, in addition, international donors with the local government contract had a gap of making differences between policy and responsibility of the government [37]. Management of post disaster by Maheshiks & Sangasumana [12] perspective is about having the mechanism of enhancing and the organization and then submitting the laws of admitting sustainability process, in addition of adapting a new method to mitigate the disaster by protecting the area from having erosion. Disaster management will have its efficiency when a good participation can be implied by NGOs and other agencies in the country the National Disaster Management Guidelines [38].

Methodology

This study is concerned with ranking the most important factors affecting the reconstruction of the housing Sector in the Gaza Strip for an easier future execution by contractors and supervisors (donors and their organizations). Factors had been extracted from the previous literature review and a questionnaire had a pre-testing, the ministry of public works and housing was chosen for this assignment due to its important role in guiding the housing reconstructing in the Gaza Strip. Due to the ministry of public works and housing, these extracted factors weren't that fitting with the reality of the Gaza Strip, in addition, a list of factors cannot follow the goal of this research, but categorizing it into groups of factors should be exist due to the different parties and phases that affect the reconstruction projects. And every group has its own affection on the housing reconstruction projects.

B.	Factors related to participating in reconstruction projects (international organization)		
1	Differences in experience between the participants specially the engineers	Selected	
2	Support sustainable mechanism	Selected	
3	Differences of the working manpower	Selected	
4	Being aware of the importance of applying sustainability	Selected	
5	Understanding the legislation and policies by engineers in the area	Selected	
6	Effort of working hard by every participant	Selected	
7	Having a good practice to manage any issue of the reconstruction	Selected	
8	Planning for post disaster risk reduction in the future	Selected	
C.	Stakeholders (beneficiaries) characteristics		
1	The volume of those who are in need for these projects (Beneficiaries)	Selected	
2	Psychological situation	Selected	
3	Gab of information due to the weakness of incorporation of the beneficiaries	Selected	
4	Availability of the temporary houses till the reconstruction finishes	Added	
5	Fitting between owners condition and the needs of the beneficiaries	Added	
D.	Technical factors		
1	Volume of the destruction of a building	Added	
2	The amount of landfill resulting from the disaster	Added	
3	Number of the destructed houses	Selected	
4	Efficiency and the quality of the work when reconstruct	Selected	
5	The efficiency of the infrastructure when start the work of reconstructing	Selected	
6	Efficiency of preliminary assessment	Selected	
7	Applying safety when reconstruct	Selected	
8	Existence of the resources of the reconstruction process such as material, equipment and manpower	Selected	
9	Integration of information about the process of these projects	Selected	
10	The requirements of the donors don't fit with the local environment	Added	
11	Existence of the quality and quantity of materials	Added	
12	Electricity availability	Selected	
13	Transparency	Deleted	
E.	Government factors		
1	Effector role of municipality	Added	
2	Availability of litigation for those projects	Selected	
3	The role of the government in controlling and monitoring those projects	Selected	
4	Finding solutions for the legal issues of the lands	Selected	
5	Existence of programs by the government to deal with these projects	Modified	Preparing a reconstruction program by the government
F.	Economic factors		
1	Existence of funds	Selected	
2	Existence of funds for long-term reconstruction	Modified	Long term reconstruction has many requirements which led to the complexity when plan and develop for reconstruction
3	Volume of the given funds	Selected	
4	Volume of the destructed area	Selected	
5	A period that needs for finding funding	Added	
6	A period that needs to make a disaster assessment to figure out the volume of funds	Selected	
7	Monitoring the funds until it reaches the target	Added	

