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Inter-Organizational Conflict (IOC) in Building Refurbishment Projects; an Exploratory Factor Analysis (EFA) approach

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ABSTRACT

Over the past years, there has been an expanding intrigued in building refurbishment projects because of the alter in financial conditions and the accentuation on sustainable development. Increasing demand for building refurbishment projects will lead to an increase in organizational interactions in the construction works as building refurbishment works involve interactions among many different organizations and it can cause Inter-Organizational conflict (IOC) among organizations involved in projects. This paper adopted an Exploratory Factor Analysis (EFA) approach to analyses IOC in building refurbishment projects. For this study, a five-point Likert Scale was adopted to ensure the instruments of the study are reliable. The researcher ultimately sent questionnaires as a web-link and email invitation to 1050 construction firms and 733 architectural firms. The questionnaire sent to managers and professionals from construction and architectural firms in Malaysia. Finally, one-hundred-seventy-nine (179) refurbishment projects formed a database for this paper. The finding of this paper shows the IOC factors that contribute to the improve the performance of building refurbishment project can be conflict during the construction stage, conflict between the client and the consultant, task expectations, basic responsibilities, final duration, project's goals, conflict between the client and the contractor, final cost, final quality, standards of behaviors, conflict between the contractor and the consultant, interference and conflict during the design stage.

1. Introduction

Over the past years, there has been an expanding intrigued in building refurbishment projects because of the alter in financial conditions and the accentuation on sustainable development^[41]. Investment for new construction projects would likely decrease, but the need for building refurbishment works would likely increase. This is since the demand for building refurbishment projects comes from various sources such as obsolescence and deteriora-

tion. In spite of the financial downturn, building proprietors still ought to repair their property^[13]. Building/house refurbishment is defined as works that involve renovation, upgrading, retrofit, improvement, and repair of existing and occupied buildings^[22, 46]. Besides, the demands for building refurbishment works are likely to increase in the next decade due to the regeneration of inner cities and towns, and growing concerns about building on green-field sites. Thus, renovation and refurbishment of existing buildings plays a considerable role in attaining sustainable

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environment in the urban area [63].

Depending on the nature and size of the project, a building refurbishment project involves many organizations, which may include client, consultants, and contractor [59, 61]. The involvement of many organizations with different objectives and orientations tends to cause IOC [71]. In construction projects, an understanding of conflict is more important now than ever before given the differentiation that exists in today's project organizations in which the inter-organizational integration within a project can be difficult [23, 39, 56]. However, comparatively little research has been done on inter-organizational conflicts in building refurbishment. This means that there is a gap of knowledge and lack of research in renovation and refurbishment projects. This gives the impetus to conduct this study. Hence, the objective of this research is to evaluate the level of IOC in refurbishment projects through an Exploratory Factor Analysis (EFA) approach.

2. Literature Review

Inter-Organizational Conflicts (IOCs) in construction projects are inevitable and unavoidable because organizations involved in the projects have different norms, background, skills, and knowledge [16]. The organizations are working temporarily together as a team and making decisions to meet project goals and objectives [45]. Conflicts can be destructive, affecting the projects' performance [36, 42]. Deutsch (1973) defined destructive conflict as a saturation, in which people and organizations are unsatisfied with the performance outcome. However, conflicts need not be destructive [7,73]. In fact, conflicts can be constructive. In some cases, conflicts can be beneficial because without conflict, organizations and people are likely to become stagnant, apathetic, non-innovative, and unable to respond to change. However, it could be argued that when the projects are uncertain, the duration is short, and the activities are intense, which are typical of refurbishment projects in which the level of conflicts should be kept to a minimum. The organizations do not have time to know and accommodate each other. The outcome of the conflict is more likely to be destructive than constructive.

To reduce conflicts, organizations involved in building refurbishment projects need to reduce the level of uncertainty. In uncertainty, when organizations have different perceptions and interpretation of the problems, IOCs are more likely to occur because organizations are not able to agree [50,57]. Moreover, when conflicts are frequent, it has significant economic and social consequences [45]. Literature review also reveals that there are numerous effects of IOC in construction projects which include final cost, final duration [72], final quality [51], interface, and task expecta-

tion [11].

