STAKEHOLDER MANAGEMENT FOR SUSTAINABLE EVENT MANAGEMENT IN MALAYSIA SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) EDUCATIONAL EVENTS

LEE WOAN SHIANG

A project report submitted in partial fulfilment of the requirements for the award of Master of Project Management

Lee Kong Chian Faculty of Engineering and Science
Universiti Tunku Abdul Rahman

May 2017

DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

Signature : _____

Name : Lee Woan Shiang

ID No. : 13UEM06699

Date : _____

APPROVAL FOR SUBMISSION

I certify that this project report entitled **"STAKEHOLDER MANAGEMENT FOR SUSTAINABLE EVENT MANAGEMENT IN MALAYSIA SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) EDUCATIONAL EVENTS"** was prepared by **LEE WOAN SHIANG** has met the required standard for submission in partial fulfilment of the requirements for the award of Master of Project Management at Universiti Tunku Abdul Rahman.

Approved by,

Signature : _____

Supervisor : Ir Jeffrey Yap Boon Hui

Date : _____

Specially dedicated to
my beloved family

ACKNOWLEDGEMENTS

First of all, I would like to thank everyone who had contributed to the successful completion of this project. I would like to express my gratitude to my research supervisor, Ir Jeffrey Yap Boon Hui for his invaluable advice, guidance and his enormous patience throughout the development of the research.

Throughout this research, I would also like to express my gratitude towards my loving parents, siblings and friends who had given me motivation and encouragement when I conducted this research project.

Last but not least, it is a pleasure to thank all the beautiful people who helped me to complete this research project.

ABSTRACT

STAKEHOLDER MANAGEMENT FOR SUSTAINABLE EVENT MANAGAMENT IN MALAYSIA SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) EDUCATIONAL EVENTS

Lee Woan Shiang

Many studies show that one of the critical success factors in delivering a project is the support from stakeholders for the project. Stakeholders exert influence over the project and would affect the project deliverables. Thus, appropriate stakeholder management in STEM educational events is a crucial aspect. In order to make these STEM educational events a great success, it is essential for sustainable organisation of events that stakeholders are attracted and retained, at the same time to mitigate negative impacts from events. Therefore, the aim of this research project is to examine the stakeholder management practice in relation to sustainable event management in STEM educational events. This study follows the elements in stakeholder management processes guided by Project Management Institute which are stakeholder identification, stakeholder engagement, and stakeholder management. A quantitative research is conducted in Malaysia. In total, the data is collected from 100 respondents who are the event stakeholders. The results demonstrate there is no significant difference observed between different roles (project manager, project team member, contractor/supplier, owner/sponsor/client) and practice (whether they establish stakeholder management procedure) of the respondents on stakeholder management processes. There is correlation between stakeholder management processes and sustainable event management. Stakeholder identification, stakeholder

engagement and stakeholder management are the crucial factors that contribute to sustainable event management. The five challenges which are limited capacity, time consuming/poor time management, wild/unrealistic expectations, limited/poor understanding of issues and high cost of management, and six best practice in the stakeholder management have also been identified.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS / ABBREVIATIONS

NGO	Non-governmental organisation
SPSS	Statistical product and service solutions
STEM	Science, technology, engineering and mathematics

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Introduction

Events are not continuous but temporary. Each event is unique. They have a beginning and an end, and events are executed by teams. It is literally impossible to recreate a same event. Since events possess these significant similarities like projects, project management approaches are deemed to be suitable and transferable to be applied in event management field (Williams, 2016).

Over the last three decade, the event industry has shown significant growth. This is due to the value of events as tools for direct communication and engagement has been recognised (Damm, 2010). As stated in Encyclopedia of public relations (as cited in Toledano & Riches, 2014) mentions that events are those circumstances in which organisations meet directly with clients and they are designed to provide participants with a meaningful experience.

Organising events becomes one of the strategies aimed not only enhancing student exposure the fields of science, technology, engineering, and mathematics (these disciplines collectively known as STEM) but also could attract media attention and gain publicity to raise the awareness of the public on the declining workforce trained in STEM.

A nation needs a high percentage of the population well trained in the fields of STEM if aimed to develop into a highly competitive and valued economy. Malaysia with the vision to be a high-income economy by 2020 must have a high proportion of the workforce well trained in STEM channelled into the industry if it aimed to achieve the vision (Chew, Idris, Leong, & Daud, 2013). However, interest in STEM has been declining. The target set is 60% skilled workers in the country but as of 2015, Malaysia had only achieved 28% skilled workers (Harun, 2016). Malaysia would end up having difficulty to innovate and complete with the global competition if this trend continues.

One of the reasons that STEM careers is not being chosen because students consider STEM courses are difficult. Not only this, some students have the opinion that STEM is unconnected to reality (Christensen, Knezek, & Tyler-Wood, 2014). There would be a crucial social problem when there are shortages of skilled technicians and researchers to get into the highly sophisticated research. Undeniably, they are playing a crucial role at the early part of product-developing chains bring about sales of high added value products (Sládek, Miléř, & Benárová, 2011). If the industry is unable to recognise and reduce the gap between the demand and availability of skilled talent in the current workforce, industry would have to spend a huge amount of training costs to train a high level of entry level skilled workers (Baumann, Mantay, Swanger, Saganski, & Stepke, 2016).

There are several major challenges in strengthening STEM education (Chew et al., 2013). Apparently, the recent trend of declining number of students interested and thus pursuing STEM in schools (Ministry of Higher Education Malaysia [MOE],

2013) is a problem that should be worrying not just the Malaysian government and educators but also the industry which would face declining workforce trained in STEM.

Many efforts have been taken to resolve the problem on declining workforce trained in STEM. Aside from the formal education of classes in school, one of the sources of interest in STEM careers is having a variety of interesting STEM educational events which aimed to enhance the approach of teaching and learning STEM through participating in hands-on activities, competitions, fairs and so forth (Christensen et al., 2014).

These STEM educational events provide social opportunities to the community to be exposed to the importance of STEM. In order to make these STEM educational events a great success, it is essential for sustainable organisation of events that stakeholders are well managed, attracted and retained. As the scale of event increases, more stakeholders from wider sectors would be involved and the complexity of stakeholders necessities appropriate project stakeholder management (Mok, Shen, Yang, & Li, 2017).

Recent studies have shown that (Davis, 2014, 2016; Spangenberg, Görg, & Settele, 2015) one of the critical success factors in completing a project is that the key stakeholders to support the project. Even when the deliverables are met and the objectives are satisfied, if the stakeholders do not support it, the project is unlikely to be a resounding success. Hence, the study of stakeholder management is essential to help the project managers to acknowledge and actively monitor the concerns of the

stakeholders. When the degree of interdependence among stakeholder is recognised, stakeholder resistance could be minimised and the necessary support would be gained.

In this regard, the organisers begin to adopt sustainable event management. This is often viewed as their competitive advantage (Settler, 2011). When the stakeholder understand and experience the positive results from the events, they would be willing to participate and retained in the events (Reid, 2011). Thus, integrating stakeholder management with event sustainability is an important aspect. Furthermore, stakeholder management could help to sustain competitive advantage of the organisation through resource commitment, developing capabilities and building relationships (Wu, 2010). The effective relationship among stakeholders such as parents, academics, professionals, industry, government agencies, non-government organisations and so forth, would not only remove the potential obstructions, it would actively support swift progress and ultimately improve sustainable event management.

The stakeholder management processes is adopted from the processes defined by Project Management Institute. With the findings from existing practice, these could help the event organisers to adopt the useful practice and improve sustainable educational event management.

1.2 Problem Statement

As the world becomes more aware of sustainability issues, there is growing practice by taking sustainability into consideration for events. STEM educational events are part of education for sustainable development. However, any kind of event could have potential negative impacts. When the event is not well managed, the negative consequences can cause public prominence and media attention for the inappropriate reasons. Eventually, the event objectives could not be achieved and the cost of event failure can be disastrous, become negative publicity, political embarrassment and costly lawsuits (Olander & Landin, 2005).

In order to avoid the disastrous consequences, the hosts or organisers have been trying hard in maintaining positive relationships with the stakeholders for event success. Nonetheless, there is an issue of decreasing stakeholder retention rate in educational events. A possible cause of this problem is lacking the understanding and managing stakeholders to increase awareness, to inform and involve them in the events.

When the event scale increases, there would be the increase of hidden stakeholders. When defining the project scope, if the stakeholders have not been involved or represented, they stand neutral in the event project as they feel that they do not have any sense of responsibility for the outcome of the event. Also, it is irrational to get stakeholders' opinions about the project outcome after the completion, where their involvement in the project is limited.

Despite the extensive and multidisciplinary research on project stakeholder management, many researchers focus on the conceptual development of stakeholder management tools and frameworks in managing the stakeholders. More empirical research is needed to establish how these frameworks unfold in practice. From the aforesaid issue, this research attempts to study the area of stakeholder management in relation to sustainable event management in the context of STEM educational events in Malaysia.

1.3 Aim and Objectives

The aim of this project is to examine the stakeholder management practice in relation to sustainable event management in STEM educational events.

The specific objectives are set forth:

(1) To investigate any significant differences between role of respondents and practice of the stakeholder on stakeholder management processes
(2) To examine the stakeholder management processes in relation to sustainable event management
(3) To rank the challenges of the stakeholder management
(4) To determine the best practices in stakeholder management

1.4 Research Questions

This study attempts to answer the following research questions:

(1) Are there any significant differences between role of respondents and practice of the stakeholder on stakeholder management processes?
(2) To what extent the stakeholder management processes are associated with sustainable event management?
(3) What are the challenges of the stakeholder management?
(4) What are the best practices in stakeholder management for sustainable event management?

1.5 Conceptual Framework and Hypotheses

1.5.1 Conceptual Framework

The conceptual framework of this study is illustrated as in Figure 1.1. It is used to study the relationship of the independent variables which include stakeholder identification, stakeholder engagement and stakeholder management towards sustainable event management.

Katzel (2007) defines sustainable event management as the convergence of sustainability with the project planning process of event management. The importance of sustainable event management can be seen from the British Standards Institution (2006) as they develop the Sustainability Management Systems for

Events by incorporating stakeholders as one of the key requirements for "Sustainable event management" (Getz, 2012).

Bal (2014) states that there is correlation between stakeholder identification, stakeholder engagement and stakeholder management to sustainability. Stakeholder identification identify opportunity for stakeholders to work alongside with the event owners and in line with their objectives rather than in conflict. This can be obtained through recognising where the power relationships lie. Many studies examine and highlight the importance of stakeholder identification for mega events such as Commonwealth Games, Olympics Games and so forth (Sadd, 2012).

Stakeholder engagement is an important strategy to successful sustainability initiatives. It is crucial that the stakeholders to have the same motivation towards sustainable practices in event management. This would lead to better understanding and commitment and increase the involvement in the whole project through continual feedback (Stettler, 2011).

Stakeholder management focuses understand the stakeholders' needs and expectations, address issues as they occur, manage conflicting interests and foster appropriate stakeholder engagement in project decisions and activities" (PMI, 2013). The event owners ought to be able to manage the stakeholder's individual needs and requirements as the stakeholder expectations and awareness are increasing, putting greater pressure on organisations to consider the environmental and social aspects to implement sustainable initiatives. The good relationships would be drawn on to increase knowledge and also encourage innovation to address some of the

sustainability issues associated with events.

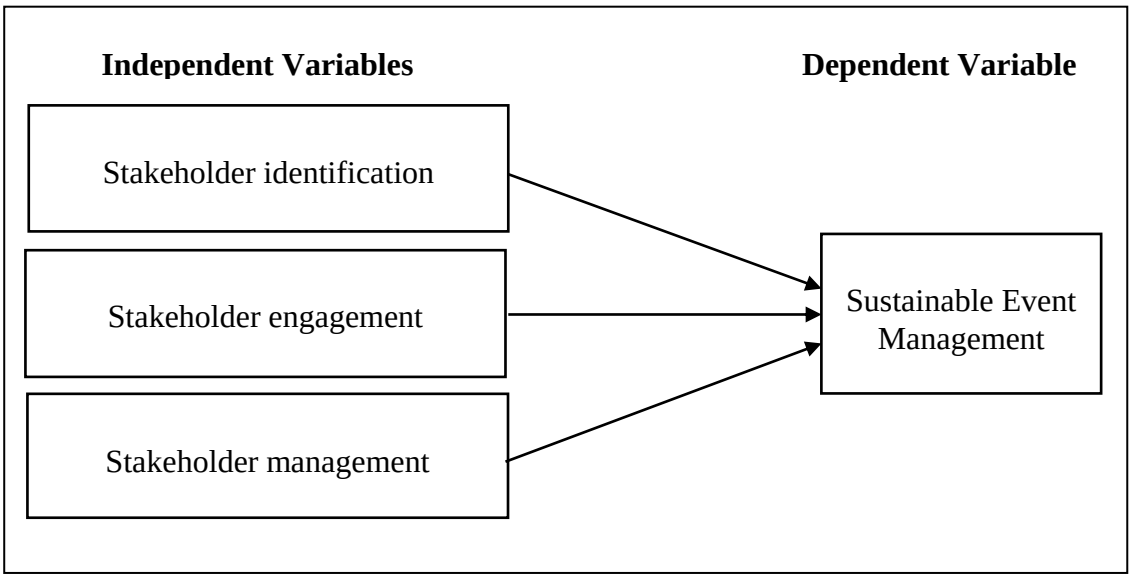

Figure 1.1: Conceptual framework developed for this study

1.5.2 Hypotheses

Hypotheses for this study are formed as follows:

H1: There is a significant difference between current role of the respondents and stakeholder management processes.

H2: There is a significant difference between practice of the respondents and stakeholder management processes.

H3: There is correlation between stakeholder identification and sustainable event management.

H4: There is correlation between stakeholder engagement and sustainable event management.

H5: There is correlation between stakeholder management and sustainable event management.

H6: There is significant relationship between at least one of the variables (stakeholder identification, stakeholder engagement and stakeholder management) and sustainable event management.

1.5.3 Test of Hypotheses

To meet objective 1, the hypotheses of H1 and H2 would be tested. Whereas, H3, H4, H5 and H6 would be tested to meet objective 2. Table 1.1 shows the hypotheses that would be tested:

Table 1.1: Test of Hypotheses

	Hypothesis	
	H_0	H_A
H1	There is no significant difference between current role of the respondents and stakeholder management processes.	There is a significant difference between current role of the respondents and stakeholder management processes.
H2	There is no significant difference between practice of the respondents and stakeholder management processes.	There is a significant difference between practice of the respondents and stakeholder management processes.
H3	There is no correlation between stakeholder identification and sustainable event management.	There is correlation between stakeholder identification and sustainable event management.
H4	There is no correlation between stakeholder engagement and sustainable event management.	There is correlation between stakeholder engagement and sustainable event management.
H5	There is no correlation between stakeholder management and sustainable event management.	There is correlation between stakeholder management and sustainable event management.
H6	There is no significant relationship between at least one of the variables (stakeholder identification, stakeholder engagement and stakeholder management) and sustainable event management.	There is significant relationship between at least one of the variables (stakeholder identification, stakeholder engagement and stakeholder management) and sustainable event management.

1.6 Chapter Outline

This research has been divided into six chapters and described as follows:

Chapter 1 is a brief introduction into the research pursued. It includes the background of the needs of STEM educational events, problem faced by the event organisers to hold sustainable educational events, aims and objectives, hypotheses and significance of study.

Chapter 2 presents a literature review that describes previous researches. It introduces STEM educational events, and sustainable event management. Stakeholder and stakeholder management processes which are worth researching are studied. Besides that, the challenges and best practice for stakeholder management have been included.

Chapter 3 contains the research methodology which describes the methods used in this study. It depicts the research design, data collection methods and data analysis.

Chapter 4 details the results from the questionnaires to answer the research questions. Statistical procedures and analyses are presented along with the hypotheses findings.

Chapter 5 discusses about the major findings between stakeholder management process and sustainable event management, challenges as well as best practice could be applied on stakeholder management in the context of STEM educational events.

Chapter 6 provides the conclusion and summary of the research. The limitations of this study are reflected and recommendations are given for the possible future studies.

CHAPTER 2

LITERATURE REVIEW

2.1 STEM Educational Event

Getz (2012) defines an event as “an occurrence at a given place, a special set of circumstances, and a noteworthy occurrence”. This definition includes many possibilities with that they can only happen once.

Events could seem to be endless categorised which could be categorised by their complexity, size and scope or concept or purpose. For examples, various types of planned event consist of special events, hallmark events, mega events, festivals, fairs and exhibition, expositions and shows, meetings as well as other business, educational and scientific events, sports events and art events (Getz, 2012).

Events dedicated to learning, and information and knowledge exchange are considered as the educational and scientific events. They are seminars, clinics, workshops, conventions, congresses, symposiums or forums which are generally held among academics for discussion (Getz, 2012).

STEM educational event could be for target group from pre-school to post-doctorate. It is intended to enhance the approach of teaching and learning STEM through participating in hands-on activities, competitions, workshops, fairs and so

forth. It covers both of formal (classrooms) and informal (afterschool programmes) settings. STEM education has been given huge attention in the United States (Gonzalez & Kuenzi, 2012) but the idea of integrating STEM subjects is very new to Malaysia. However, substantial interest in the idea can be found in the document of the Malaysia Education Blueprint 2013-2025 (MOE, 2013), where the Malaysian government aims to achieve the target of 60% students are pursuing science.