8	Effective corporation between the donors and the organizations in the Gaza Strip	Selected	
9	Effective disaster assessment to figure out the appropriate amount of funds	Selected	
10	Price of material	Selected	
11	Price of equipment	Selected	
12	Price of manpower	Selected	
13	Most of the funds don't include the reconstruction stage	Selected	
G.	Duration factors		
1	Being as a heritage area	Selected	
2	Considering the development beside the humanitarian concerns in post disaster reconstruction disaster	Selected	
3	Considering the justice when giving the priority to reconstruct	Selected	
4	Finding appropriate land to reconstruct whenever the original land can't be reconstructed	Selected	
5	Efficiency in defining the responsibilities for every participant in these projects	Modified	Who take the decisions with whom and what sequences results of those decisions
6	Patience and not to impose pressure on employees who work on the reconstruction projects by the beneficiaries	Modified	Patience and not to impose pressure on employees who work on the reconstruction projects by the beneficiaries

A pilot survey was established to measure the validity and reliability of the factors that have been extracted from the previous literature review with the help of expert engineers at the ministry of public works and housing in the Gaza Strip. Due to their experiences of reconstructing projects. 2 groups of engineers were formed. First group tested the validity of the questionnaire, and the degree of fitting to the main objective of the research. The second group tested the reliability factors. Some factors were deleted and others were added or modified depending on the Gaza Strip polices and formulations of reconstruction projects. It has been resulted 64 effective factors, which more reliable to the reality of the construction process in the Gaza Strip. Table 2 shows the results of the pilot study in editing the extracted factors.

Table 3: Cronbach's Coefficient Alpha for reliability (C α).

No.	Fields	Cronbach's Alpha (C α)	
1.		Management factors	0.791
2.		Factors related to participating in reconstruction projects (international organization)	0.670
3.		Factors related to beneficiaries of reconstruction projects	0.703
4.		Technical factors	0.660
5.		Governmental factors	0.864
6.		Economic factors	0.839
7.		Duration factors	0.762
		All items	0.925

A five-point Likert scale had been used, respondents were required to choose a number were (1 = not important; 2 = of little importance; 3 = somewhat important; 4 = important; and 5 = very important). Statal Package for social science (SPSS) was used to analyze the collected data. And to check the consistency and the probability of having same similar results Cronbach's coefficient alpha method had been used. The normal range of Cronbach's coefficient alpha (C α) value is between 0.0 and +1 and the higher value reflects a higher degree of internal consistency [39,40]. The

using reconstruction projects in the Gaza Strip. The questionnaire was distributed Depending on the definition of the "snow ball" one respondent was leading to another respondent until a group of respondents had been selected, due to the small sample size, which have an experience in reconstructing projects which consisted of the following (UNRWA, UNDP, Qatar committee, Ministries of the Gaza Strip, those ministries who have a direct relationship with reconstruction at the Gaza Strip, municipalities). Ninety (90) questionnaires were collected out of ninety-eight 98 questionnaires. Sixty-four factors were identified and categories to 7 main groups as the following (management, beneficiaries, international organizations, technic, government, economic and duration factors).

Cronbach's coefficient alpha (C α) was calculated for five fields. The results were in the range from 0.660 and 0.864 and the general reliability for all items equals 0.925. This range is considered high, where it is above 0.7. Thus, the result ensures the reliability of the questionnaire. Table 3 shows the Cronbach's Coefficient Alpha for reliability (C α)

The parametric statistical test is also needed and have been used to ensure that the data is following the normal distribution. Normality was assessed by applying the central limit theorem.

The central limit theorem states that when samples are large (above about 30), the sampling distribution will take the shape of a normal distribution, regardless of the shape of the population from which the sample was drawn Field [40]. The relative importance index (RII) was computed as Sambasivan & Soon [41]. RII has been widely used in construction research for measuring attitudes with respect to surveyed variables. Several researches Enshassi et al. [42], Enshassi et al. [43], El-Hallaq & Tayeh [44], Albhaisi et al. [45], Tayeh et al. [46], Tayeh et al. [47], Tayeh et al. [49], Tayeh et al. [50] used the RII in their analysis.

$$\bar{X}_w = \frac{\sum W}{N} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N}$$

Where:

W = the weighting given to each factor by the respondents (ranging from 1 to 5)

A = the highest weight (i.e. 5 in this case)

N = the total number of respondents

The RII value had a range from 0 to 1 (0 not inclusive), the higher the value of RII, the more the impact of the attributes. Questionnaire tests were as the following:

Results and Discussion

By using SPSS software, data were analyzed. Cronbach's coef-

Table 4: Background information of respondents.