Construction projects, which include refurbishment projects typically start well, but problems can lead to conflicts between the client and contractor [72]. Moreover, [16] mention that in construction projects, conflicts sometimes seem inevitable due to high differences in interests among the contractors and clients. Conflict is common between clients and consultants because they almost always disagree over some issues such as cost estimation, structural design, and architectural design, when they start working together [24].

From the above literature, it could be concluded that disagreement over their basic responsibilities, disagreement on how to achieve the project's goals, disagreement over task expectations, disagreement agreed over the interference of other project members in their works, disagreement over standards of behaviors, the client and the contractor, disagreement on the final cost, the client and the contractor disagreement on the final duration, the client and the contractor disagreement on the final quality, the level of organizational conflict between the client and the contractor in the building refurbishment project is low, the level of organizational conflict between the client and the consultants in the building refurbishment project is low, the level of organizational conflict between the contractor and the consultants in the building refurbishment project is low, the level of IOC during the design stage in the building refurbishment project overall is low, and the level of IOC during the construction stage in the building refurbishment project overall is low, are factors that contribute to the inter-organizational conflict in building refurbishment projects during both the design and construction stage among organizations involved in building refurbishment projects. The factors that contribute to IOC in building refurbishment projects are shown in Table 1:

Table 1. The factors that cause conflict in building refurbishment projects

Inter-Organizational Conflict Factors	Authors
Disagreement Over Their Basic Responsibilities.	(Narh et al., 2015; Schultz & Schultz, 2010; Sousa & Camelo, 2014; Vaaland & Håkansson, 2003; Verma, 1998)
Disagreement on How to Achieve the Project's Goals.	(Ali et al., 2013; Harmon, 2003; Kerzner, 2013; Senaratne et al., 2013; Wilmot & Hocker, 2010)
Disagreement Over Task Expectations.	(Diekmann & Girard, 1995; Gould, 2004; Molenaar et al., 2000; Goldman, 2002; Vaux & Kirk, 2014)
Disagreement Over the Interference of Other Project's Members in Their Works.	(Barki & Hartwick, 2001; Bekele, 2015; Deutsch, 1973; Moura & Teixeira, 2010; Sambasivan & Soon, 2007)
Disagreement Over Ethical Standards of Behaviours.	(Jefferies et al., 2003; Kang, 2004; Lumineau et al., 2015)

Inter-Organizational Conflict Factors	Authors
Disagreement Over the Final Cost	(Cakmak & Cakmak, 2013; S. O. Cheung & Pang, 2013; Jr & Polkinghorn, 2008; Khahro & Ali, 2014; Xiang et al., 2012)
Disagreement Over the Final Duration	(Ashworth, 2013; Bachmann et al., 2012; Cakmak & Cakmak, 2013; Ilter, 2012; Khahro & Ali, 2014; Waddell et al., 2013)
Disagreement Over the Final Quality	(Bekele, 2015; Cakmak & Cakmak, 2013; Cheung & Pang, 2013; Jha, 2013; Yang et al., 2009)
Organizational Conflict Between the Client and The Contractor	(Acharya et al., 2006; Mitkus & Mitkus, 2014; Spang & Riemann, 2011; Vaux & Kirk, 2014; Yates, 2003)
Organizational Conflict Between the Client and The Consultants	(Aziz & Abdel-Hakam, 2016; Bekele, 2015; Golembiewski, 2000; Halac et al., 2013; Lindhard et al., 2016; Nikolova et al., 2014)
Organizational Conflict Between the Contractor and The Consultants	(Arain, 2005; Bekele, 2015; Mitkus & Mitkus, 2014)
Inter-Organizational Conflict During the Design Stage	(Grebici et al., 2006; Mark Klein, 2000; Msallam et al., 2015; Senaratne et al., 2013)
Inter-Organizational Conflict During the Construction Stage	(Jackson, 2010; Liu, 2014; Sousa-ginel & Camelo-ordaz, 2014)