Thus, to make these STEM educational events a great success, it is essential to incorporate sustainable concept for stakeholders to be attracted and retained.

2.2 Sustainable Event Management

The concept of sustainability is not new and a growing interest for sustainability could be seen. Sustainability is a term used to support, endure, and maintain. The World Commission on Environment and Development (1987) seeks to address the problem of conflict between environment and development goals by formulating a definition of sustainable development:

> "*Sustainable development is development which meets the needs of the present without compromising the ability of the future generations to meet their needs*" (World Commission on Environment and Development, 1987).

In general, sustainable development is a complex and multidimensional issue. It combines efficiency, equity, and intergenerational equity based on economic,

social, and environmental developments. These three important fundamentals are interrelated and complementary in maintaining and improving the quality of life, without degrading the quantity, quality or the availability of natural resources and ecosystems (World Commission on Environment and Development, 1987).

Sustainable event management is the "convergence of sustainability with the project planning process of event management" (Katzel, 2007). Laing and Frost (2010) explain that:

> *"Sustainably managed event is one in which sustainability awareness, design and decision making are fully integrated into its management logistics, operations, and production. Sustainable event management is rapidly growing in recognition, both in the national and international event industries".*

Sustainability practices have been implemented in different types of events. Stettler (2011) highlights that events could play a unique and important role in the contribution to the transition of sustainability. This can be done by fully integrating sustainability awareness, design and decision making into management of events.

Furthermore, economic sustainable event management initiatives may include local business partnerships. Whereas, social sustainable event management initiatives may include health and wellness enhancement. Then, environmental sustainable event management initiatives may include waste recovery and minimisation (Stettler, 2011).

Other than that, there are many advantages, for instance, working together with stakeholders in a project can provide innovative solutions at affordable prices and the sustainable practice leads to short and long-term cost reductions (Bal, 2014). As the production of most events rely on the coming together of many stakeholders, the appropriate involvement and management of stakeholders could help in event success.

2.3 Stakeholder Theory

In 1963, the stakeholder theory is introduced by the Stanford Research Institute into the management domain, where stakeholders are stated as “any groups or individuals who are important for organisational survival” (Freeman, 1984). In Freeman’s landmark book (1984) on the strategic management of stakeholders stated stakeholders as “the ones who can affect or is affected by the achievement of the firm's objectives”. Then, in nascent work of Cleland (1986) on project stakeholder management, where the researcher attempts to fit the central ideas of stakeholder management to the context of temporary organisations.

2.4 Stakeholder Management

Over the years, project stakeholder management has received its legitimised status as one of the knowledge areas in Project Management Body of Knowledge in 2013. Project Management Institute (2013) defines a stakeholder as “a person or organisation that is actively involved in the project, has interests that might be

positively or negatively affected by the performance or completion of the project, and might exert influence over the project, its deliverables or its team members".

In Cleland (1986) work on project stakeholder management, the author identifies four steps, which are stakeholder identification, classification, analysis and strategy development.

According to Jergeas, Williamson and Skulmoski (2000) about the study of a construction project, stakeholder management is "to get stakeholder support in project execution and to make project activities as issue driven rather than stakeholder driven". In order to attain this purpose, "education", "mitigation", "communication", and "compensation" are four critical activities that the project team should constantly work on it.

Yang, Shen, Bourne, Ho and Xue (2011) point out the lack of clarity on terminology in previous studies. The confusion are utilising terms such as "stakeholder management", "stakeholder analysis" and "stakeholder engagement" interchangeably to describe interrelated concepts.

Yang et al. (2011) define stakeholder management as "the process of identification, analysis, communication, decision making and all other kinds of activities in terms of managing stakeholders" and categorised stakeholder management activities into the two sub-groups of "stakeholder analysis" and "stakeholder engagement". From the study conducted by Reed (2008) and Yang et al. (2011), they agree the three steps of stakeholder analysis:

- “Identifying stakeholders and their interests,
- Assessing stakeholders’ influence,
- Analysing stakeholders’ relationships.”

On the other hand, PMI (2013) categorise the processes of project stakeholder management comprises the following four steps:

- “Identifying Stakeholders,
- Planning Stakeholder Management,
- Managing Stakeholder Engagement,
- Controlling Stakeholder Engagement.”

The stakeholder analysis is considered as a technique under the process of identify stakeholders by PMI (2013). Project stakeholder management describes the processes as “to identify people, groups or organisations that could impact or be impacted by the project, to analyse stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution” (PMI, 2013).

Project stakeholder management also focuses on “continuous communication with stakeholders to understand their needs and expectations, addressing issues as they occur, managing conflicting interests and fostering appropriate stakeholder engagement in project decisions and activities” (PMI, 2013).

The next section discusses the stakeholder management terminology to explain how they are interrelated.

2.5 Stakeholder Identification

Stakeholder identification is “the process of identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analysing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success” (PMI, 2013). PMI (2013) highlights the importance to identify and manage all the relevant stakeholders for project success. Olander and Landin (2005) claim that it is very important to consider stakeholders’ interests and influences to ensure the success of a project.

In certain scenario, not all stakeholders are equally important in project (Salam & Noguchi, 2006). The key stakeholders who can significantly influence, or are important to the success of the project must be identified prior to identify other stakeholders. Also, there are stakeholders who would be impacted by or can impact the project in a positive or negative way in every project. Some of the stakeholders might have limited ability to influence the project, others might have significant influence on the project.

Vos and Achterkamp (2006) argue that classifying stakeholders is different with identifying stakeholders. Although stakeholder classification is a necessary step, identifying stakeholders goes beyond this step (Figure 2.1).

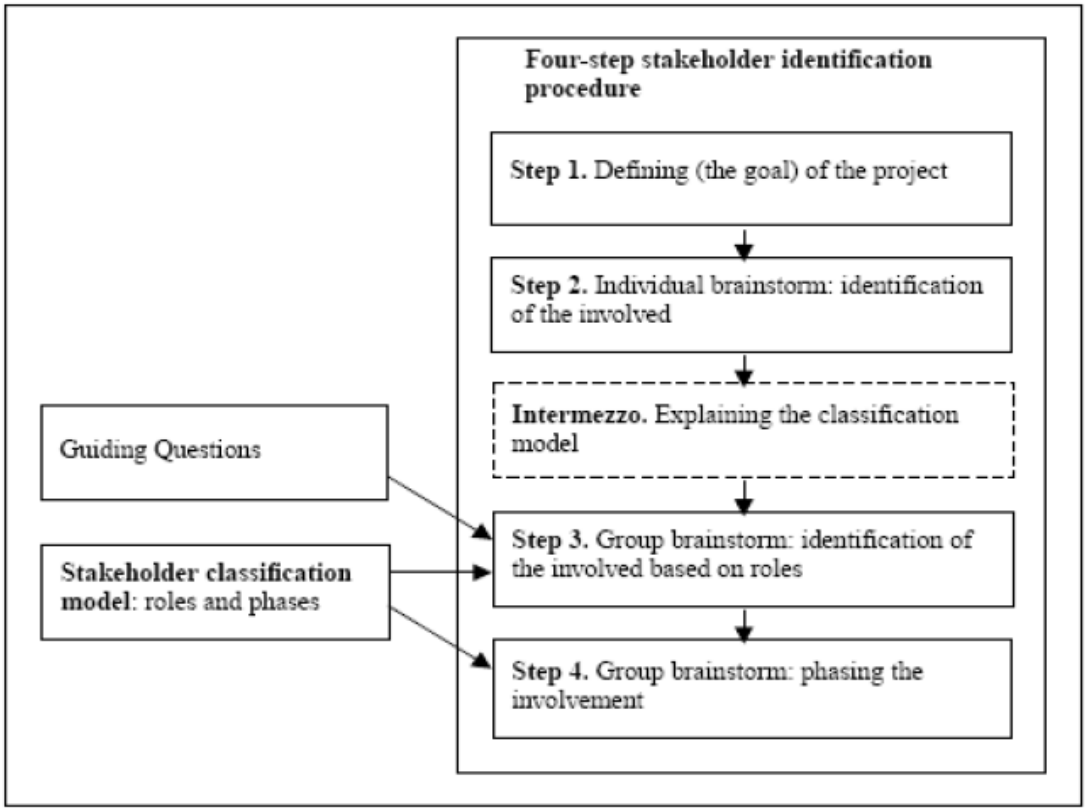

Figure 2.1: Stakeholder identification procedure by Vos and Achterkamp (2006)

2.5.1 Stakeholder Analysis

Stakeholder analysis is considered as a technique under identifying stakeholders by PMI (2013). On the contrary, Yang et al. (2011) place "identifying stakeholders" as a sub-task of "stakeholder analysis" and indicate the interrelationship between "stakeholder engagement" and "stakeholder identification and analysis".

2.5.2 Types of Stakeholder

Basically, there are multiple stakeholders typically involve in a project. In order to provide a clear and practical way to manage the projects, many researchers have given effort to classify the stakeholders.

The literature suggested classifying stakeholders by levels of an attribute, such as power, legitimacy and urgency (Mitchell, Agle, & Wood, 1997), by attitudes towards the project either proponents or opponents (Olander, 2007), by types (Kerzner, 2013), such as organisational stakeholders, product stakeholders and capital market stakeholders and by locus (Sutterfield, Friday-Stroud, & Shivers-Blackwell, 2006).

The locus of the stakeholder might have certain impact (Mazur & Pisarski, 2015). The stakeholders could be distinguished into internal stakeholder and external stakeholders. Stakeholders can be internal or external to the project team or project scope depending upon how they are perceived by the observer (Sutterfield et al., 2006). Figure 2.2 shows one example on the relationship between stakeholder and the project illustrated by PMI (2013).

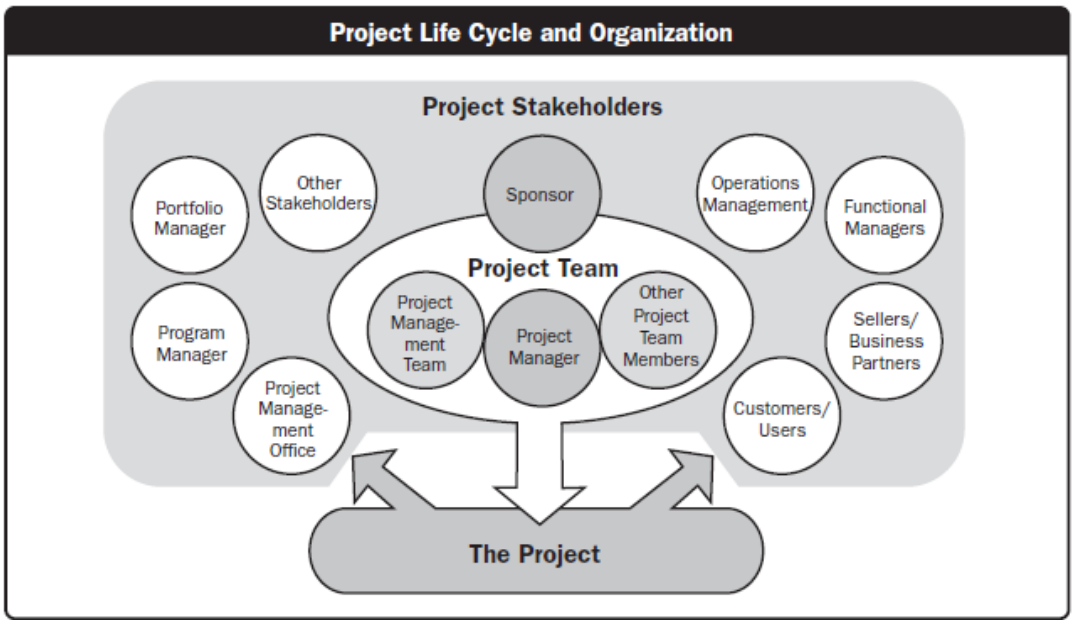

Figure 2.2: Example on the relationship between stakeholder and the project (Project Management Institute, 2013)

2.5.3 Internal Stakeholder

PMI (2013) defined internal stakeholder as "the individual or group of individual that are internal project manager's organisation". Winch and Bonke (2002), Mazur and Pisarski (2015) as well as Vilchez, Darnall, and Correa, (2017) view from the same perspective that the internal stakeholders are the members of the project coalition. They would operate inside the organisation's physical boundaries. They are critical to the success or failure of any organisation's strategy (Freeman, 1984).

2.5.4 External Stakeholder

On the contrary, external stakeholders are the individual or group of individual that are external project manager's organisation (PMI, 2013). External

stakeholders that are those operate outside the organisation's physical boundaries (Vilchez et al., 2017). Winch and Bonke (2002) emphasise that they are “those affect or affected by the project, but not normally engaged in transactions with the project and might not be essential to the survival of the project”.

Aaltonen (2010) comments that the empirical studies mostly is about the management of internal stakeholders and attention should also be given to external stakeholders. Zidane, Johansen, Ekambaram, and Hald (2015) emphasise the importance of managing external stakeholders as these group of people would look on the project outcomes. According to Kazadi, Lievens and Mahr (2016), external stakeholders are still playing an important role as they could be sources of specific information which would have not been accessible without these collaboration due to some resources are not readily available through market transactions.

2.5.5 Event Stakeholders

Stakeholder would vary from event to event. Event stakeholders are those people and groups who have a direct influence to the organisation or might be influenced by it. They have the roles to play in the event outcomes, including the groups that participate in event production (Damm, 2010).

The study done by Watson (2003) reveals a diversity of stakeholders in educational events that include event owner, parents, academics, students, governing

bodies, non-government organisations, sponsors, civic authorities, the media, and consultants.

Adapted from the literature (Watson, 2003; EventScotland, 2006; Damm, 2010), the potential event stakeholders for STEM educational events are categorised as shown in Table 2.1. Moreover, EventScotland (2006) also proposed an example on organisational chart or staffing plan of event as shown in Figure 2.3.

Table 2.1: Potential event stakeholders for STEM educational events adapted from Watson (2003), EventScotland (2006) and Damm (2010)

Stakeholders	Objectives and/or roles
Sponsor	Support the event by providing financial resources
Event organiser	Event organisers come in many shapes and sizes, including: • Public/private partnerships • Events departments within parent organisations or companies • Local authorities • Tourism forums and organisations • Local promoters • Voluntary groups • Trusts • Charities • Governing bodies of sport • Clubs and associations
Event team	Employees and volunteers, key areas of responsibility may include: • Event Director • Event Producer/Manager • Production Manager • Event Administrator • Event Assistant • Finance Assistant • Marketing Manager • Media Manager • Site/Venue Manager • Fundraising/Sponsorship Manager • Programme Manager • Production Designer • Information Assistants • Artist/Participant Liaison • Stage Management • Production Crew • Runners

Table 2.1: Potential event stakeholders for STEM educational events adapted from Watson (2003), EventScotlandn (2006) and Damm (2010) (continued)

Stakeholders	Objectives and/or roles
Contractor and Supplier	• Professional event or festival organisations (not-for-profit) • Professional event management companies and promoters (commercial) • Freelance event organisers working for, or on behalf of public bodies or private companies • Service and contract providers, may include: – Catering, merchandise, amusement structures, equipment,emergency services (ambulance service) – Security services – Transport services
Government authorities and agencies, local councils	• For participation • To give approval on different aspects
Media	• Long lead information through newspapers, magazines, TV and radio stations • Press Launch Release to formally announce the details of the event
Public / Community	The persons who attend the event

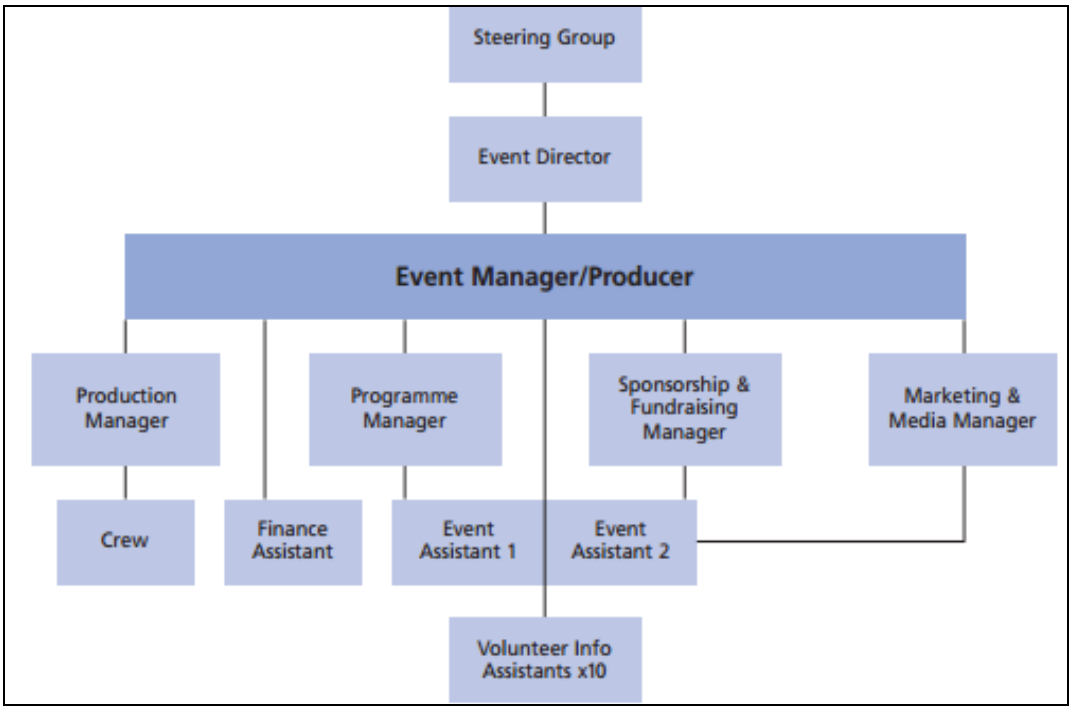

Figure 2.3: Example of organisational chart or staffing plan (EventScotland, 2006)

2.6 Stakeholder Engagement

Stakeholder engagement is defined as "involving, communicating, and developing relationships with other stakeholders is necessary" (Greenwood, 2007). PMI (2013) emphasises the importance of appropriately engaging project stakeholders.