General Information	Frequency (F)	Percent (%)
Job Title		
GM manager	19	24.4
Vice manager	31	34.4
Site engineer	22	21.1
Other	18	20.0
Educational level		
Bachelor	62	68.9
Master	24	26.7
Ph.D.	1	1.1
Other	3	3.3
Location		
North Gaza	8	8.9
Gaza	68	75.6
Middle	10	11.1
South	4	4.4
Employer		
Government sector	40	44.44
Non-governmental organizations	17	18.8
UNRWA	21	23.3
Private sector	10	11.11
Other	2	2.2
Number of years of work in the reconstruction projects in the housing sector after the Israeli aggression on the Gaza Strip in 2008		
1 to less than 2 years	3	3.3

cient alpha method measures the reliability if the value is 0.9 or above, then it's a great reliability. High reliability is between 0.7 and 0.9 and if its between 0.5 to 0.7 then its moderate reliability. But low 0.5 means a poor value of reliability. The reliability of this research is great. 0.925 by using SPSS. The questionnaire data are acceptable. Normality was assessed by applying the central limit theorem. The central limit theorem states that when samples are large (above about 30), the sampling distribution will take the shape of a normal distribution, regardless of the shape of the population from which the sample was drawn [40]. According to that, the collected data of the research follow the normal distribution, where the sample size is N=90 and so parametric tests must be used.

Respondents information

Table 4 shows the results of information of the respondents, where the highest result showed that 34.4% of the respondents were vice manager, 68.9% of them had a bachelor degree, 75.6% of them were from Gaza city, 44.44% of them worked at a government organizations, 71.1% of them have a high experiences, more than 5 years of experiences in reconstructing in the projects of 2008 and 2012 housing reconstruction projects, 68.9% of the respondents had an experience in of 2014 housing reconstruction projects and 57.8 of the respondents worked on projects with budget more than \$10 million.

2 to less than 3 years	5	5.6
3 to less than 5 years	18	20.0
More than 5	64	71.1
Number of years of work in the reconstruction projects in the housing sector after the Israeli aggression on the Gaza Strip in 2014		
1 to less than 2 years	4	4.4
2 to less than 3 years	4	4.4
3 to less than 4 years	20	22.2
4 to 5 years	62	68.9
The cost of the projects in which it worked and specialized in the reconstruction of the housing sector after the Israeli aggression on the Gaza Strip in 2014		
> \$1 million	4	4.4
From \$1 to less \$5 million	12	13.3
From \$5 to less \$10 million	22	24.4
\$10 million and more	52	57.8

Discussion of the respondents' information: The results show that the distribution of the questionnaire was well distributed while the respondents were as the research desired, the respondent have different experiences, so the respondents were between site engineers, managers and vice managers. But the most of those who have been replied to this questionnaire, were having a bachelor's degree, less were having master's degree and that hasn't a relation with the efficiency of the answers because the answers we need depends on experience not about higher degrees. Gaza city was the highest respondent's place and this shows that most enterprises and most institutions are located in Gaza City, this is due to the status of Gaza City as if it is the capital of the Gaza Strip. Government institutions were the highest answers, because reconstruction projects are mainly carried out through official bodies. The results showed extensive experience in this

field through the emergence of high results on the experience of more than five years in the field of this type of projects in addition to a huge budget in this type of projects.

Factors affecting reconstruction projects: The second section of the questionnaire contains 7 factors, each factor contains a number of items, Management factors (15 items), Factors related to participating in reconstruction projects (8 items), Factors related to beneficiaries of reconstruction projects (5 items), Technical factors (12 items), Government factors (5 items), Economic factors (13 items), and Duration factors (6 items). These statements were subjected to the views of respondents, and the outcomes of the analysis were shown in Table 5. The descriptive statistics, i.e. Means, Standard Deviations (SD), t-value (two tailed), probabilities (P-value), Relative Importance Indices (RII), and finally ranks were established.