3. Methodologies

To achieve the research objective, two steps of data collection were employed in this study. The phases are the literature review and questionnaire survey. The first stage begun with the study of secondary data collected through vast and extensive literature reviews. The literature review for this study was done through reading and exploring in project management, general management, refurbishment published in referred journals, conferences, and textbooks. The literature review section explains the IOC in the construction and refurbishment and renovation projects. The research problems and variables were identified from literature review as the literature survey helps to make a precise and clear problem statement^[66]. The second phase of this research involves the questionnaire survey. The data was collected from boundary role persons in construction and architectural firms that have experience in refurbishment and renovation projects to evaluate the information needed regarding refurbishment projects in Malaysia. The questionnaires were formed from literature reviews. According to^[17] researchers have three ways to design and develop questionnaires, modify an existing one, or using one that they have located in literature. Therefore, this research developed its own questionnaire following the structure from previous re-searches done by^[3,55,59].

However, in many different ways the structured questionnaire data can be collected, containing Web-Based Survey, email, direct mailing, drop-off and pick-up, tele-

phone interviews, and face-to-face interviews [Antwi & Hamza, 2015; Ticehurst & Veal, 2000]. Therefore, for this study Web-Based Survey is employed to collect the data from respondents. The Web-Based questionnaire is the latest tool and is becoming one of the most used method to of collect questionnaire data. To host this research the Survey Monkey program was chosen because this program is easy to use, economical and it met the needs of the researcher. Therefore, this study over-comes multiple replies, and confidential issues by: first, monitoring the access of respondents by letting only users with a unique IP address to complete the survey; and second, delivering obvious written steps on how respondents' confidentiality is treated and how the data is transmitted in this research. For this research, the data was collected from boundary role persons in contractor and architectural firms regarding refurbishment projects in Malaysia. Web-Based questionnaires survey helped to gather data in a short period and questionnaires have been sent swiftly to numerous kinds of respondents and all selected samples had an impartial chance to respond. In this study, a self-administered questionnaire with close-ended questionnaire was employed. Moreover, Likert's Scale was used as the rating method for this study. Likert items are used to measure the respondents' attitudes to a particular question or statement. In current studies, most Likert's Scales, contain either five to seven-point scales categories^[66,80]. Thus, for this study, a five-point Likert Scale was adopted as 1 = Totally Disagree; 2 = Disagree; 3 = Moderate (Neither Agree nor Disagree); 4 = Agree; 5 = Totally Agree, to ensure the instruments of the study are reliable. The researcher ultimately sent questionnaires as a web-link and email invitation to 1050 construction firms and 733 architectural firms. The respondents were asked to complete the questionnaires within a week. The author sent a reminder every week for five weeks to all respondents who did not respond to the questionnaire. Researchers have widely accepted the use of follow-up techniques as having significant effects in improving response rate^[21,53]. After five weeks, the author received 302 responses from the project managers, site engineers, site directors, and site supervisors of the construction firms and 178 responses from principal architects and architects of the architectural firms. The overall response rate for construction firms was 28 percent and the valid response rate was 10 percent. For architectural firms, the total response rate was 25 percent, and the valid response rate was 12 percent. Finally, the overall response rate for both construction and architectural firms is 27 percent and the valid response rate is 11 percent. All 188 respondents were registered with the Construction Industry Development Board (CIDB) and Malaysian Institute of

Architect (PAM). In this research to validate and refine the data collected, the Exploratory Factor Analysis (EFA) was used. The Statistical Package for Social Science (SPSS) was used in both descriptive and inferential statistics. EFA usually applied to regroup variables into a limited set of clusters based on shared variance. Therefore, EFA aids to isolate concepts and constructs [18].

4. Findings and Discussion

Factor Analysis (FA) is a statistical method employed to classify a moderately small number of variables, which can be applied to show the relationship among sets of many interrelated variables [58]. Moreover, FA takes a large set of variables and looks for a way the data may be lessened or summarized applying a smaller set of variables [37].

In this study, to verify that data set is suitable for EFA, Bartlett’s Test of Sphericity (BTS) and Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) are used. The value of KMO is >0.6, and the significant value of BTS is <0.05 [57]. Table 2 shows that the amount of KMO is more than 0.6, which is an acceptable KMO value. Thus, the BTS is significant, so the data meets this assumption, and the values are appropriate for EFA.