PMI (2013) adds new process after identifying stakeholder, which is "planning stakeholder management". This is the process of "developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success" (PMI, 2013).

PMI (2013) contributes the analytical techniques to classify the following engagement level of all stakeholders. Over the time, the current and planned engagement levels are required to be compared. The engagement level of the stakeholders can be classified as “unaware”, “resistant”, “neutral”, “supportive” and “leading” (Greene & Stellman, 2013).

Whereas, Deegan and Parkin (2011) identify two levels of stakeholder engagement:

- “involvement as a means of information giving and consultation to increase stakeholders' knowledge of a project; and
- participation as a higher level of engagement by reducing stakeholder resistance to a project”.

Next, as defined by PMI (2013), managing stakeholder engagement is “the process of communicating and working with stakeholders to meet their needs or expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle”. Manage stakeholder engagement involves activities such as:

- “Engaging stakeholders at appropriate project stages to obtain or confirm their continued commitment to the success of the project;
- Managing stakeholder expectations through negotiation and communication, ensuring project goals are achieved;
- Addressing potential concerns that have not yet become issues and anticipating future problems that might be raised by stakeholders. Such

concerns need to be identified and discussed as soon as possible to assess associated project risks; and

- Clarifying and resolving issues that have been identified" (PMI, 2013)

Greene and Stellman (2013) explain that managing stakeholder engagement indicates clearing up misunderstandings. As the project progresses, there is a need to check in with the stakeholders regularly so that misunderstandings would not develop so that they can be supportive. When a stakeholder is resistant to change, the project manager would have to negotiate with stakeholders and understand their resistance.

Next process, controlling stakeholder engagement is defined as "the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders". When the project evolves and its environment changes, this process would maintain or increase the efficiency and effectiveness of stakeholder engagement activities. Stakeholder engagement should be continuously controlled and monitored as those interactions is the way to make sure that stakeholders stay in the project. When there is a problem, the project manager can make course corrections and changes to keep as many of the stakeholders satisfied (Greene & Stellman, 2013).

2.7 Extant Literature on Stakeholder Management Processes

Table 2.2: Summary of Extant Literature

Author	Stakeholder identification	Stakeholder engagement	Stakeholder management
Ayatah (2012)			√
Bal (2014)	√	√	√
Bourne and Walker (2006)		√	
Davis (2014)			√
Deegan and Parkin (2011)		√	
Graham and Thomas (2007)			√
Greene and Stellman (2013)		√	
Greenwood (2007)		√	
Hraisha (2015)	√	√	√
Jergeas, Williamson and Skulmoski (2000)			√
Kazadi, Lievens and Mahr (2016)	√		
Mazur and Pisarski (2015)	√		
Mok, Shen, Yang, and Li (2017)	√		
O'Halloran (2014).	√	√	√
Olander and Landin (2005)	√		√
Reed (2008)	√	√	√
Salam and Noguchi (2006)	√		√
Settler (2011)		√	
Spangenberg, Görg, and Settele (2015)			√
Vilchez, Darnall, and Correa (2017)	√		
Vos and Achterkamp (2006)	√		
Winch and Bonke (2002)	√		
Yang, Shen, Bourne, Ho and Xue (2011)	√	√	√
Zidane, Johansen, Ekambaram and Hald (2015)	√		

2.8 Challenges

Identifying the management challenges is imperative for more successful project implementation as the time, cost, quality, content of the events would be affected when stakeholders' requirements and expectations are not met (Davis, 2014, 2016; Spangenberg et al., 2015).

One of the big challenges for the project management team is to identify the stakeholders who can affect the project (Zidane, Johansen, Ekambaram, & Hald, 2015). When project progresses, the list of stakeholders would be changing (Johansen, Eik-Andresen, & Ekambaram, 2014). Although Innes and Booher (2004) argues that engaging a wide range of stakeholders are essential for meaningful participation. However, Brody (2003) states that broad participation in the planning process does not necessarily lead to better plans. The researcher suggests that identifying and involving specific stakeholder groups that are likely to enhance the quality of decisions should be focused on. Also, there are some circumstances that one stakeholder group dominates the project while ignoring the needs of other less vocal groups (International Project Leadership Academy, n.d.).

Another challenge is failure to establish effective communications between individuals, groups or organisations in the project. There would be a unique information at a given community. With the project manager's experience, relationships, capability (Waghmare 2016), better information exchange could happen (Sutterfield, Friday-Stroud, & Shivers-Blackwell, 2006). For instance, if the project manager could communicate well, more valuable knowledge could be acquired from the local community which this could be representing an opportunity for improving the project (Olander, 2006).

Another challenge is lacking of documentation about project. Some of the project manager are not involved in the project right from the beginning. It is common when there are changes in project management leadership during the implementation phase (Pokharel, 2011), and woud cause considerable project delays

and cost escalation. The project managers might not have a sufficient record on the progress of the project and no proper documentation which could be used to understand the stakeholders' expectations.

Ayatah (2012) examines the stakeholder management challenges and their impact on project implementation in the advocacy and community empowerment non-governmental organisations (NGO) sub sector. The challenges are tabulated in Table 2.3.

Table 2.3: Stakeholder Management Challenges and Their Impact on Project Implementation (Ayatah, 2012)

Stakeholder Management Challenges	Effect(s) of challenge
Conflicting/varied interests and opinions, beliefs and orientations	Affects timing & quality, limits cooperation, difficulty in building consensus, too much burden on project team
Limited/poor understanding of issues	Misinformation & wrong interpretation, impeded implementation
High cost of management	Eats into resources meant for other things
Limited/poor commitment (inadequate/delay in releasing funds, diminishing donor support	Implementation and objectives, poor participation
Personal gains seeking	Conflict, diversion of project resources
Wild/unrealistic expectations	Conflict and poor participation/cooperation, kills intent, failure to give the best
Time consuming/ poor time management	Limits participation, undue delays in producing deliverables
Hidden stakeholders (inability to identify all stakeholders)	Limits projects content or quality.
Limited capacity (resources, knowledge and skills)	Success and sustainability not assured, unable to effectively play their role
Poor institutional memory due to high staff turn over	Lose of vital working information

2.9 Best Practice for Better Stakeholder Management

The best practice recommended for better project stakeholder management and to facilitate better decision making from literature review are tabulated in Table 2.4.

Table 2.4: Best Practice for Better Stakeholder Management

Best practice	Sources
Choosing and engaging the target group	Spangenberg et al. (2015)
Providing brief, easy-to-understand informational materials at the beginning of engagement	Guise et al., (2013)
A combination of several stakeholder analysis and engagement methods according to the project characteristics	O'Halloran (2014)
Integration of communication	Leenders, Van Engelen and Kratzer (2003)
True collaborators instead of the unproductive pseudo competition among the organisations	Ayatah (2012)
Establishing lesson learnt database	Graham and Thomas (2007)

CHAPTER 3

METHODOLOGY

This chapter discovers the methods, strategies and approaches adopted for data collection and analysis in this research.

3.1 Research Philosophy

Before data collection, the steps of the layers on the research onion model are followed in order to gain valid findings. Figure 3.1 illustrates the different layers of the research methodology or process (Saunders, Lewis, & Thornhill, 2009).

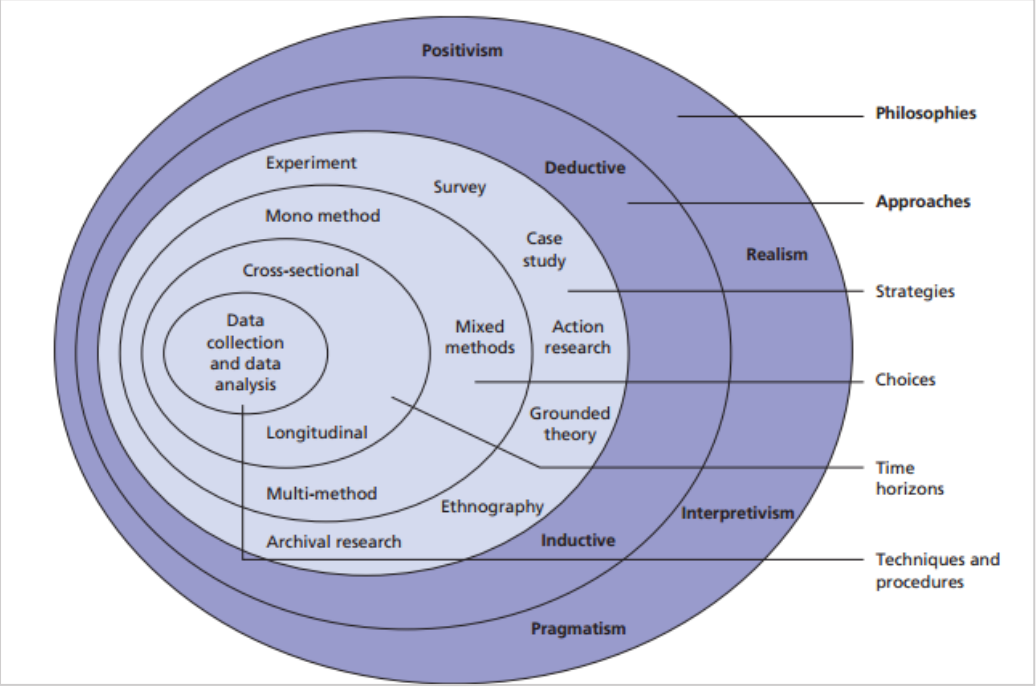

Figure 3.1: Research onion (Saunders, Lewis, & Thornhill, 2009)

In this study, the research philosophy proposed is positivism. As this study concerns with determining the project managers and the teams' local practice on stakeholder management, the positivistic approach is the appropriate methodology. The quantitative data enables the researcher to identify the relationships between the variables, and to determine the extent to which the findings of the study can be generalised (Waritimi, 2012).

3.2 Research Approach

In this study, the deductive approach is proposed as the deductive approach corresponds to the positivistic philosophy (Saunders et al., 2009). Quantitative data is used to consider if they are valid for Malaysia STEM educational events.

3.3 Research Strategy

Survey strategy is proposed as it is most frequently used to answer questions regarding to who, what, where, how much and how many (Saunders et al., 2009). It is proposed to adopt survey as the research tool for this study since this study relates most closely to questions of what and how much.

3.4 Research Choice and Time Horizon

Among the research choices, this would be a cross-sectional study focuses on mono-quantitative-method is used for this study to test whether is in accordance with the findings from the other researchers.

3.5 Population and Sampling

The event team from industry, government bodies, non-governmental organisations, universities, colleges, institutions and schools who have been involved in Malaysian STEM educational events are targeted in this study. They could be the project managers, project team members, contractor or supplier, event owner or sponsor.

Non-probability sampling is used to choose the respondents because of less expensive, less time consuming (Malhotra, 2007). Also, convenience sampling is chosen due to the limited time frame. The respondents who participate were mostly easy to approach (Saunders et al., 2009) as the researcher has good connection with them.

In this study, a sample size of 100 valid responses is proposed. The author targets to receive 30 responses from pilot study and followed by another 70 responses. Roscoe (1975) proposes the sample size rules of thumb that more than 30 and less than 500 are applicable for most of the researches. While, Gorsuch (1983) recommends that at least 100 of samples size is appropriate. MacCallum, Widaman,

Zhang & Hong (1999) highlight that no sample should be less than 100 even though the number of variables is less than 20 for this rule of 100.

3.6 Data Collection

Self-administrated questionnaire is used to get response from the respondents due to data can be collected in a short period of time for this research (Saunders et al., 2009). Questionnaires are distributed to relevant respondents through both Google form via internet and hard copies to reach the targeted number of respondents.

3.7 Questionnaire Design

Close-ended questions are developed for this research. Less time is spent for respondent to answer and it is easier for questioning of larger numbers of people (Saunders et al., 2009).

The respondents are requested to answer all of the questions from a defined list of choices and rating scale, where five-point Likert Scale is adopted to allow the respondents to express how much they agree or disagree with the particular statement. The five-point Likert Scale used indicates “1 is Strongly Disagree, 2 is Disagree, 3 is Neutral, 4 is Agree, 5 is Strongly Agree”. Eventually, data obtained from respondents is translated into numerical form.

The origin of the constructs are tabulated as in Table 3.1. The full questionnaire can be found in Appendix A.

Table 3.1: Questionnaire Constructs Origin

Construct	Details	Source
Respondent background	(1) Current role in the team (2) Nature of organisation (3) Working experience in STEM (4) Number of projects that (5) Stakeholder management practice (6) Using of any stakeholder management software application	Hraisha (2015)
Stakeholders	10 stakeholders listed	Hammad (2013) O'Halloran (2014)
Stakeholder Management Approaches	Methods for stakeholder identification and engagement	Yang et al. (2011) Bourne and Walker (2006) O'Halloran (2014)
Stakeholder Identification	(a) Stakeholder identification helps to find out who has unique knowledge related to any aspect of the project. (b) The needs of different stakeholder should be prioritised depending on each stakeholders potential to influence project objectives. (c) Internal Stakeholders are prioritised above external stakeholders.	PMI (2013) Hammad (2013) O'Halloran (2014) Bal (2014) Stettler (2011)
Stakeholder Engagement	(a) You engage all people internally/externally linked with your project as stakeholders. (b) Stakeholder engagement is the process of exchanging information. (c) Stakeholder engagement helps to manage relationships by aligning mutual interests, which mitigate project risk/uncertainty.	
Stakeholder Management	(a)When stakeholders are managed properly they will be more motivated to the project. (b) Stakeholder management can assist in reducing the risk. (c) Developing good relationship with stakeholders makes it easier to manage them.	
Sustainable Event Management	(a) Sustainability concepts, practices and processes are important to STEM educational events. (b) My company have the approach to evaluate the outcomes of sustainable development. (c) Working together with stakeholders in the initial stages of a project can provide innovative solutions at affordable prices. (d) Sustainable practice leads to short/long-term cost reductions (e) Economic sustainable event management initiatives might include local business partnerships, place marketing of host city, and leveraging the event for generic economic development. (f) Social sustainable event management initiatives might include local cultural development, health and wellness enhancement, stakeholder consensus building. (g) Environmental sustainable event management initiatives might include waste recovery and minimization, renewable energy usage, greenhouse gas inventories, resource lifecycle accounting, and efficient transport systems.	
Challenges	10 challenges listed	Ayatah (2012)
Best practice	6 best practice listed	Spangenberg et al. (2015) Guise et al. (2013) O'Halloran, (2014) Leenders et al. (2003) Ayatah (2012) Graham and Thomas (2007)

3.8 Pilot Test

A pilot test is needed to ensure the reliability and validity of the questionnaire. The first 30 responses collected and the software of IBM SPSS Statistics 24.0 are used for pilot test.

3.8.1 Reliability Test

Reliability refers to "the extent to which a scale produces consistent results if repeated measurements are free from random" (Malhotra & Peterson, 2006).

Cronbach's Alpha is the average value of the reliability coefficient. It is used to measure the internal consistency reliability. The Cronbach's coefficient alpha (α) ranges between 0.00 and 1.00 as shown in Table 3.2. The higher values reflects a higher degree of internal consistency and value above 0.70 are known as acceptable (George and Mallery, 2003).

Table 3.2: Cronbach's Alpha Value (George and Mallery, 2003)

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

3.8.2 Validity Test

Burton and Mazerolle (2011) describe validity as “the success of an instrument in measuring the construct it is developed to measure”. In order to ensure content validity, the questionnaire is adopted from multiple sources.

For construct validation, Kaiser-Meyer-Olkin (KMO) test is used to measure the homogeneity of variables. Whereas, Bartlett's test of sphericity is used to test for the correlation among the variables used (Field, 2009).

The KMO represents the ratio of the squared correlation between variables to the squared partial correlation between variables. KMO values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Field, 2009).

Bartlett’s test tells whether the correlation matrix is significantly different from an identity matrix. Thus, if it is significant then it shows that the correlations between variables are overall significantly different from zero (Field, 2009).

3.9 Data Analysis

According to Boone and Boone (2012), data from summated Likert scale are considered as interval even though data from individual Likert-type item are treated as ordinal. Likert scale items are created by calculating sum or mean from four or more type Likert-type items. Hence, Likert scale items in this research are combined

into a single composite score and are analysed at the interval measurement scale. Parametric methods is suggested to analyse interval Likert scale data (Boone & Boone, 2012).

Descriptive analysis is “a set of concept and method used in organising, summarising, tabulating, describing collections of data”. This tells what happened in the study and makes clear any trends and patterns (Zikmund, Babin, Carr, and Griffin, 2003).

Inferential analysis is about the characteristic of the population from the information of samples (Collis & Hussey, 2003).

3.9.1 Descriptive Analysis

Frequency distribution is tabulation of number of individuals and shows the values (numbers and percentages) for the different categories of a single categorical variable (Zikmund et al., 2003).