Table 5: Factors affecting reconstruction.

No.	Items	Mean	Std. dev.	RII (%)	T value	P value Sig.	Rank
Management factors							
A1	The efficiency of management process in the organization	3.87	0.67	77.33	12.20	0.000	8
A2	The management of housing reconstruction after disasters should keep going, with the existence of the built environment when planning	3.73	0.75	74.67	9.32	0.000	11
A3	The management of housing reconstruction after disasters should consider the delay of the process for different reasons when planning	3.91	0.86	78.22	10.09	0.000	5
A4	Adaptive Capacity of the area of housing reconstruction when planning	3.96	0.54	79.11	16.83	0.000	3
A5	Tacking in account the vulnerability of the environment of housing reconstruction is a factor for a good management process	3.88	0.75	77.56	11.15	0.000	7
A6	Being ready for management process when it needs	3.96	0.69	79.11	13.22	0.000	4
A7	Risk mitigation should be as a priority when managing housing reconstruction projects	3.46	0.93	69.11	4.67	0.000	15
A8	Efficiency of the assessment of the requirement for post disaster reconstruction	3.82	0.71	76.44	10.95	0.000	10
A9	The existence of the material of the reconstruction	3.61	0.91	72.22	6.38	0.000	13
A10	The good Corporation between organizations	3.49	1.01	69.78	4.60	0.000	14
A11	The good Corporation between the basic resources of the reconstruction	3.86	0.73	77.11	11.16	0.000	9
A12	Emergency plans to support the management of the reconstruction	3.99	0.66	79.78	14.17	0.000	2

A13	The existence of special management mechanism for such a project	3.88	0.67	77.56	12.48	0.000	6
A14	Efficiency of the management of the government	4.04	0.63	80.89	15.62	0.000	1
A15	Differences in politics of the reconstruction between different organizations	3.72	0.82	74.44	8.34	0.000	12
Factors related to institutions participating (international organization) in reconstruction projects							
B1	Differences in experience between the participants specially the engineers	4.14	0.91	82.89	11.98	0.000	1
B2	Support sustainable mechanism	3.62	0.79	72.44	7.50	0.000	8
B3	Differences of the working manpower	3.87	0.75	77.33	10.93	0.000	6
B4	Being aware of the importance of applying sustainability	3.77	0.72	75.33	10.11	0.000	7
B5	Understanding the legislation and policies by engineers in the area	3.97	0.63	79.33	14.65	0.000	4
B6	Effort of working hard by every participant	3.89	0.71	77.78	11.87	0.000	5
B7	Having a good practice to manage any issue of the reconstruction	4.10	0.81	82.00	12.92	0.000	2
B8	Planning for post disaster risk reduction in the future	4.00	0.82	80.00	11.55	0.000	3
Factors related to beneficiaries of reconstruction projects							
C1	The volume of those who are in need for these projects (Beneficiaries)	4.17	0.86	83.33	12.80	0.000	1
C2	Psychological situation	3.72	0.94	74.44	7.32	0.000	3
C3	Gab of information due to the weakness of incorporation of the beneficiaries	3.47	1.12	69.33	3.94	0.000	5
C4	Availability of the temporary houses till the reconstruction finishes	3.68	0.95	73.56	6.80	0.000	4
C5	Fitting between donors' condition and the needs of the beneficiaries	4.12	0.56	82.44	19.10	0.000	2
Technical factors							
D1	Volume of the destruction of a building	4.23	0.70	84.67	16.62	0.000	2
D2	The amount of landfill resulting from the disaster	3.76	0.74	75.11	9.70	0.000	8
D3	Number of the destructed houses	4.40	0.72	88.00	18.56	0.000	1
D4	Efficiency and the quality of the work when reconstruct	4.18	0.77	83.56	14.46	0.000	3
D5	The efficiency of the infrastructure when start the work of reconstructing	3.82	0.95	76.44	8.17	0.000	6
D6	Efficiency of preliminary assessment	4.00	0.70	80.00	13.49	0.000	4
D7	Applying safety when reconstruct	3.28	0.97	65.56	2.71	0.000	12
D8	Existence of the resources of the reconstruction process such as material, equipment and manpower	3.64	0.83	72.89	7.41	0.000	9
D9	Integration of information about the process of these projects	3.81	0.73	76.22	10.50	0.000	7
D10	The requirement of the donors doesn't fit with the local environment	3.63	0.87	72.67	6.93	0.000	10
D11	Existence of the quality and quantity of materials	3.89	1.04	77.78	8.08	0.000	5
D12	Electricity availability	3.42	0.97	68.44	4.12	0.000	11
Government factors							
E1	The effective role of municipality	3.71	0.88	74.22	7.69	0.000	2
E2	Availability of litigation for those projects	3.43	1.03	68.67	4.00	0.000	5
E3	The role of the government in controlling and monitoring those projects	3.56	1.07	71.11	4.92	0.000	4
E4	Finding solutions for the legal issues of the lands	3.64	0.88	72.89	6.96	0.000	3
E5	Existence of programs by the government to deal with these projects	3.87	0.74	77.33	11.15	0.000	1
Economic factors							
F1	Existence of funds	3.82	1.12	76.44	6.98	0.000	7
F2	Existence of funds for long-term reconstruction	4.01	0.84	80.22	11.40	0.000	5
F3	Volume of the given funds	4.04	0.81	80.89	12.29	0.000	4
F4	Volume of the destructed areas	4.14	0.79	82.89	13.80	0.000	2
F5	A period that needs for finding funding	3.90	0.85	78.00	10.06	0.000	6
F6	A period that needs to make a disaster assessment to figure out the volume of funds	3.57	0.87	71.33	6.15	0.000	9
F7	Monitoring the funds until it reaches the target	3.71	0.85	74.22	7.93	0.000	8
F8	Effective cooperation between the donors and the organizations in the Gaza Strip	4.12	0.60	82.44	17.85	0.000	3