Table 2. Initial assumptions of EFA

KMO	BTS			
	Approx. Chi-Square	Df	Sig	
IOC	0.953	2874.404	78	0.000

Note: BTS = Bartlett’s Test of Sphericity; KMO = Kaiser-Meyer-Olkin; IOC=Inter-Organizational Conflict.

Table 3 shows the EFA analysis for Analysis for IOC by applying the CP derivation technique with a combination of the Varimax Rotation method. The Kaiser-Meyer-Olkin measure of sampling adequacy indicates that the strength of the relationships among variables is high (KMO = 0.953). Likewise, Bartlett’s Test of Sphericity (BTS) for inter-organizational conflict items is significant where the significance value of BTS is <0.05 ($X^2(78) = 2874.404$, $P < .001$). Therefore, it can be concluded that the values are appropriate for EFA. Table 4.10 shows that one variable should be extracted from inter-organizational conflict since one Eigenvalue is exceeded (Eigenvalue = 9.69). This extracted variable is predicted to have 74.51% of the Variance Explained to explain the inter-organizational conflict variables. The group items are called inter-organizational conflict (Cronbach’s alpha = 0.971). It shows that the grouped item has a good reliability value since Cronbach’s alpha value is above 0.80, where the acceptable value is > 0.70.

Table 3. Summary results of EFA analysis for inter-organizational conflict

Factors and Items Included	Code	Factor Loading	Communalities
Conflict During the Construction Stage	Q313	.912	.827
Conflict Between the Client and the Consultant	Q310	.907	.817
Task Expectations	Q33	.893	.790
Basic Responsibilities	Q31	.889	.789
Final Duration	Q37	.886	.813
Project’s Goals	Q32	.877	.828
Conflict Between the Client and the Contractor	Q39	.876	.825
Final Cost	Q36	.858	.793
Final Quality	Q38	.849	.746
Standards of Behaviors	Q35	.847	.746
Conflict Between the Contractor and the Consultant	Q311	.823	.770
Interference	Q34	.812	.763
Conflict During the Design Stage	Q312	.784	.747

Eigenvalue = 9.687, % Variance Explained = 74.51%, Cronbach’s alpha = .971

Note: index = .953; BTS, $X^2(78) = 2874.404$, $P < .001$

Based on Exploratory Factor Analysis (EFA), it could be concluded that the main factors, which contribute to the inter-organizational conflicts in refurbishment projects are: conflict during the construction stage, conflict between the client and the consultant, task expectations, basic responsibilities, final duration, project’s goals, conflict between the client and the contractor, final cost, final quality, standards of behaviors, conflict between the contractor and the consultant, interference and conflict during the design stage.

5. Conclusion

This study reveals that the managing and controlling inter-organizational conflicts of refurbishment and renovation projects have not been addressed appropriately in earlier studies. Surveys on practices applied to the management of this uncertain environment are scarce and have lacked a theoretical underpinning. However, the construction projects are facing major problems when they come to completing projects. This is especially the case for refurbishment projects. Mostly in refurbishment projects the performance is not satisfactory, and many valuable resources have been wasted because of failed projects. The first reason for these problems is rooted in a high level of uncertainty, which is an integral part of refurbishment

projects. The second reason is an inter-organizational conflict due to the presence of different organizations in projects.

The finding of this paper shows that inter-organizational conflicts (IOCs) can be significantly reduced if project managers are able to control the IOC factors in refurbishment projects. The IOC factors include conflict during the construction stage, conflict between the client and the consultant, task expectations, basic responsibilities, final duration, project's goals, conflict between the client and the contractor, final cost, final quality, standards of behaviors, conflict between the contractor and the consultant, interference and conflict during the design stage. As a result, by controlling IOC factors, the level of uncertainty will be practically reduced, and it helps to achieve a better performance. The findings of this paper would help construction and refurbishment projects managers to control, monitor and reduce inter-organizational conflicts among organizations involved a project.

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