For questions where the respondents rate the stakeholder and methods by using Likert scale, the ranking using the arithmetic mean scores and standard deviation would be tabulated to describe the distribution. The highest mean would indicate that respondents are more likely to have the same opinion about that variable (Zikmund et al., 2003).

3.9.2 Multivariate Analysis of Variance (MANOVA)

Multivariate analysis of variance (MANOVA) is a statistical technique that is similar to Analysis of Variance (ANOVA). Hair, Anderson, Tatham, and Black (1992) explain that, in ANOVA, the values of dependent variables are separated into groups corresponding to each value of the independent variable. F-statistic evaluates the effect of independent variable on dependent variable. High F value indicates significance, while a low F value indicates insignificance. Unlike ANOVA, MANOVA is used to test if the independent variable has an effect on two or more dependent variables. In MANOVA, the equivalent to the F statistic is the Wilks Lambda statistic (Hair et al., 1992).

3.9.3 Pearson's Correlation Analysis

Pearson's correlation coefficient is used to determine the strength of a linear relationship between two variables whether there are positive, negative or no relationship between the independent variables and dependent variable in this study. The correlation coefficient is ranges from -1.00 to 1.00, with 0 representing absolutely no systematic association between two variables (Zikmund et al., 2003). The result of 1.0 indicates a perfect positive relationship. While result of -1.0, it indicates a perfect negative relationship (Table 3.3) (Hair, Bush & Ortinau, 2003).

Table 3.3: Correlation Coefficient Range (Hair, Bush & Ortinau, 2003)

Correlation Coefficient	Strength of Correlation
± 0.81 ± 1.00	Very strong
± 0.61 ± 0.80	Strong
±0.41 ± 0.60	Moderate
± 0.21 ± 0.40	Weak
± 0.00 ± 0.20	None

3.9.4 Multiple Regressions

Multiple regressions is used to find out the relationship between independent variables and dependent variable. As the relationship between multiple independent variables (stakeholder identification, stakeholder engagement and stakeholder management) and one dependent variable (sustainable event management) are to be tested, multiple regression technique are incorporated (Sekaran, 2003). The general equation of the multiple regression is as follow:

$$Y= a + \beta1X1+\beta2X2 + \beta3X3 +…..+\beta nXn$$

where

"Y = dependent variable

a = intercept or constant

β = coefficient associated with the predictor variables

X(s) = predictors (independent) variable(s) that influence the dependent variable".

Sekaran (2003) explains that:

> "*The p-value is compared to some alpha level in testing the null hypothesis. The test will be significant if the p-value is less than 0.05. The beta*

coefficient is used to determine which independent variables have the most influence on the dependent variables. Besides, F-test is a procedure for comparing one sample variance to another sample variance and large F-value indicates that the result is statistically significant. In addition, R is the correlation of the independent variables with the dependent variable and R^2 *is used to determine the strength of the relationship between all the independent variables collectively and the dependent variable."*

The results and analysis of this study would be discussed in Chapter 4 and Chapter 5.

CHAPTER 4

RESULTS

4.1 Respond Rate

In pilot study, a total of 42 questionnaires are distributed to get 30 responses returned from both google form and hard copies, showing response rate of 71%. The remaining 70 responses are collected from a total of 103 questionnaires distributed via google form, showing response rate of 68%.

4.2 Respondent Background

The respondents' background including their current role in the project team, nature of their organisation, working experience in STEM educational events, number of projects that their experience contain and their stakeholder management practice are summarised (Table 4.1).

The majority of the respondents are project team members which contributes 73%, followed by 11% of respondents are the project manager. Owner/sponsor and contractor/supplier are 10% and 6% respectively. There are 76% of respondents are from private sector and the remaining 24% are from public sector.

The respondents with less than 5 years of experience in STEM educational events contributes 67%, followed by 5 to less than 10 years are 28%. Next, experience of 10 to less than 15 years forms 4%. There are only 1% of them have experience of more than 15 years.

The majority of the respondents have involved in less than 5 projects. The second higher is 5 to 10 projects by 27% respondents. There are 6% of them have involved in more than 15 projects. While there are 4% of the respondents have involved in 11 to 15 projects.

There are 54% of respondents indicate that they have practiced stakeholder management by established procedure in formal ways and 30% of them have practiced by established procedure in mind. The remaining of 16% respondents have not applied established procedure. Furthermore, there are 82% of respondents express that they do not use any stakeholder management software application which only 18% of them has used.

Table 4.1: Respondent Background

	Construct	Frequency	Percentage (%)
(1)	Current role in the team		
	Project manager	11	11
	Project team member	73	73
	Contractor/Supplier	6	6
	Owner/Sponsor	10	10
(2)	Nature of organisation		
	Public	24	24
	Private	76	76
(3)	Working experience in STEM educational events:		
	Less than 5 years	67	67
	5 – less than 10 years	28	28
	10 – less than 15 years	4	4
	More than 15 years	1	1
(4)	Number of projects that experience contain		
	Less than 5	63	63
	5 – 10	27	27
	11 – 15	4	4
	More than 15	6	6
(5)	Stakeholder management practice		
	Established procedure in formal ways	54	54
	Established procedure in mind	30	30
	No established procedure	16	16
(6)	Using of any stakeholder management software application		
	Yes	18	18
	No	82	82

4.3 Reliability test

The results of the reliability test in Table 4.2 shows that four constructs obtained more than 0.9 of alpha value, indicating high level of consistency as excellent. Whereas there are two constructs are good with more than 0.8 of alpha value. Another two constructs have value more than 0.7 with acceptable internal consistency. Overall, Cronbach's alpha values for all the constructs go beyond the minimum acceptance value of 0.70, therefore, the results of Cronbach's alpha analysis show that the questionnaire is reliable.

Table 4.2: Result of Reliability Test

Construct	Cronbach's Alpha	Number of items	Internal Consistency
Stakeholders	0.919	10	Excellent
Stakeholder Management Approaches	0.909	19	Excellent
Challenges	0.934	10	Excellent
Best practice	0.892	6	Good
Stakeholder Identification	0.739	3	Acceptable
Stakeholder Engagement	0.727	3	Acceptable
Stakeholder Management	0.839	3	Good
Sustainable Event Management	0.941	7	Excellent

4.4 Validity test

The test of Kaiser-Meyer-Olkin Measure of Sampling Adequacy is done and all the values are above 0.50. The Bartlett's test shows significant results for all questions. Hence, the instrument is used for data collection. Table 4.3 summarises the results of validity test.

Table 4.3: Result of Validity Test

Construct	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx Chi-Square	df	Sig.
Stakeholders	0.744	223.101	45	0.000
Stakeholder Management Approaches	0.613	396.666	171	0.000
Challenges	0.727	277.458	45	0.000
Best practice	0.851	98.507	15	0.000
Stakeholder Identification	0.644	22.087	3	0.000
Stakeholder Engagement	0.560	29.254	3	0.000
Stakeholder Management	0.666	36.624	3	0.000
Sustainable Event Management	0.864	185.721	21	0.000

4.5 Stakeholder

The respondents agree that the stakeholders from highest to lowest consist of government authorities, public/community, organiser/owner, team member, sponsor, client, media, local councils, supplier and contractor. The results are shown in Table 4.4. Government authorities play an important role that they usually start the initiatives on STEM related programmes and they are responsible of applying laws and regulations in the industry (Hraisha, 2014).

Table 4.4: Stakeholders

Stakeholder	Mean	Standard Deviation	Rating scale	Rank
Government authorities	4.30	0.823	Agree	1
Public/Community	4.27	0.839	Agree	2
Organiser/Owner	4.24	0.780	Agree	3
Team Member	4.19	0.873	Agree	4
Sponsor	4.14	0.865	Agree	5
Client	4.14	0.921	Agree	6
Media	4.14	0.932	Agree	7
Local councils	4.14	0.975	Agree	8
Supplier	4.00	1.005	Agree	9
Contractor	3.92	0.939	Neutral	10

4.6 Stakeholder Management Approaches

The respondents prefer to identify project stakeholders based on their “personal past experience”. The other approaches that respondents consider appropriate are “referring to guidelines in the organisation”, “professional services,” “directed by higher authorities” and “asking other stakeholders or through interviews”. “Public engagement methods” with mean 3.99 falls under neutral are near to mean value 4 indicating agree. The results are shown in Table 4.5.

Table 4.5: Methods to identify project stakeholders

Methods	Mean	Standard Deviation	Rating scale	Rank
Personal past experience	4.30	0.732	Agree	1
Guidelines in the organisation	4.17	0.739	Agree	2
Professional services	4.10	0.759	Agree	3
Directed by higher authorities	4.05	0.757	Agree	4
Asking other stakeholders/Interviews	4.00	0.853	Agree	5
Public engagement methods	3.99	0.785	Neutral	6

Whereas, for project stakeholder engagement, respondents rank walking tour/site tour as the most effective approach of stakeholder engagement. Having stakeholders for workshops, media, meetings, negotiations and public engagement are considered effective approaches, as they have mean value more than 4. The remaining approaches are ranked lower. They are generally appropriate as the mean are more than 3 (neutral). The results are shown in Table 4.6.

Table 4.6: Methods to engage stakeholders

Methods	Mean	Std. Deviation	Rating scale	Rank
Walking tour/site tour	4.11	0.790	Agree	1
Workshops	4.08	0.787	Agree	2
Media	4.07	0.807	Agree	3
Meetings	4.05	0.796	Agree	4
Negotiations	4.04	0.942	Agree	5
Public engagement	4.02	0.752	Agree	6
Social Interaction	3.93	0.714	Neutral	7
Website	3.88	0.832	Neutral	8
Interviews	3.80	0.682	Neutral	9
Intranet	3.79	0.782	Neutral	10
Email/Fax	3.79	0.924	Neutral	11
Phone	3.65	1.086	Neutral	12
Questionnaires	3.36	0.882	Neutral	13

4.7 Challenges

Among the ten challenges listed in Table 4.7, five challenges has been agreed and ranked by respondents with mean value more than 4, they are limited capacity, time consuming/ poor time management, wild/unrealistic expectations, limited/poor understanding of issues and high cost of management. The remaining five challenges consist of limited/poor commitment, conflicting/varied interests and opinions, beliefs and orientations, poor documentation memory due to high staff turnover, hidden stakeholders and personal gains seeking are ranked lower as the mean are more than 3 (neutral).

Table 4.7: Challenges

Challenges	Mean	Standard Deviation	Rating scale	Rank
Limited capacity	4.08	0.720	Agree	1
Time consuming/ poor time management	4.06	0.722	Agree	2
Wild/unrealistic expectations	4.04	0.864	Agree	3
Limited/poor understanding of issues	4.02	0.791	Agree	4
High cost of management	4.00	0.791	Agree	5
Limited/poor commitment	3.97	0.771	Neutral	6
Conflicting/varied interests and opinions, beliefs and orientations	3.95	0.845	Neutral	7
Poor documentation memory due to high staff turn over	3.88	0.756	Neutral	8
Hidden stakeholders	3.70	0.847	Neutral	9
Personal gains seeking	3.67	0.888	Neutral	10

4.8 Best Practice

Among the six best practice listed in Table 4.8, generally the respondents agree that these are appropriate practice. “Integration of communication” has the highest score. Then, followed by “true collaborators instead of the unproductive pseudo competition among the organisations”, “providing brief, easy-to-understand informational materials at the beginning of engagement”, “choosing and engaging the target group”, “a combination of several stakeholder analysis and engagement methods according to the project characteristics” and “establishing lesson learnt database”.

Table 4.8: Best Practice

Best Practice	Mean	Standard Deviation	Rating scale	Rank
Integration of communication	4.14	0.711	Agree	1
True collaborators instead of the unproductive pseudo competition among the organisations	4.12	0.671	Agree	2
Providing brief, easy-to-understand informational materials at the beginning of engagement	4.11	0.723	Agree	3
Choosing and engaging the target group	4.10	0.611	Agree	4
A combination of several stakeholder analysis and engagement methods according to the project characteristics	4.04	0.634	Agree	5
Establishing lesson learnt database	4.03	0.643	Agree	6

4.9 Multivariate Analysis of Variance (MANOVA)

4.9.1 Current Role of the Respondents in the Team

MANOVA is used to test whether or not the role of respondents has a significant effect on stakeholder management processes (Fellows & Liu, 2008).

$H1_0$: There is no significant difference between current role of the respondents and stakeholder management processes.

$H1_A$: There is a significant difference between current role of the respondents and stakeholder management processes.

Levene's test is used to test if samples have equal variances, assuming that variances are equal across groups or samples (Field, 2009). As in Table 4.9, test for homogeneity of variances is not significant. The value of p is greater than 0.05. Thus it unable to accept H_A due to there is little evidence that the variances are not equal. This indicates that the homogeneity of variances assumption is met.

Table 4.9: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Stakeholder identification	0.193	3	96	**0.901**
Stakeholder engagement	0.545	3	96	**0.652**
Stakeholder management	2.567	3	96	**0.059**

Besides mean and variance, descriptive statistics in Table 4.10 shown the total number of the cell size (N). The four groups of role do not have approximately equal cell sizes.

Table 4.10: Descriptive Statistics

	Role	Mean	Std. Deviation	N
Stakeholder identification	Project Manager	3.9091	0.70065	**11**
	Project team member	4.1644	0.62391	**73**
	Contractor/Supplier	4.1667	0.75277	**6**
	Owner/Sponsor	4.0000	0.66667	**10**
	Total	4.1200	0.64008	100
Stakeholder engagement	Project Manager	3.8182	0.60302	**11**
	Project team member	4.1370	0.65224	**73**
	Contractor/Supplier	4.3333	0.81650	**6**
	Owner/Sponsor	4.0000	0.66667	**10**
	Total	4.1000	0.65905	100
Stakeholder management	Project Manager	4.0000	0.77460	**11**
	Project team member	4.0959	0.60471	**73**
	Contractor/Supplier	4.5000	0.83666	**6**
	Owner/Sponsor	3.5000	0.97183	**10**
	Total	4.0500	0.70173	100

As shown in Table 4.11, the F-test is significant where $F = 2.384$, $p < 0.05$; Wilk's $\Lambda = 0.804$, multivariate $\eta^2 = 0.070$. This significant F value indicates that there are significant differences among stakeholder management processes. The multivariate $\eta^2 = .0.070$ indicates that approximately 7% of multivariate variance of the dependent variables is associated with the group factor.

Table 4.11: Multivariate Tests

Effect[a]		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Intercept	Pillai's Trace	0.958	705.961[b]	3.000	94.000	0.000	0.958	2117.883	1.000
	Wilks' Lambda	0.042	705.961[b]	3.000	94.000	0.000	0.958	2117.883	1.000
	Hotelling's Trace	22.531	705.961[b]	3.000	94.000	0.000	0.958	2117.883	1.000
	Roy's Largest Root	22.531	705.961[b]	3.000	94.000	0.000	0.958	2117.883	1.000
Role	Pillai's Trace	0.202	2.313	9.000	288.000	0.016	0.067	20.813	0.907
	Wilks' Lambda	**0.804**	**2.384**	9.000	228.922	**0.013**	**0.070**	17.255	0.829
	Hotelling's Trace	0.236	2.428	9.000	278.000	0.011	0.073	21.849	0.922
	Roy's Largest Root	0.197	6.307[c]	3.000	96.000	0.001	0.165	18.921	0.961

a. Design: Intercept + Role
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.
d. Computed using alpha = 0.05

Table 4.12 demonstrates univariate ANOVAs which is also known as multiple one-way ANOVA's as a follow-up. The purpose is to determine how the dependent variables differ for the independent variable. The p-value is more than 0.05 for stakeholder identification F = 0.636 and stakeholder engagement F = 1.077. Hence, this indicates that in this case, unable to accept H_A, thus there is no significant difference between current role of the respondents and stakeholder identification and stakeholder engagement. It is failed to observe a difference between any of the means. For stakeholder management, it is significantly affected by the roles that $F = 3.192$, $p < 0.05$.

Table 4.12: Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Corrected Model	SI	.790[a]	3	0.263	0.636	0.594	0.019	1.907	0.179
	SE	1.400[b]	3	0.467	1.077	0.363	0.033	3.231	0.283
	SM	4.421[c]	3	1.474	3.192	0.027	0.091	9.575	0.721
Intercept	SI	710.370	1	710.370	1714.755	0.000	0.947	1714.755	1.000
	SE	714.607	1	714.607	1649.100	0.000	0.945	1649.100	1.000
	SM	697.807	1	697.807	1511.195	0.000	0.940	1511.195	1.000
Role	SI	0.790	3	0.263	**0.636**	**0.594**	0.019	1.907	0.179
	SE	1.400	3	0.467	**1.077**	**0.363**	0.033	3.231	0.283
	SM	4.421	3	1.474	**3.192**	**0.027**	0.091	9.575	0.721
Error	SI	39.770	96	0.414					
	SE	41.600	96	0.433					
	SM	44.329	96	0.462					
Total	SI	1738.000	100						
	SE	1724.000	100						
	SM	1689.000	100						
Corrected Total	SI	40.560	99						
	SE	43.000	99						
	SM	48.750	99						

a. R Squared = 0.019 (Adjusted R Squared = -0.011)
b. R Squared = 0.033 (Adjusted R Squared = 0.002)
c. R Squared = 0.091 (Adjusted R Squared = 0.062)
d. Computed using alpha = 0.05

Table 4.13: Estimated Marginal Means

Role					
Dependent Variable	Role	Mean	Standard Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Stakeholder identification	Project Manager	3.909	0.194	3.524	4.294
	Project team member	4.164	0.075	4.015	4.314
	Contractor/Supplier	4.167	0.263	3.645	4.688
	Owner/Sponsor	4.000	0.204	3.596	4.404
Stakeholder engagement	Project Manager	3.818	0.198	3.424	4.212
	Project team member	4.137	0.077	3.984	4.290
	Contractor/Supplier	4.333	0.269	3.800	4.867
	Owner/Sponsor	4.000	0.208	3.587	4.413
Stakeholder management	Project Manager	4.000	0.205	3.593	4.407
	Project team member	4.096	0.080	3.938	4.254
	Contractor/Supplier	4.500	0.277	3.949	5.051
	Owner/Sponsor	3.500	0.215	3.073	3.927

The significant ANOVA can be followed up with Tukey's HSD post-hoc test, as shown in the Multiple Comparisons Table 4.14, **o**nce the dependent variable that is significantly affected by the independent variables is identified, then the test can be proceeded further to figure out the levels of the independent variable differ from one another on each of the separate dependent variables. Table 4.14 shows that for mean scores for Stakeholder management are statistically significantly different between contractor/supplier and owner/sponsor ($p < 0.05$). These differences can be easily visualised by Table 4.12 and plot in Figure 4.1.