F9	Effective disaster assessment to figure out the appropriate amount of funds	4.23	0.72	84.67	16.26	0.000	1
F10	Price of material	3.43	0.81	68.67	5.09	0.000	13
F11	Price of equipment	3.44	0.86	68.89	4.89	0.000	12
F12	Price of manpower	3.48	0.82	69.56	5.50	0.000	11
F13	Most of the funds don't include the reconstruction stage	3.56	0.77	71.11	6.88	0.000	10
Duration factors							
G1	Being as a heritage area	3.79	0.95	75.78	7.85	0.000	4
G2	Considering the development beside the humanitarian concerns in post disaster reconstruction disaster	3.76	0.89	75.11	8.05	0.000	5
G3	Considering the justice when giving the priority to reconstruct	3.94	0.78	78.89	11.43	0.000	2
G4	Finding appropriate land to reconstruct whenever the original land can't be reconstructed	3.87	0.77	77.33	10.72	0.000	3
G5	Efficiency in defining the responsibilities for every participant in these projects	4.10	0.74	82.00	14.20	0.000	1
G6	Patience and not to impose pressure on employees who work in the reconstruction projects by the beneficiaries	3.60	1.10	72.00	5.18	0.000	6
	All statements	3.82	0.35	76.40	22.44	0.000	

The results illustrated that the total average means for all items equal 3.82, T-test 22.44 and the P-value equal 0.000 which is less than 0.05. This means that the respondents have strong agreement on the terms relating to the factors affecting reconstruction. The SD was also used to quantify the amount of variation or dispersion of respondent opinions regarded to "the factors affecting reconstruction, the average SD was 0.35, which indicate that the respondent's results are consistent and are not spread out over a wider range of values. P-value = 0.000 < 0.05, and T statistics (22.44) > T critical (1.98), so, there is a statistically significant difference attributed to the respondent's opinions at the level of $\alpha \leq 0.05$ between the statistical mean (3.82) and hypotheses mean (3) of the fields.