Table 4.14: Multiple Comparisons with Tukey's HSD post-hoc test

Tukey HSD

Dependent Variable	(I) Role	(J) Role	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Stakeholder identification	Project Manager	Project team member	-0.2553	0.20817	0.612	-0.7996	0.2890
		Contractor/Supplier	-0.2576	0.32666	0.860	-1.1117	0.5965
		Owner/Sponsor	-0.0909	0.28123	0.988	-0.8262	0.6444
	Project team member	Project Manager	0.2553	0.20817	0.612	-0.2890	0.7996
		Contractor/Supplier	-0.0023	0.27335	1.000	-0.7170	0.7124
		Owner/Sponsor	0.1644	0.21703	0.873	-0.4031	0.7318
	Contractor/ Supplier	Project Manager	0.2576	0.32666	0.860	-0.5965	1.1117
		Project team member	0.0023	0.27335	1.000	-0.7124	0.7170
		Owner/Sponsor	0.1667	0.33237	0.959	-0.7024	1.0357
	Owner/ Sponsor	Project Manager	0.0909	0.28123	0.988	-0.6444	0.8262
		Project team member	-0.1644	0.21703	0.873	-0.7318	0.4031
		Contractor/Supplier	-0.1667	0.33237	0.959	-1.0357	0.7024
Stakeholder engagement	Project Manager	Project team member	-0.3188	0.21291	0.443	-0.8755	0.2379
		Contractor/Supplier	-0.5152	0.33409	0.417	-1.3887	0.3584
		Owner/Sponsor	-0.1818	0.28762	0.921	-0.9338	0.5702
	Project team member	Project Manager	0.3188	0.21291	0.443	-0.2379	0.8755
		Contractor/Supplier	-0.1963	0.27957	0.896	-0.9273	0.5346
		Owner/Sponsor	0.1370	0.22197	0.926	-0.4434	0.7173
	Contractor/ Supplier	Project Manager	0.5152	0.33409	0.417	-0.3584	1.3887
		Project team member	0.1963	0.27957	0.896	-0.5346	0.9273
		Owner/Sponsor	0.3333	0.33993	0.761	-0.5555	1.2221
	Owner/ Sponsor	Project Manager	0.1818	0.28762	0.921	-0.5702	0.9338
		Project team member	-0.1370	0.22197	0.926	-0.7173	0.4434
		Contractor/Supplier	-0.3333	0.33993	0.761	-1.2221	0.5555
Stakeholder management	Project Manager	Project team member	-0.0959	0.21978	0.972	-0.6705	0.4787
		Contractor/Supplier	-0.5000	0.34487	0.472	-1.4017	0.4017
		Owner/Sponsor	0.5000	0.29691	0.338	-0.2763	1.2763
	Project team member	Project Manager	0.0959	0.21978	0.972	-0.4787	0.6705
		Contractor/Supplier	-0.4041	0.28859	0.502	-1.1587	0.3504
		Owner/Sponsor	0.5959	0.22913	0.052	-0.0032	1.1950
	Contractor/ Supplier	Project Manager	0.5000	0.34487	0.472	-0.4017	1.4017
		Project team member	0.4041	0.28859	0.502	-0.3504	1.1587
		Owner/Sponsor	1.0000*	0.35091	**0.027**	0.0825	1.9175
	Owner/ Sponsor	Project Manager	-0.5000	0.29691	0.338	-1.2763	0.2763
		Project team member	-0.5959	0.22913	0.052	-1.1950	0.0032
		Contractor/Supplier	-1.0000*	0.35091	**0.027**	-1.9175	-0.0825

Based on observed means.
The error term is Mean Square (Error) = 0.462.
*. The mean difference is significant at the 0.05 level.

Figure 4.1: Estimated Marginal Means of Stakeholder Management

4.9.2 Practice of the Respondents in the Team

In order to test whether or not the practice of the respondents has a significant effect on stakeholder management processes.

$H2_0$: There is no significant difference between practice of the respondents and stakeholder management processes.

$H2_A$: There is a significant difference between practice of the respondents and stakeholder management processes.

Results in Table 4.15 show that the test for homogeneity of variances is significant for stakeholder identification and engagement (p is less than $\alpha = 0.05$) then H_0 is rejected that the variances are equal. It is not significant for stakeholder management (p is greater than $\alpha = 0.05$) and unable to accept H_A implying that there is little evidence that the variances are not equal. This indicates that the homogeneity of variances assumption is met.

Table 4.15: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Stakeholder identification	4,.707	2	97	**0.011**
Stakeholder engagement	4.588	2	97	**0.012**
Stakeholder management	0.691	2	97	**0.053**

Besides mean and variance, Descriptive Statistics Table 4.16 show the total number of the cell size (N). They do not have approximately equal cell sizes.

Table 4.17 the test is a non-significant result $F = 0.925$, p is more than 0.05; Wilk's $\Lambda = 0.944$, multivariate $\eta^2 = 0.028$. Practice demonstrated that the p-value (level of significance) is more than 0.05 for all stakeholder management processes. Hence, this indicates that in this case, unable to accept H_A, thus there is no significant difference between practice of the respondents and stakeholder management processes. As it is not statistically significant, hence the multiple comparisons output gives the results of the Post-Hoc tests would not be proceeded. It is failed to observe a difference between any of the means.

Table 4.16: Descriptive Statistics

	Stakeholder management practice	Mean	Std. Deviation	N
Stakeholder identification	No established procedure	4.1875	0.65511	16
	Established procedure in formal ways	4.1667	0.69364	54
	Established procedure in mind	4.0000	0.52523	30
	Total	4.1200	0.64008	100
Stakeholder engagement	No established procedure	4.1875	0.83417	16
	Established procedure in formal ways	4.1481	0.65610	54
	Established procedure in mind	3.9667	0.55605	30
	Total	4.1000	0.65905	100
Stakeholder management	No established procedure	4.0000	0.89443	16
	Established procedure in formal ways	4.0741	0.66876	54
	Established procedure in mind	4.0333	0.66868	30
	Total	4.0500	0.70173	100

Table 4.17: Multivariate Tests

Effect[a]		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Intercept	Pillai's Trace	0.976	1313.596[b]	3.000	95.000	0.000	0.976	3940.788	1.000
	Wilks' Lambda	0.024	1313.596[b]	3.000	95.000	0.000	0.976	3940.788	1.000
	Hotelling's Trace	41.482	1313.596[b]	3.000	95.000	0.000	0.976	3940.788	1.000
	Roy's Largest Root	41.482	1313.596[b]	3.000	95.000	0.000	0.976	3940.788	1.000
Stakeholder management practice	Pillai's Trace	0.056	0.923	6.000	192.000	0.480	0.028	5.535	0.360
	Wilks' Lambda	**0.944**	**0.925[b]**	**6.000**	**190.000**	**0.478**	**0.028**	5.549	0.361
	Hotelling's Trace	0.059	0.927	6.000	188.000	0.477	0.029	5.561	0.362
	Roy's Largest Root	0.057	1.837[c]	3.000	96.000	0.146	0.054	5.511	0.464

a. Design: Intercept + SMpractice
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.
d. Computed using alpha = 0.05

4.10 Correlations

Pearson product-moment correlation coefficient, r is used for the testing of hypotheses H3, H4 and H5. The correlation coefficient squared (coefficient of determination, R^2) is a measure of the amount of variability in one variable that is shared by the other (Field, 2009). In order to study the validity of this test, assumption of normality is met that have a skewness near zero (Table 4.18).

Table 4.18: Descriptive Statistics

	N	Mean	Skewness	
	Statistic	Statistic	Statistic	Std. Error
Stakeholder identification	100	11.9500	**0.154**	0.241
Stakeholder engagement	100	12.1700	**0.017**	0.241
Stakeholder management	100	12.2000	**-0.230**	0.241
Sustainable event management	100	27.7900	**0.083**	0.241
Valid N (listwise)	100			

The results are shown in Table 4.19. Stakeholder identification is found to be significant at 1% level with sustainable event management, $r = 0.651$, $p<0.001$. This results reflects a positively strong and significant correlation. A scatterplot summarizes the results with $R^2 = 0.424$ (Figure 4.2). The hypothesis $H3_A$ is accepted.

Stakeholder engagement is found to be significant at 1% level with sustainable event management, $r = 0.803$, $p<0.001$. This results reflects a positively strong and significant correlation. A scatterplot summarizes the results $R^2 = 0.645$ (Figure 4.3). The hypothesis $H4_A$ is accepted.

Stakeholder management is found to be significant at 1% level with sustainable event management, $r = 0.887$, $p<0.001$. This results reflects a positively strong and significant correlation. The value of this correlation coefficient ($r = 0.887$) falls under range of $\pm 0.81 \pm 1.00$, the relationship between stakeholder management and sustainable event management is very strong. A scatterplot summarizes the results $R^2 = 0.787$ (Figure 4.4). The hypothesis $H5_A$ is accepted.

Table 4.20 shows that 3 null hypotheses are rejected ($p<0.001$). This finding suggests that there are correlation between stakeholder identification, stakeholder engagement and stakeholder management and sustainable event management.

Table 4.19: Correlations

		Stakeholder identification	Stakeholder engagement	Stakeholder management	Sustainable event management
Stakeholder identification	Pearson Correlation	1	0.600**	0.580**	0.651**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	100	100	100	100
Stakeholder engagement	Pearson Correlation	0.600**	1	0.807**	0.803**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	100	100	100	100
Stakeholder management	Pearson Correlation	0.580**	0.807**	1	0.887**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	100	100	100	100
Sustainable event management	Pearson Correlation	0.651**	0.803**	0.887**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.20: Results of Pearson's Correlation Coefficient Test

	Hypothesis				
	H_0		H_A		Coefficient
H3	There is no correlation between stakeholder identification and sustainable event management.	Rejected	There is correlation between stakeholder identification and sustainable event management.	Accepted	0.651
H4	There is no correlation between stakeholder engagement and sustainable event management.	Rejected	There is correlation between stakeholder engagement and sustainable event management.	Accepted	0.803
H5	There is no correlation between stakeholder management and sustainable event management.	Rejected	There is correlation between stakeholder management and sustainable event management.	Accepted	0.887

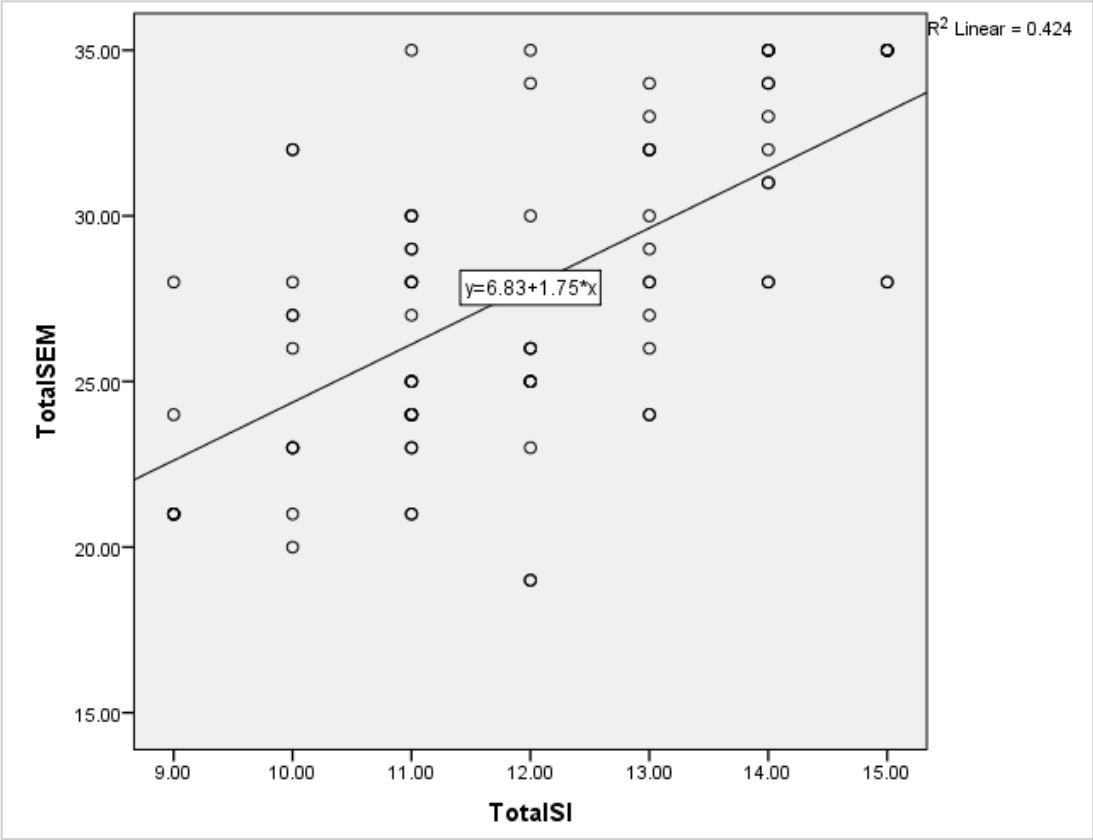

Figure 4.2: Scatterplot of Stakeholder identification

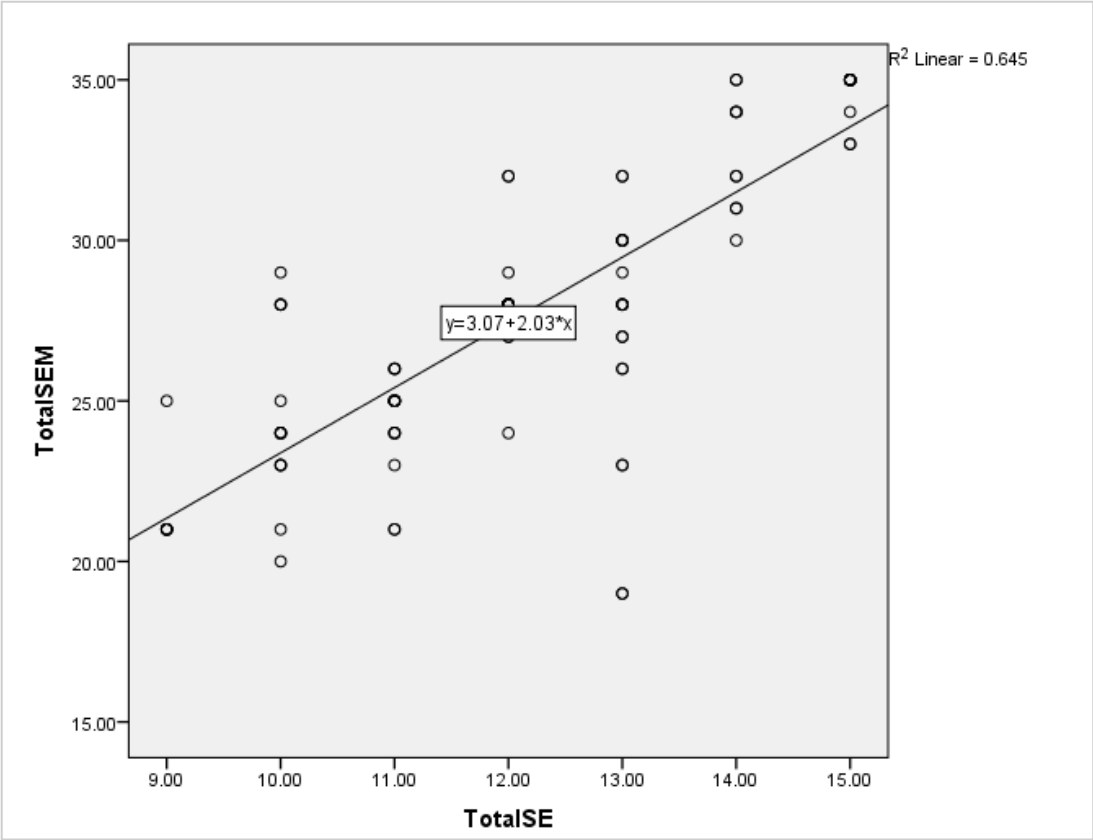

Figure 4.3: Scatterplot of Stakeholder engagement

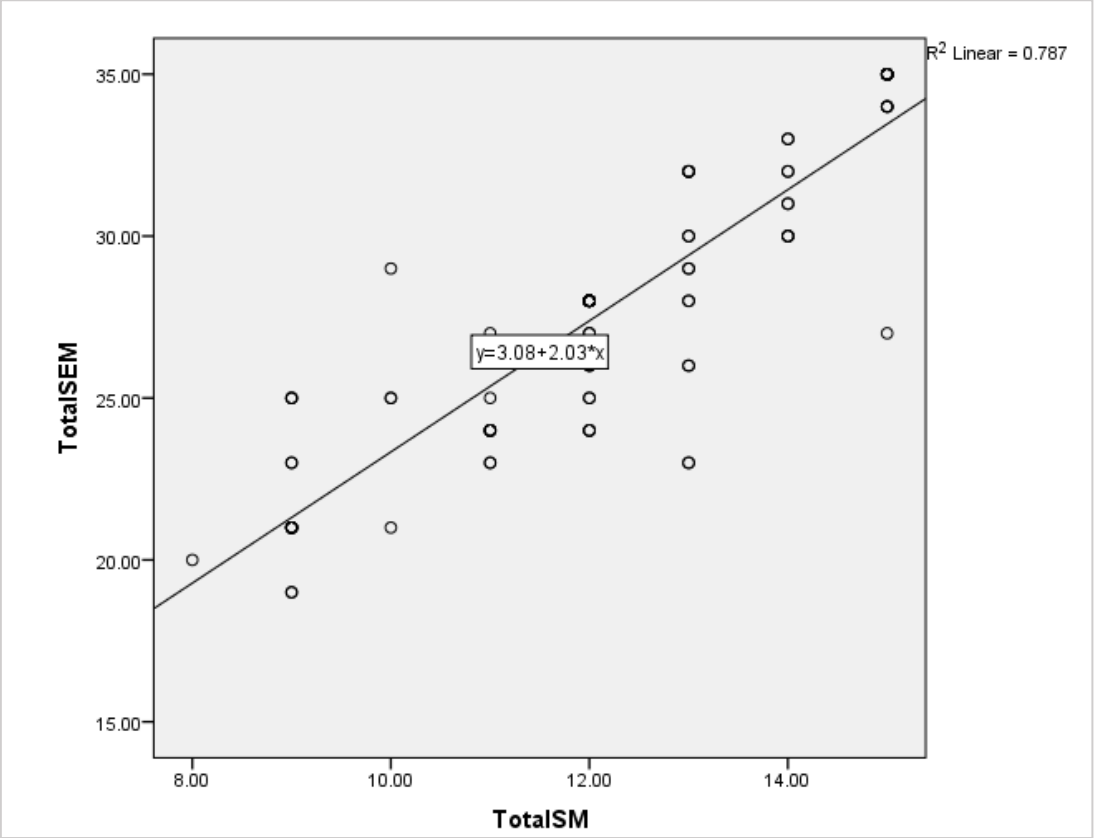

Figure 4.4: Scatterplot of Stakeholder management

4.11 Multiple Regression

Prior to test H6, there are several assumptions about the relationships between the dependent and independent variables that affect the statistical procedure (least square) used for multiple regression. The assumptions are examined in seven areas consist of dealing with outliers, collinearity of data, independent errors, random normal distribution of errors, homoscedasticity & linearity of data, and non-zero variances (Hair et al., 1992).

i. Outliers

An analysis of standard residuals is carried out, which Table 4.26 shows that the data contained no outliers (standard residual minimum = -2.243, standard residual maximum = 2.903). There are no values equal or over 3.29, or less than or equal to -3.29.

ii. Collinearity

Table 4.24 shows that the data meets the assumption of collinearity indicated that multicollinearity is not a concern (stakeholder identification, Tolerance = 0.574, VIF = 1.742; stakeholder engagement, Tolerance = 0.419, VIF = 2.387; stakeholder management, Tolerance = 0.367, VIF = 2.722).

iii. Independent Errors

The data meets the assumption of independent errors (Table 4.22), Durbin-Watson value = 2.462.

iv. Random Normally Distributed Errors & Homoscedasticity & Linearity

The data meets the assumption of normally distributed residuals. The histogram of standardised residuals in Figure 4.5, indicates that the data contained approximately normally distributed errors, as the normal P-P plot of standardised residuals, which shows points that are not completely on the line, but close, is observed in Figure 4.6. The scatterplot of standardised predicted scatterplot of standardised residuals in Figure 4.7 shows that the data meets the assumptions of homogeneity of variance and linearity.

v. Non-Zero Variances

The data also meets the assumption of non-zero variances (Identification, Variance = 0.410; Engagement, Variance = 0.423; Management, Variance = 0.492; Sustainable event management, Variance = 0.454) as in Table 4.27.

Using the enter method (Table 4.21), it is found that stakeholder identification, stakeholder engagement and stakeholder management explain a significant amount of the variance in the sustainable event management.

Table 4.22 shows the result of the regression analysis where 61% of the variance in sustainable event management is explained by the three independent variables (stakeholder identification, stakeholder engagement and stakeholder management) as R^2 is 0.614 and R^2_{adjusted} is 0.601. Besides that, Table 4.23 indicates that the F value of 50.806 is significant at the level of 0.05. Table 4.24 shows stakeholder identification is significant at 0.035 (t-value = 2.134, $p<0.05$), stakeholder engagement is significant at 0.000 (t-value = 3.786, $p<0.05$) and stakeholder management is significant at 0.002 (t-value = 3.149, $p<0.05$). This shows that stakeholder identification, stakeholder engagement and stakeholder management have a significant positive impact on sustainable event management. Thus, H6 is supported. In addition, Table 4.24 also shows that stakeholder engagement has the strongest impact on sustainable event management ($\beta = 0.371$). Hence, the analysis shows that stakeholder identification, stakeholder engagement and stakeholder management significantly predict value of sustainable event management. The following equation is formed:

SEM= 0.419 + 0.188SI + 0.379SE + 0.316SM

where

SEM = sustainable event management

SI = stakeholder identification

SE = stakeholder engagement

SM = stakeholder management

Table 4.21: Variables Entered/Removed

Model	Variables Entered[a]	Variables Removed	Method
1	Management, Identification, Engagement[b]	.	**Enter**

a. Dependent Variable: Sustainable event management
b. All requested variables entered.

Table 4.22: Model Summary

Model[b]	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.783[a]	**0.614**	**0.601**	0.42519	**2.462**

a. Predictors: (Constant), Management, Identification, Engagement
b. Dependent Variable: sustainable event management

Table 4.23: ANOVA Test

Model[a]		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.555	3	9.185	**50.806**	0.000[b]
	Residual	17.355	96	0.181		
	Total	44.910	99			

a. Dependent Variable: sustainable event management
b. Predictors: (Constant), Management, Identification, Engagement

Table 4.24: Coefficients

Model[a]		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	**0.419**	0.309		**1.357**	0.178		
	Mean SI	**0.188**	0.088	0.179	**2.134**	**0.035**	**0.574**	**1.742**
	Mean SE	**0.379**	0.100	**0.371**	**3.786**	**0.000**	**0.419**	**2.387**
	Mean SM	**0.316**	0.100	0.330	**3.149**	**0.002**	**0.367**	**2.722**

a. Dependent Variable: sustainable event management

Table 4.25: Collinearity Diagnostics

Model[a]	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Identification	Engagement	Management
1	1	3.967	1.000	0.00	0.00	0.00	0.00
	2	0.016	15.757	0.76	0.00	0.07	0.17
	3	0.010	19.502	0.15	0.90	0.20	0.01
	4	0.006	25.090	0.09	0.09	0.73	0.82

a. Dependent Variable: sustainable event management

Table 4.26: Residuals Statistics

[a]	Minimum	Maximum	Mean	Standard Deviation	N
Predicted Value	2.7536	4.8374	4.0300	0.52757	100
Residual	-0.95369	1.23438	0.00000	0.41870	100
Std. Predicted Value	-2.419	1.530	0.000	1.000	100
Std. Residual	**-2.243**	**2.903**	0.000	0.985	100

a. Dependent Variable: sustainable event management

Table 4.27: Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation	Variance
Mean SI	100	3.00	5.00	4.1200	0.64008	0.410
Mean SE	100	3.00	5.00	4.1000	0.65905	0.434
Mean SM	100	2.00	5.00	4.0500	0.70173	0.492
Mean SEM	100	3.00	5.00	4.0300	0.67353	0.454
Valid N (listwise)	100					

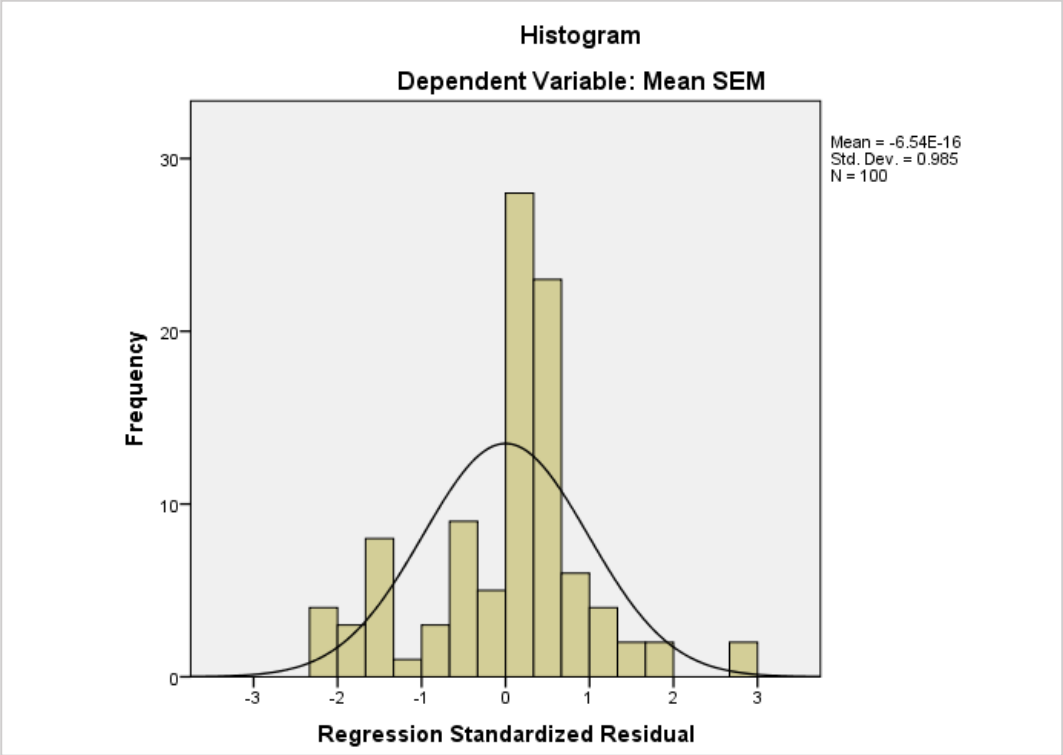

Figure 4.5: Histogram of Standardised Residuals

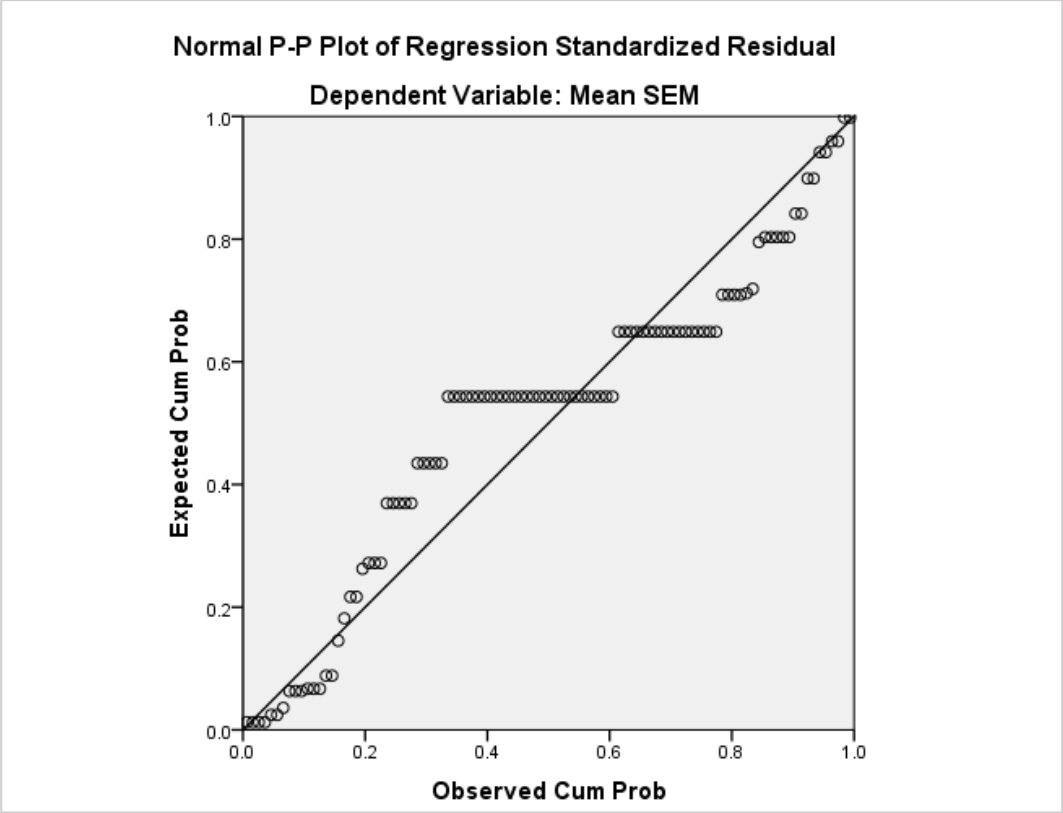

Figure 4.6: Normal P-P plot of standardised residuals

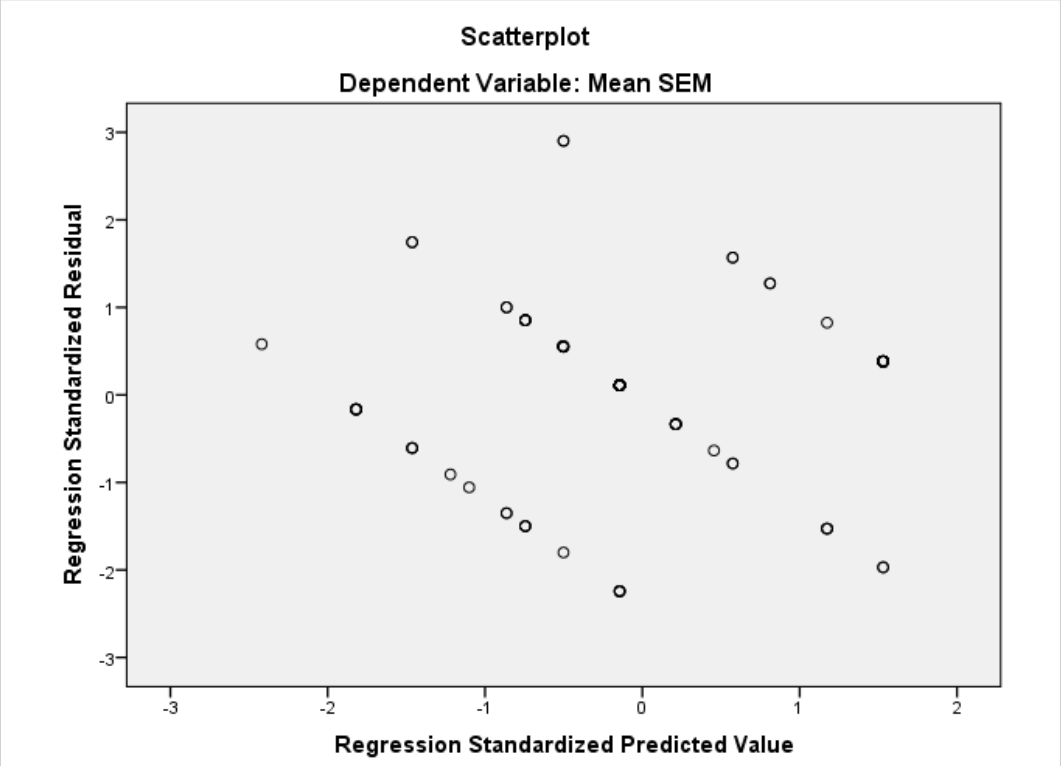

Figure 4.7: Scatterplot

4.12 Hypotheses Summary

Table 4.28: Hypotheses Summary

	Hypothesis	Observations
$H1_0$	There is no significant difference between current role of the respondents and stakeholder management processes.	Unable to accept H_A
$H2_0$	There is no significant difference between practice of the respondents and stakeholder management processes.	Unable to accept H_A
$H3_A$	There is correlation between stakeholder identification and sustainable event management.	Reject H_0
$H4_A$	There is correlation between stakeholder engagement and sustainable event management.	Reject H_0
$H5_A$	There is correlation between stakeholder management and sustainable event management.	Reject H_0
$H6_A$	There is significant relationship between at least one of the variables (stakeholder identification, stakeholder engagement and stakeholder management) and sustainable event management.	Reject H_0

CHAPTER 5

DISCUSSION

5.1 Current role and Practice of Participants

Overall, the aim of this project is to examine the stakeholder management practice in relation to sustainable event management in STEM educational events. The objectives of the study are studied to discuss about the findings.

The first objective is to investigate the role and practice of the stakeholder on stakeholder management processes.

H1: There is a significant difference between current role of the respondents and stakeholder management processes.

H2: There is a significant difference between practice of the respondents and stakeholder management processes.