Group one: management factors

Influencing factors: The most influenced factor in the management group is "efficiency of the management of the government". Government of the Gaza Strip is very sensitive to the situation and very supportive in facilitating the reconstruction process, and that can be seen easily around and by the witnesses of the beneficiaries and the international organizations such giving license easily, this result agrees with Sharma et al. [9], this also fits with Ophiyandri et al. [30] who said that government's role and support can have a serious role in the process of reconstructing. This means that the first influencing factor that can really support the process is the government itself by being strong enough to handle all the needed phases. The next influencing factor is "having an emergency plan", the results also agree with von Meding et al. [35] who, supported having a planned management and groups to reduce the barrier which will decrease the efficiency of reconstructing.

Group Two: Factors related to participating (international organizations) in reconstruction projects

Influencing factors: "Differences in experience between the participants (engineers for example)" is a supportive factor

of housing reconstructing in the organizations group. The Gaza Strip full of different college majors which can facilitate the applying this factor in organizations. Agrees with von Meding et al. [35] stated, who said that different participants with different experience will support the process of reconstructing. Issues and sudden problem can be solved by those different skills. "Having a good practice to manage any issue of the reconstruction" is a second important factor. Agrees with (Bilau et al. [34] and Ophindari [30].

Group Three: Factors related to beneficiaries of reconstruction projects

Influencing factors: The results indicate that all of the factors related to beneficiaries of reconstruction projects in this group are barriers factors, which affect the process of reconstruction negatively. The findings were indicated that the higher rank as a challenged factor is "number of those who are in need for the reconstruction projects (Beneficiaries)". Which means whenever there are less destructive buildings would be better. More funds are needed when more buildings need a construct [14]. Second factor which considered as a challenging factor is the "Fitting between the condition and the needs of the beneficiaries", a small interview to support the answers with the managers of the ministry of public work and housing confirm that less conditions by donors can increase the efficiency of the reconstruction process. There are some of reconstructed places had been designed and implemented under the conditions of their donors, which isn't that applicable in the Gaza Strip, and couldn't fit with the demands of the beneficiaries.

Group Four: Technical factors

Influencing factors: The findings indicated that "Number of the destructed houses" is the highest rank. But it's supposed to be considered as a challenged factor while it's not a factor we can control. Less numbers of destructive houses can lead to more effective work in reconstructing, by giving a higher chance for the

buildings to have better rehabilitation, but by the increase of the destructive houses the chance should be divided so justice can reach the beneficiaries. Which the same of what Subekti [14] stated. The second highest factor is similar to the previous "Volume of the destruction of a building" at every unit of the destroyed units how much destruction is in there, is it greatly damaged or partially damaged. It considers as challenging factor, and it can't be controlled. Less destructive units are more desired for an easy, efficient and quick reconstruction.

Group Five: Governmental factors

Influencing factors: The results also revealed that "existence of programs by the government to deal with these projects" and also the "effective role of municipality" as the greatest influencing factors. Another role of the government is the role of municipal, integration in format and services between local government organization leads to effective reconstruction process in the projects. From reality, international organizations had established that municipalities had a great role in facilitating the process of housing reconstruction.

Group Six: Economical factors

Influencing factors: "Effective disaster assessment to figure out the appropriate amount of funds": Assessment is the key to reach the efficiency in reconstructing, assessment lead to the appropriate amount of funds needed in addition to preparing the methodology of reconstructing. Field et al. [40]; Fengler et al. [50]

confirmed the importance of assessment is to approximate the appropriate funds. And also Aufret et al. [51] supported the idea of the importance of having an effective assessment to have affected reconstructing. And as a barrier is the "Volume of destructive areas". Rotimi et al. [7] established that the area of destruction is the key role of having efficient reconstructing. Volume of destroyed Areas will determine the appropriate funds. Due to the increase of the demands in reconstructing huge areas of destruction efficiency will be reduced due to the great pressure the team will have, and great destructed areas need a great amount of funds and so on.