In term of current role of participants, there are project manager, project team member, contractor/supplier and owner/sponsor. There are significant differences among stakeholder management processes when MANOVA is used to investigate this hypothesis.

However, univariate ANOVAs which is also known as multiple one-way ANOVA's indicates that there is no significant difference between current role of the respondents and stakeholder identification and stakeholder engagement. The result shows that it is failed to observe a difference between any of the means. While, for stakeholder management, it is significantly affected by the roles. Stakeholder management are statistically significantly different between contractor/supplier and owner/sponsor.

An owner and a sponsor are considered as the sponsoring organisation or the initiator, who is directly responsible for the production and development of the project (PMI, 2013). Then, contractor and supplier are those from event management companies and service and contract providers. Having different roles would probably affect their views on stakeholder management in STEM educational events (EventScotland, 2006).

In term of practice of participants there is no significant difference between practice of the respondents and stakeholder management processes. As it is not statistically significant, this is not to indicate that the means of Established procedure in formal ways, Established procedure in mind, No established procedure are not different from each other, It is failed to observe a difference between any of the means from the significant proportion that there are 54% of respondents that have practiced stakeholder management by established procedure in formal ways and 30% of them have practiced by established procedure in mind.

Field (2009) emphasises that there are two reasons that MANOVA is preferred over multiple ANOVAs as:

> *"First, not only does MANOVA provide univariate information on the effect of the independent variable(s) on each dependent variable, but it also demonstrates potential interaction effects. Second, MANOVA can protect against Type I errors that might occur if multiple ANOVA's are conducted independently. Repeated univariate measures can dramatically increase Type I error (rejecting a true null hypothesis). Also, multiple univariate measures do not equal a multivariate measure because they do not take into account colinearity (correlations among dependent variables)" (Field, 2009).*

Stakeholder management processes are correlated. MANOVA tests groups even though their means are the same on the dependents, whereas ANOVA would unable to accept the null hypotheses of no group differences when the groups of role do not have approximately equal cell sizes. The majority of the respondents are the project team members which contributes 73%, sample size is insufficient to detect the alternative. The null hypothesis is never true because it can be known from sampling distributions that the random samples would have slightly different means, and even though these differences can be very small they are nevertheless different (Field, 2009).

5.2 Stakeholder Management Processes

The second objective is to examine the stakeholder management processes in relation to sustainable event management

H3: There is correlation between stakeholder identification and sustainable event management.

H4: There is correlation between stakeholder engagement and sustainable event management.

H5: There is correlation between stakeholder management and sustainable event management.

Stakeholder identification is found to be having a positively strong and significant correlation with sustainable event management. Stakeholder identification helps to find out who has unique knowledge related to any aspect of the project. The needs of different stakeholder should be prioritised depending on each stakeholders potential to influence project objectives. Internal Stakeholders are prioritised above external stakeholders (Bal, 2014).

Also, stakeholder engagement is found to be having a positively strong and significant correlation. People internally or externally linked with project are engaged as stakeholders. Stakeholder engagement is the process of exchanging information. Stakeholder engagement helps to manage relationships by aligning mutual interests, which mitigate project risk/uncertainty (Bal, 2014).

Stakeholder management is found to be having the positively strongest significant correlation with sustainable event management. When stakeholders are

managed properly they will be more motivated to the project. Stakeholder management can assist in reducing the risk. Developing good relationship with stakeholders makes it easier to manage them. Yang et al. (2011), Doloi (2013) and O'Halloran (2014) and (Bal, 2014) emphasise the stakeholder management is commonly known as a critical success factor in projects.

H6: There is significant relationship between at least one of the variables (stakeholder identification, stakeholder engagement and stakeholder management) and sustainable event management.

The results of the regression analysis accept of the hypothesis. There is no violations of these assumptions hence this model is reliable. This shows that stakeholder identification, stakeholder engagement and stakeholder management are significant. The largest of the dimension, stakeholder engagement, is particularly noteworthy because of the large beta. When there is fundamental change in the engagement with the stakeholders is sought, sustainable event management is particularly important.

Stakeholder identification and management are important too. The results of these three dimension show that there is a significant positive impact on sustainable event management. This hypothesis is supported and can be helpful to project manager.

After identifying those stakeholders who have affected or will be affected by the project, the results suggest that engage those stakeholder in the project is

meaningful to sustainable event management. They are most likely to be committed throughout the project.

This finding is in accordance with the results of Yang et al. (2011) and O'Halloran (2014) about construction industry in Hong Kong and Irish that the engagement of stakeholder would help to ensure the success of project.

5.3 Challenges

The third objective is to rank the challenges in the stakeholder management Among the ten challenges listed (Table 4.6), five challenges has been agreed and ranked by respondents, they are limited capacity, time consuming/poor time management, wild/unrealistic expectations, limited/poor understanding of issues and high cost of management.

There are limited capacity available including resources, knowledge and skills required by the project team. Engaging internal and external stakeholders effectively requires a significant amount of resources of time, finances and personal commitment (Guise et al., 2013). Allocating sufficient resources could facilitate organisations' strategic decision making and future development.

Another challenge in the stakeholder management is time consuming. In certain cases, the stakeholders' participation has been limited due to the poor time management by the team in producing deliverables. Thus, the respondents generally

agree that they deal with stakeholders based on their personal past experience (O'Halloran, 2014; Yang et al., 2011).

In fact, the stakeholder requirements and expectations at the individual level is difficult to be identified to its full extent and as the stakeholders list might evolve. This means that stakeholders might give new demands, and new goals might appear even though the project is still under development, thus creating more uncertainties in projects (Johansen, Eik-Andresen, & Ekambaram, 2014).

Next challenge is limited/poor understanding of issues. Most of the project management teams are based at the operational level. There is difficulty for them to identify those stakeholders affect the project, and then manage their differing demands starting from the early stages of project. Therefore, limited/poor understanding of issues could cause wrong interpretation (Zidane et al., 2015).

Another challenge is high cost of stakeholder management. It has often been argued that investors or sponsors or owners behave in a selfish manner while making investment decisions (Michelson, Wailes, Laan, & Frost, 2004). In their views, the costs of stakeholder management is reducing returns for the investors or owners (Garcia-Castro et al., 2010). For instance, costs of stakeholder analysis incur when interviews are to be conducted.

5.4 Best practices in stakeholder management

The last objective is to determine the best practices in stakeholder management. Among the six best practice (Table 4.8), generally the respondents agree that these are appropriate practice to ensure enhanced stakeholder management.

Integration of communication has the highest score due to it offers a multi-pronged approach for engaging with an organisations' diverse stakeholders (Thulkanam, 2014). Leenders et al. (2003) discovered that the integration of communication is more important than the frequency of communication. Multiple methods like in-person meeting and voting can be applied (Guise et al., 2013). Whereas, for group discussions, a skilled and neutral facilitator can be involved for balanced participation and focused discussions. Daniel, Bogdan and Daniel (2012) as well as Butt, Naaranoja and Savolainen (2016) agreed that communication with stakeholders is very important to avoid misinformation about activities, failed expectations, poor information flow.

Then, followed by true collaborators instead of the unproductive pseudo competition among the organisations. Study by Ayatah (2012) finds that line or sister organizations should be true collaborators instead of the unproductive pseudo competition causes non-governmental organisations sector becomes individual organisational or personal gains seeking. The author commented that stakeholders are supposed to focus the bigger picture of projects, instead of seeking individual or personal gains as the reasons for their participation.

It is common that some stakeholders who are unfamiliar with the engagement process or the topic (Guise et al., 2013). The literature encourages providing sufficient brief, easy-to-understand informational materials before any kinds of in-person meetings and at the beginning of engagement process. After that, offering opportunities for clarification of topics with discussion or question-and-answer session.

Choosing stakeholders carefully (Spangenberg et al., 2015) and engaging them early in the process (Hund & Greenberg, 2011) are the necessary steps to build successful long-term relationships and create more possibilities for multiple engagements. Planning strategies for managing disruptive or dominating stakeholders and for resolving conflicts that might arise must be taken into consideration (Guise et al., 2013). Throughout this process, time needed for engaging of all relevant stakeholder groups ought to be given. Negotiation could help in along the spectrum of full engagement to achieve agreement on various issues (Erkul, Yitmen, & Celik, 2016).

Studies show that stakeholder approaches are not necessary aligned, and more importantly that they can change at different stages of the project. Stakeholders' positions in a sustainability map might change significantly. These different approaches create tensions and influence the building process (Herazo & Lizarralde, 2016). A combination of methods for stakeholder analysis and engagement methods can be considered in managing stakeholders as they are dependent on the project characteristics (O'Halloran, 2014).

Lastly, lesson learnt database is required to be established. Certain key project members must commit to contribute lesson learnt with their monthly reports to improve both collection and implementation of the project (Graham & Thomas, 2007). Project manager is preferably involved in the project from the beginning. Nonetheless, this might not be the case in all projects. There would be lacking of documentation about project in current practice. If there is no proper documentation, the expectations of stakeholders might not be acknowledged. Hence, database would be a valuable tool for avoiding mistakes in the future (Economist Intelligence Unit, 2009).

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

This chapter presents conclusion summarised based on the result from this study. The research findings, limitation and recommendation for future studies are also provided.

6.1 Conclusion

In conclusion, this study identifies the stakeholders and examines the current level of stakeholder management process in relation to sustainable event management. The challenges and best practice in the stakeholder management are also determined. Stakeholder identification, stakeholder engagement and stakeholder management are the crucial factors that contribute to sustainable event management. Stakeholder management has moved from pure information dissemination and communication to understanding of stakeholder's needs and expectation. Appropriately identify and manage the stakeholders are crucial. Stakeholder engagement that exchanges information helps to manage relationships by aligning mutual interests, which mitigate project risk uncertainty. Sustainability is not only an initiative. Sustainable event management is a useful practice to ensure long term support for events. Also, the educational event contributions could be valuable and and become a good opportunity to raise awareness among the stakeholders to take responsible decisions and introduce environmental and social improvements.

6.2 Significance of Research

STEM educational events are part of education for sustainable development. The events could be the catalyst to increase the community's awareness in the importance of STEM for the nation.

Across the industry, the better understanding of stakeholders would assist organisations and project partners to identify the relevant stakeholders and foster a better understanding in maintaining positive relationships with the stakeholders. The event owners need to work together with the key parties that mostly affect the project. In this study, it is found that the government authorities play an important role in STEM educational events. Thus the owner or organiser could collaborate with the government authorities as their strategies.

To get better result in retention rate in educational events, the stakeholders' perception have to be studied in promoting both events and education for sustainable development. The results that demonstrated stakeholder identifications, stakeholder engagement and stakeholder management are interrelated to the growth and sustainability of event could be used to improve future educational events.

This study also find out the gap between academic research and implementation in STEM educational events by targeting the challenges that the event teams usually encounter and suggest the best practice to them.

6.3 Limitations and Recommendations

There are limitations in this study. Firstly, the questionnaire comprised closed-ended questions and restricted the responses. The respondents could be asked to list out their answers and state the order of importance, instead of giving them a few choices that have been generally grouped.

Also, when indicating the challenges and best practices in stakeholder management, it is better for respondents to express their views and share their experiences in the STEM educational events by including open-ended questions. Hence, it is suggested to use triangulation approach.

This study is also limited in terms of its generalisability. The experience of the respondents are in Malaysia. Therefore, the findings of the study might not be tally with those involved in other countries. Similar representative studies in other countries could be carried out.

The sample size should be expanded. This would be bias in the overall results because of convenience sampling is chosen. Future research be expanded to more sample size each category evenly.

REFERENCES

Aaltonen, K. (2010). *Stakeholder Management in International Projects*. (Unpublished Doctoral Dissertation). Aalto University.

Ayatah, A. K. (2012). *Examining Stakeholder Management Challenges and Their Impact on Project Management In The Case Of Advocacy and Empowerment NGOs In The Upper East Region Of Ghana*. (Unpublished master's thesis). Kwame Nkrumah University of Science and Technology.

Bal, M. (2014). *Stakeholder Engagement and Sustainability-Related Project Performance in Construction*. (Unpublished doctoral dissertation). Liverpool John Moores University.

Baumann, T., Mantay, K., Swanger, A., Saganski, G., & Stepke, S. (2016). Education and innovation management: a contradiction? How to manage educational projects if innovation is crucial for success and innovation management is mostly unknown. 29th World Congress International Project Management Association (IPMA) 2015. 226, pp. 243–251. Westin Playa Bonita, Panama: *Procedia - Social and Behavioral Sciences*.

Boone Jr., H.N. and Boone, D.A., 2012. Analyzing Likert Data. Journal of Extension, 50 (2), 1 – 5.

Bourne, L., & Walker, D. H. T. (2006). Visualizing stakeholder influence – two Australian examples, *Project Management Journal*, 37(1): 5–22.

Burton, L. J., & Mazerolle S. M. (2011). Survey instrument validity part I: Principles of survey instrument development and validation in athletic training education research. *Athletic Training Education Journal*, 6(1), 27-35.

Butt, A., Naaranoja, M., & Savolainen, J. (2016). Project change stakeholder communication. *International Journal of Project Management*, 34, 1579–1595.

Chew, C., Idris, N., Leong, K., & Daud, M. (2013). Secondary School Assessment Practices in Science, Technology, Engineering and Mathematics (STEM) Related Subjects. *Journal of Mathematics Education*, 6(2), 58-69.

Christensen, R., Knezek, G., & Tyler-Wood, T. (2014). Student perceptions of Science, Technology, Engineering and Mathematics (STEM) content and careers. *Computers in Human Behavior*, 34, 173–186.

Cleland, D. I. (1986). Project stakeholder management. *Project Management Journal*, 17(4), 36-44.

Collis, J. and Hussey, R. (2003). Business Research: A Practical Guide for Undergraduate and Postgraduate Students (3rd ed.). Palgrave Macmillan, Houndmills, Basingstoke, Hampshire.

Damm, S. (2010). *The implications of best practice event management when applied to small-scale local events*. (Unpublished master thesis). Unitec Institute of Technology.

Daniel, M., Bogdan, G., & Daniel, Z. (2012). Strategies for interactive communication, with external and internal stakeholders, in events' marketing. *Procedia - Social and Behavioral Sciences*, 46, 5361-5365.

Davis, K. (2014). Different stakeholder groups and their perceptions of project success. *International Journal of Project Management*, 32, 189-201.

Davis, K. (2016). A method to measure success dimensions relating to individual stakeholder groups. *International Journal of Project Management*, 34, 480-493.

Deegan, B., & Parkin, J. (2011). Planning cycling networks: human factors and design processes. *Proc. Inst. Civ. Eng. Eng. Sustain*, 164, 85-93.

Doloi, H. 2013. Cost overruns and failure in project management: understanding the roles of key stakeholders in construction projects. *Journal of Construction Engineering and Management, ASCE*, 139 (3), 267-279.

Economist Intelligence Unit. (2009). *Closing the gap: The link between prokect management excellence and long-term success*. Economist Intelligence Unit Limited.

Erkul, M., Yitmen, I., & Celik, T. (2016). Stakeholder Engagement in Mega Transport Infrastructure Projects. *Procedia Engineering*, 161, 704-710.

EventScotland. (2006). *Events Management: A Practical Guide: a Reference for Event Planning and Production in Scotland*. Edinburgh: EventScotland.

Fellows, R. and Liu, A. (2008). *Research methods for construction* (3rd ed.). UK: Blackwell Publishing Ltd.

Field, A. P. (2009). *Discovering statistics using SPSS*. London, England: SAGE.

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston: Pitman.

Garcia-Castro, R., Miguel, A., Ariño, and Canela, M., A. (2010). Does social performance really lead to financial performance? Accounting for endogeneity. *Journal of Business Ethics*, 92(1), 107–126.

George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston, MA: Allyn & Bacon.

Getz, D. (2012). *Event Studies Theory, Research and Policy for Planned Events* (2nd ed.). Oxford: Elsevier Ltd.

Gonzalez, H., & Kuenzi, J. (2012). *Science, Technology, Engineering, and Mathematics (STEM) Education: A Primer*. Congressional Research Service.

Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale,NJ: Erlbaum.

Graham, B., & Thomas, K. (2007). Lesson learned practices: case study of a leading Irish construction organization. *Construction Management and Economics 25th Anniversary Conference*, 16-18 July, University of Reading, United Kingdom.

Greene, J., & Stellman, A. (2013). *Head First PMP, A Learner's Companion to Passing the Project Management Professional Exam* (3rd ed). O'Reilly Media.

Greenwood, M., & Van Buren III, H. J. (2010). Trust and stakeholder theory: Trustworthiness in the organisation–stakeholder relationship. *Journal of Business Ethics*, 95(3), 425–438.

Guise, J., O'Haire, C., McPheeters, M., Most, C., LaBrant, L., Lee, K., . . . Graham, E. (2013). A practice-based tool for engaging stakeholders in future research: a synthesis of current practices. *Journal of Clinical Epidemiology*, 66, 666-674.

Hammad, S., (2013). *Investigating the Stakeholder Management in Construction Projects in the Gaza Strip*. (Unpublished master's thesis). The Islamic University of Gaza.

Hair J.F., Anderson R.E., Tatham R.L., Black, W.C., 1992. *Multivariate Data Analysis with Readings* (3rd ed.). Macmillan, New York.

Hair, Jr., J., F., Bush, R., P., Ortinau, D., J. (2003). Marketing research-within a changing information environment (3rd ed.). New York: McGraw-Hill Irwin.