Group Seven: Duration factors

Influencing factors: "Efficiency in defining the responsibilities for every participant in these projects". One of the effective factors that can reduce the period of reconstruction, so the time can be more effective when reconstructing is defining the responsibilities for each participant. Khalid et al. [31] stated that defining who take the decisions, with whom and what sequences resulted of those decisions, with whom and what sequences resulted of those decisions. Agrees with Tafti & Tomlinson [48]. "Considering the justice when giving the priority to reconstruct": Karunasena & Rameezdeen [21] established that are submitting justice distributions of housing recovery can save time. The people of the Gaza Strip had different chances, depending on equity not equality, every beneficiary had his own chance of registration for housing reconstruction.

Summary of factors affecting reconstruction in the housing sector

Table 6: Rank of the factors.

Factors	Average RII	Rank
Factors related to institutions participating in reconstruction projects	78.39	1
Duration factors	76.85	2
Technical factors	76.78	3
Factors related to beneficiaries of reconstruction projects	76.62	4
Management factors	76.22	5
Economic factors	76.10	6
Governmental factors	72.84	7

Table 6 illustrates rank of the factors. The results show that the most effective group of factors that affect the efficiency of the housing reconstruction projects is the role of the international organizations. But the less influencing group is the role of the government. But all of the groups are efficient and have affection in the process of housing reconstructions, Results show that the affection is almost similar to the other groups.

Respondents were asked to give a rank for each question in scale 1 to 5. They were informed that the second part of the questionnaire on factors affecting the reconstruction of the housing sector in the Gaza Strip contained seven sections. Each section has a different impact on this type of project based on the pilot study, and each department will have its own properties. Data were then collected and analyzed using the SPBS program. Relative import-

ant index (RII) used as a tool to rank the factors. Some factors have had a positive impact on increased efficiency in reconstruction, but some have had a negative impact on efficiency. Some of these factors can be controlled, but others are beyond manual control. From each section two factors had been extracted as the highest influencing factors in the reconstruction process in the Gaza Strip after the 2014 conflict. Sixteen factors were ranked is the highest important factors from 46 factors. Table 7 shows the important factors that affect the reconstruction in the Gaza Strip after the 2014 conflict. In addition, the most important group that affect the reconstruction process in the Gaza Strip were the factor related to the institution's participation and in there we mean mostly the international organization in the Gaza Strip which include the following factors [52].

- i. Differences in experience between the participants specially the engineers
- ii. Support sustainable mechanism
- iii. Differences of the working manpower
- iv. Being a war of the importance of applying sustainability
- v. Understanding the legislation and policies by engineers in the area
- vi. Effort of working hard by every participant
- vii. Having a good practice to manage any issue of the reconstruction
- viii. Planning for post disaster risk reduction in the future and the other group's results were around each other, means have the same efficiency at the reconstruction projects. But the results show that governmental factors have the lowest degree of ranking.

Conclusion

In this research, the questionnaire was used to reach the desired results in finding the most important factors affecting the reconstruction of the Gaza Strip. Accordingly, 46 factors have been subdivided into 7 sections, as reconstruction has many supporting parties and phases that have a real role in project implementation. The study found that the factors influencing the work of international institutions are the most important factor in the

reconstruction process in the Gaza Strip, and that the factors affecting the government's work are the least influential. It should, therefore, shed light on the factors affecting the effective functioning of international institutions as the following: differences in experience between the participants specially the engineers, support sustainable mechanism, differences of the working manpower, being a aware of the importance of applying sustainability, understanding the legislation and policies by engineers in the area, effort of working hard by every participant, having a good practice to manage any issue of the reconstruction and planning for post disaster risk reduction in the future.

So, the success and effectiveness of reconstruction projects in the Gaza Strip can be achieved through which financial and preventive losses can be reduced. Without forgetting a main factors that had a great influencing on the reconstruction process for the other groups. It is necessary to focus on these points by institutions and stakeholders for more efficient work when reconstruct, and these important factors are having efficiency of the management of the government, emergency plans by the parties who concern of reconstructing the Gaza Strip, fitting between donors conditions and beneficiaries' needs, prepared program by the government to deal with these projects, effective role of municipality, effective disaster assessment to figure out the appropriate amount of funds, efficiency in defining the responsibilities for every participant in these projects and considering the justice when giving the priority to reconstruct to the beneficiaries. Some suggestions can be followed as suggested in Table 7.

Table 7: the important factors that affect the reconstruction in the Gaza Strip after the 2014 conflict.

	Factors	Group	Notes	Suggestion
i.	Efficiency of government management	Management factors	Supportive factor. Whenever there is an efficient government role in management efficiency in the reconstruction will appear	Government can make courses about management issues to their staff
ii.	The existence of an emergency plan	Management factors	Supportive factor. Emergency plans can mitigate risk when reconstruct	Emergency plans should be prepared by every section and every party of the reconstruction projects in the Gaza Strip
iii.	Differences in experience among participants (engineers for example)	Factors belong to international organizations	Supportive factor. Different experience means different issues can be solved efficiently	The organizations and companies who concern of reconstruction the Gaza Strip should employ different experience
iv.	Having a good practice to manage any issue for reconstruction	Factors belong to an international organization	Supportive factor. Efficient practice equal efficient reconstructing	The organizations who concern of reconstructing the Gaza Strip should employ those who has productivity and efficiency in their work
v.	Number of people in need of reconstruction projects (beneficiaries)	Factors belong to the beneficiaries	Challenging factor. Less people in need lead to efficiency and to perfect productivity	It's not a factor that we can control, it results from the conflict randomly and most of the time results a great amount of beneficiaries
vi.	Financing conditions with the needs of the beneficiaries	Factors belong to the beneficiaries	Challenging factor. Conditions of the donors should fit with the needs of beneficiaries and the conditions of the Gaza Strip	It's not a factor that we can control, but some simple solution may be done, a proposal for donors should contain some of the Gaza Strip regulations in addition to explaining the beneficiaries' needs.
vii.	Number of the destructed houses	Technical factors	Challenging factor.	It's not a factor that we can control, it results from the conflict randomly and most of the time results a great amount of destructed houses

viii.	Volume of the destruction of a building	Technical factors	Challenging factor.	It's not a factor that we can control, it results from the conflict randomly and most of the time results a great volume of the destruction of a building
ix.	Existence of programs by the government to deal with these projects	Governmental factors	Supportive factor. Preparation of a pre-plan for this type of projects by the government for ease of implementation and speed and minimize losses as possible while reducing the time required	Prepare pre-plan by the government especial for these kind of projects
x.	Effector role of the municipality	Governmental factors	Supportive factor. The municipality is considered a cornerstone of reconstruction. Their role is important and necessary	The municipality should do courses for their staff to a warn them of their important role in these projects, and their affection on projects and beneficiaries.
xi.	Effective disaster assessment	Economical factors	Supportive factor. Re-Evaluation of damage affects all reconstruction tasks such as budget and scheduling	The damage assessment staff should be employed with high efficiency
xii.	Size of destroying areas	Economical factors	Challenged factor. The greater the damage, the greater the need for reconstruction, which increased the required financing for reconstruction	It's not something can be controlled; conflict results a lot of damage and it's not something can be assumed or can be mitigated.
xiii.	Efficiency in determining responsibilities for each participant in these projects	Period factors	Supportive factor. The identification and distribution of tasks correctly reduce many losses, especially it can shortage the period of reconstructing.	The senior management of institutions responsible for reconstruction must use staff according to their qualifications and employ staff in their proper place. Distributed according to an appropriate schedule.
xiv.	Consider justice when prioritizing reconstruction	Period factors	The fair and appropriate distribution of reconstruction opportunities to beneficiaries reduces much of the conflict that leads to the loss of time. And to identify correct priorities among beneficiaries.	Institutions responsible for distributing reconstruction opportunities among beneficiaries should define a system of prioritization so that they can be implemented more easily

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