Hraisha, A. A. A. (2015). *Stakeholder Analysis in Libyan Construction Industry*. (Unpublished master's thesis). Eastern Mediterranean University.

Harun, H. N. (2016, September 7). New era needs 'STEM' brains. *New Straits Times*, p. 12.

Herazo, B., & Lizarralde, G. (2016). Understanding stakeholders' approaches to sustainability in building projects. *Sustainable Cities and Society*, 26, 240–254.

Hund, G., & Greenberg, S. (2011). Dual-track CCS stakeholder engagement: Lessons learned from FutureGen in Illinois. *Energy Procedia*, 4, 6218–6225.

Innes, J., & Booher, D. (2004). *Reframing Public Participation: Strategies for the 21st Century*. 5, 419-436.

International Project Leadership Academy. (n.d.). Retrieved December 1, 2016, from http://calleam.com/WTPF/?page_id=2338/

Jergeas, G., Williamson, E., & Skulmoski, G. (2000). Stakeholder management on construction projects. *AACE International Transactions*, 2, 12.11-12.16.

Johansen, A., Eik-Andresen, P., & Ekambaram, A. (2014). Stakeholder benefit assessment – Project success through management of stakeholders. *Procedia - Social and Behavioral Sciences*, 119, 581 – 590.

Katzel, C. T. (2007). *Event greening: Is this concept providing a serious platform for sustainability best practice?* (Unpublished master's thesis). University of Stellenbosch, Stellenbosch, South Africa.

Kazadi, K., Lievens, A., & Mahr, D. (2016). Stakeholder co-creation during the innovation process: Identifying capabilities for knowledge creation among multiple stakeholders. *Journal of Business Research*, 69, 525–540.

Kerzner, H. (2013). *Project Management: A Systems Approach to Planning, Scheduling and Controlling* (11th ed.). New Jersey: John Wiley & Sons, Inc.

Laing, J., & Frost, W. (2010). How green was my festival: Exploring challenges and opportunities associated with staging green events. *International Journal of Hospitality Management*, 29, 261-267.

Leenders, R. T., Van Engelen, J. M., & Kratzer, J. (2003). Virtuality, communication, and new product team creativity: a social network perspective. *J. Eng. Technol. Manage*, 20, 69–92.

MacCallum, R., C., Widaman, K., F., Zhang, S., Hong, S. (1999). *Psychological Methods*, 4(1), 84-99.

Malhotra N. K. (2007). *Marketing research: an applied orientation* (5th ed.). Prentice Hall, Upper Saddle River.

Mazur, A., & Pisarski, A. (2015). Major project managers' internal and external stakeholder relationships: The development and validation of measurement scales. *International Journal of Project Management*, 33, 1680-1691.

Michelson, G., Wailes, N., Laan, S., V., D., and Frost, G. (2004). Ethical investment processes and outcomes. *Journal of Business Ethics*, 52(1), 1–10.

Ministry of Education Malaysia. (2013). *Malaysia Education Blueprint 2013-2025 (Pre-School to Post-Secondary Education)*. Putrajaya: Ministry of Education.

Ministry of Higher Education Malaysia. (2013). National Education Statistic: Higher Education Sector 2012. Retrieved from http://www.mohe.gov.my/web_statistik/Perangkaan_SPT_2012.pdf/

Mitchell, R., Agle, B., & Wood, D. (1997). *Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts (Vol. 22).* Academy of Management Review.

Mok, K., Shen, G. Q., Yang, R. J., & Li, C. Z. (2017). Investigating key challenges in major public engineering projects by a network-theory based analysis of stakeholder concerns: A case study. *International Journal of Project Management*, 35, 78–94.

O'Halloran, B. (2014). *A Study of the Awareness of Stakeholder Management amongst Project Managers in the Construction Industry in Ireland. (*Unpublished master's thesis). Dublin Business School.

Olander, S. (2006). *External Stakeholder Analysis in Construction Project Management*. (Unpublished doctoral dissertation). Lund University.

Olander, S. (2007). Stakeholder impact analysis in construction project management. *Construction Management and Economics*, 25, 277-287.

Olander, S., & Landin, A. (2005). Evaluation of stakeholder influence in the implementation of construction projects. *International Journal of Project Management*, 23, 321–328.

Pokharel, S. (2011). Stakeholders' roles in virtual project environment: A case study. *J. Eng. Technol. Manage*, 28, 201–214.

Project Management Institute. (2013). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. (5th ed.). Pennsylvania: Project Management Institute, Inc.

Project Management Institute. (2013). *Managing Change In Organizations: A Practice Guide*. Pennsylvania, USA: Project Management Institute, Inc.

Reed, M. (2008). Stakeholder participation for environmental management: A literature review. *Biological Conservation*, 141, 2417-2431.

Reid, S. (2011). Event stakeholder management: developing sustainable rural event practices. *International Journal of Event and Festival Management*, 2(1), 20-36

Roscoe, J.T. (1975). *Fundamental Research Statistics for the Behavioural Sciences* (2nd ed.). New York: Holt Rinehart & Winston.

Sadd, D., J. (2012). *Mega-Events, Community Stakeholders and Legacy: London 2012.* (Unpublished doctoral dissertation). Bournemouth University.

Salam, M., & Ngoguchi, T. (2006). Evaluating capacity development for participatory forest management in Bangladesh's Sal forests based on '4Rs' stakeholder analysis. Forest Policy and Economics, 8(8), 785–796.

Saunders, M., Lewis, P., Thornhill, A. (2009) *Research Methods for Business Students* (5th ed.). Prentice Hall

Sekaran, U. (2003). *Research methods for business: A skill building approach* (4th ed.). NY: John Wiley & Sons, Inc.

Sládek, P., Miléř, T., & Benárová, R. (2011). How to increase students' interest in science and technology. *Procedia Social and Behavioral Sciences*, 12, 168–174.

Spangenberg, J. H., Görg, C., & Settele, J. (2015). Stakeholder involvement in ESS research and governance: Between conceptual ambition and practical experiences – risks, challenges and tested tools. *Ecosystem Services*, 16, 201-211.

Stettler, S. L. (2011). *Sustainable Event Management of Music Festivals: An Event Organizer Perspective*. (Unpublished master's thesis). Portland State University.

Sutterfield, J., Friday-Stroud, S., & Shivers-Blackwell, S. (2006). A case study of project and Stakeholder management failures: Lessons learned. *Project Managment Journal*, 35(5), 26-35

Thukanam. M. (2014). *The Role of Integrated Communication (IC) In Stakeholder Engagement: A Strategic Corporate Social Responsibility (CSR) Perspective.* (Unpublished master's thesis). Univrsity of South Africa.

Toledano, M., & Riches, M. (2014). Review Brand alliance and event management for social causes: Evidence from New Zealand. *Public Relations Review*, 40, 807–814.

Vilchez, V., Darnall, N., & Correa, J. (2017). Stakeholder influences on the design of firms' environmental practices. *Journal of Cleaner Production*, 142, 3370e3381.

Vos, J., & Achterkamp, M. (2006). Stakeholder Identification in Innovation Projects – Going Beyond Classification. *European Journal of Innovation Management*, 9, 161-178.

Waritimi, E. (2012). *Stakeholder Management in Practice: Evidence from The Nigerian Oil and Gas Industry*. (Unpublished master's thesis). Durham University.

Watson, J. S. (2003). Examining Perceptions of the Science Fair Project: Content or Process? *School Library Media Research*, 6.

Williams, N. L. (2016). *Managing Event Projects. In N. Ferdinand, & P. J. Kitchin (Eds.), Events Management: An International Approach* (2nd ed.). London: SAGE Publications Ltd.

Winch, G., & Bonke, S. (2002). Project stakeholder mapping: analyzing the interests of project. In D. P. Slevin, D. I. Cleland, & J. K. Pinto (Ed.), *The Frontiers of Project* (pp. 385-403). Pennsylvania: Project Management Institute.

World Commission on Environment and Development. (1987). *From One Earth to One World: An Overview*. Oxford: Oxford University Press.

Wu, M. (2010). *The search for sustainable competitive advantage: A stakeholder management perspective*. (Unpublished doctoral dissertation). Massey University.

Yang, J., Shen, P. Q., Bourne, L., Ho, M. F., & Xue, X. (2011). A typology of operational approaches for stakeholder analysis and engagament: findings from Hong Kong and Australia. *Construction Management and Economics*, 29(2), 145 - 162.

Zidane, Y. J., Johansen, A., Ekambaram, A., & Hald, L. (2015). When Stakeholders Shape Successes or Bring Failures – A Case Study of an Algerian Megaproject. *Procedia Computer Science*, 64, 844 – 851.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods* (9th ed.). Mason, OH: South-Western.

APPENDICES

APPENDIX A: Survey questionnaire

Stakeholder Management in Malaysia Science, Technology, Engineering and Mathematics (STEM) Educational Events

Dear Sir/Madam,

I would be thankful if you could participate in this survey by filling up this questionnaire. This questionnaire is conducted as part of a final year project of Master of Project Management from UTAR.

Please be assured that all information will be treated with the strictest confidentiality and only the collective data will be analysed.

If you have any queries, you can contact Ms Lee Woan Shiang through email leewoanshiang@gmail.com.

Thank you for your precious time in participating in the survey.

Consent form

I confirm that I have read and understand the information for the above study. I had the opportunity to consider the information, ask question and have had these answered satisfactorily.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.

I understand that my identity will not be disclosed. All the information provided in the questionnaire will be kept confidential. The data will be used for the purpose of this study.

I agree to take part in the above study.

Signature: _____ Signature _____
(Respondent) (Witness)

Name: _____

Date: _____

Part one: Respondent Background

INSTRUCTION: Please tick " √ " the appropriate cell for your response.

1 What is the nature of your organisation?

- ☐ Public
- ☐ Private

2 What is your current role in the team?

- ☐ Project manager
- ☐ Project team member
- ☐ Contractor/Supplier
- ☐ Owner/Sponsor/Client

3 Your working experience in STEM educational events:

- ☐ Less than 5 years
- ☐ 5 – less than 10 years
- ☐ 10 – less than 15 years
- ☐ More than 15 years

4 How many projects your experience contain?

- ☐ Less than 5
- ☐ 5 – 10
- ☐ 11 – 15
- ☐ More than 15

Part two: Stakeholder Management Approach

INSTRUCTION: Please tick " √ " the appropriate cell for your response.

5 Which of the following statements best describes your stakeholder management practice?

- ☐ Established procedure in formal ways
- ☐ Established procedure in mind
- ☐ No established procedure

6 Do you use any stakeholder management software application?

- ☐ Yes
- ☐ No

Part three: Stakeholder Management Process and Sustainable Event Management

Stakeholder Identification

INSTRUCTION: Please indicate how strongly you agree or disagree with each statement by placing a circle on the number from 1 to 5, where:

Strongly disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly agree (SA)
1	2	3	4	5

7	**To what extent do you think the following individual or organisations are stakeholders in STEM educational events?**				
Stakeholder	**SD**	**D**	**N**	**A**	**SA**
Sponsor	1	2	3	4	5
Client	1	2	3	4	5
Organiser/Owner	1	2	3	4	5
Team members	1	2	3	4	5
Contractor	1	2	3	4	5
Supplier	1	2	3	4	5
Government authorities	1	2	3	4	5
Local councils	1	2	3	4	5
Media	1	2	3	4	5
Public/Community	1	2	3	4	5

8	**To what extent do you think the following methods are effective to identify project stakeholder?**				
Methods	**SD**	**D**	**N**	**A**	**SA**
Personal past experience	1	2	3	4	5
Asking other stakeholders/Interviews	1	2	3	4	5
Public engagement methods	1	2	3	4	5
Directed by higher authorities	1	2	3	4	5
Guidelines in the organisation	1	2	3	4	5
Professional services (external to the project management team)	1	2	3	4	5

9	**Please indicate your level of agreement with the following statements which relates to how you deal with the stakeholders to your projects.**				
Statements	**SD**	**D**	**N**	**A**	**SA**
a) Stakeholder identification helps to find out who has unique knowledge related to any aspect of the project.	1	2	3	4	5
b) The needs of different stakeholder should be prioritised depending on each stakeholders potential to influence project objectives.	1	2	3	4	5
c) Internal Stakeholders are prioritised above external stakeholders.	1	2	3	4	5

Stakeholder Engagement

10	To what extent do you think the following methods are effective to engage project stakeholders?				
Methods	**SD**	**D**	**N**	**A**	**SA**
Meetings	1	2	3	4	5
Workshops	1	2	3	4	5
Negotiations	1	2	3	4	5
Walking tour / site tour	1	2	3	4	5
Phone	1	2	3	4	5
Public engagement	1	2	3	4	5
Media (e.g. radio, T.V., print)	1	2	3	4	5
Interviews	1	2	3	4	5
Social interaction	1	2	3	4	5
Website	1	2	3	4	5
Questionnaires	1	2	3	4	5
E-mail / fax	1	2	3	4	5
Intranet	1	2	3	4	5
Other social media	1	2	3	4	5

11	Please indicate your level of agreement with the following statements which relates to stakeholder engagement in your projects.				
Statements	**SD**	**D**	**N**	**A**	**SA**
a) You engage all people internally/externally linked with your project as stakeholders.	1	2	3	4	5
b) Stakeholder engagement is the process of exchanging information.	1	2	3	4	5
c) Stakeholder engagement helps to manage relationships by aligning mutual interests, which mitigate project risk/uncertainty.	1	2	3	4	5

Stakeholder Management

12	Please indicate your level of agreement with the following statements which relates to how you deal with the stakeholders management to your projects				
Statements	**SD**	**D**	**N**	**A**	**SA**
a) When stakeholders are managed properly they will be more motivated to the project.	1	2	3	4	5
b) Stakeholder management can assist in reducing the risk.	1	2	3	4	5
c) Developing good relationship with stakeholders makes it easier to manage them.	1	2	3	4	5

Sustainable Event Management

13	Please indicate your level of agreement with the following statements which relates to sustainable event management to your projects					
Statements		**SD**	**D**	**N**	**A**	**SA**
a)	Sustainability concepts, practices and processes are important to STEM educational events.	1	2	3	4	5
b)	My company have the approach to evaluate the outcomes of sustainable development.	1	2	3	4	5
c)	Working together with stakeholders in the initial stages of a project can provide innovative solutions at affordable prices.	1	2	3	4	5
d)	Sustainable practice leads to short/long-term cost reductions	1	2	3	4	5
e)	Economic sustainable event management initiatives might include local business partnerships, place marketing of host city, and leveraging the event for generic economic development.	1	2	3	4	5
f)	Social sustainable event management initiatives might include local cultural development, health and wellness enhancement, stakeholder consensus building.	1	2	3	4	5
g)	Environmental sustainable event management initiatives might include waste recovery and minimization, renewable energy usage, greenhouse gas inventories, resource lifecycle accounting, and efficient transport systems.	1	2	3	4	5

Part four: Challenges of the Stakeholders Management

14	Please indicate your level of agreement with the following statements which relates to challenges of stakeholders management in your projects					
Statements		**SD**	**D**	**N**	**A**	**SA**
High cost of management		1	2	3	4	5
Conflicting/varied interests and opinions, beliefs and orientations		1	2	3	4	5
Limited/poor understanding of issues		1	2	3	4	5
Limited/poor commitment		1	2	3	4	5
Wild/unrealistic expectations		1	2	3	4	5
Personal gains seeking		1	2	3	4	5
Time consuming/ poor time management		1	2	3	4	5
Hidden stakeholders (inability to identify all stakeholders)		1	2	3	4	5
Limited capacity (resources, knowledge and skills)		1	2	3	4	5
Poor documentation memory due to high staff turn over		1	2	3	4	5

Part five: Best Practice of the Stakeholder Management

15	To what extent do you think the following best practice could be applied in the stakeholder management process in STEM educational events?				
Best practice	**SD**	**D**	**N**	**A**	**SA**
Choosing and engaging the target group	1	2	3	4	5
Providing brief, easy-to-understand informational materials at the beginning of engagement	1	2	3	4	5
A combination of several stakeholder analysis and engagement methods according to the project characteristics	1	2	3	4	5
Integration of communication	1	2	3	4	5
True collaborators instead of the unproductive pseudo competition among the organisations					
Establishing lesson learnt database	1	2	3	4	5

Thank you

UNIVERSITI TUNKU ABDUL RAHMAN

Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/14/2017

24 February 2017

Ir Jeffrey Yap Boon Hui
Department of Surveying
Lee Kong Chian Faculty of Engineering and Science
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang
Selangor

Dear Ir Jeffrey,

Ethical Approval For Research Project/Protocol

We refer to your application dated 14 February 2017 for ethical approval for your research project (Master student's project) and are pleased to inform you that your application has been approved under expedited review.

The details of the research project are as follows:

Research Title	Stakeholder Management in Malaysia Science, Technology, Engineering and Mathematics (STEM) Educational Events
Investigator(s)	Ir Jeffrey Yap Boon Hui Lee Woan Shiang (UTAR Postgraduate Student)
Research Area	Social Sciences
Research Location	Malaysia
No of Participants	100 participants (Age: 18 - 65)
Research Costs	Self-funded
Approval Validity	24 February 2017 - 23 February 2018

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

Should you collect personal data of participants in your study, please have the participants sign the attached Personal Data Protection Statement for your records.

Thank you.

Yours sincerely,

Professor Ir Dr Lee Sze Wei
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Lee Kong Chian Faculty of Engineering and Science
Director, Institute of Postgraduate Studies and Research