Event Logistics in Sustainability of Football Matches

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***Abstract*— The sports event is the most popular and well-known event by the people since the past few decades. The most significant sports events will draw billion of the spectators to attend it. However, it is difficult to maintain the sustainability of the events without proper event management which may bring consequences to the economics, society and the environments. The sustainable of events are closely related to the event logistics. The purpose of this study is to explore the relationship between the sustainability of sports matches and event logistics in term of accessibility, information and communication technology (ICT) and waste management. The results obtained from the respondents of the population sample of the football audience by using a quantitative approach through online survey design. The result supported the awareness level of event organisers implicate the sustainability of an event and provide evidence that encapsulated event management and event logistics importance to the public.**

***Keywords*—** *sports event, event management, event logistics and sustainability.*

1. Introduction

Many organisations would conduct many events for various purposes such as promoting products, charity, competition or source of income. Event management is the essential part for to organisation if they aim for the success of the event. Event management is a planned event as defined [1]. "Planned events' are created to achieve specific outcomes, including those related to the economy, culture, society and the environment. Event planning involves the design and implementation of themes, settings, consumables, services and programs that suggest, facilitate or constrain experiences for participants, guests, spectators and other stakeholders. Every event experience is personal and unique, arising from the interactions of setting, program and people." (pp: 21).

Event management usually would become the side-line for the organisations to support their primary business activities [2]. However, for the event companies, the event management is the primary income source and also the financial support for the event development. The skills in the event management can be applied to all types of events through the event facilities, and also the event crew. Event management always related to sustainability during the process of preparation, on-going and after the event. However, a more significant event consists of multiple processes with a considerable amount of the tasks and activities, and the higher accessibility is difficult to be achieved in order to maintain the sustainability of the sport matches such as poor in crowd control management, cueing management, traffic management as well as non-strategic event factors (facility and assets management).

Sustainable sports matches can be defined as the sports matches management with designed organised and implemented the way of minimising potential adverse impacts to organisers, stakeholders, society and environment. The beneficial consequences will result for the event stakeholders, shareholders and all those who involved [3]. When the sustainable of the event can be achieved, the Green event will result in the legacy of sustainability. The sustainable of the event always depend on the event logistics. There will be three sections in the event management which include the pre-event, on-event and post-event process [2]. The event logistics will be included in all of these processes. Therefore, the event logistics manager has the responsibility to manage and analyses every process of the logistics movement in the event management, provide clear communication among different departments, and conclusively linked all parts of the event [2]. The study aims to investigate how the higher accessibility can be achieved with the event logistics in order to maintain the sustainability of the sports matches.

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2. Literature Review

2.1. Event Logistics

Events can be defined as an occurrence or something that happens, often used to suggest that what happened was on an unusual scale and unique situation [4]. However, managing the events is not an easy task to achieve its objective. Therefore, event management is playing a pivotal role to determine the success or failure of an event. Event management is defined as the planning and production of all types of event, including from the small event such as meeting to the big event such as sports competitions [1]. According to the [4] event industry segment can be divided into several essential sub-segments that include corporate events, competitions and decorations, cultural events, sports events, festivals and celebrations, personal and social events.

To make event management to achieve higher efficiency, logistics is playing a pivotal role in it. Strong logistics management is essential in delivering the business results expected from the event. Therefore, event logistics have been rising as a specialist in the logistics industry today. According to [5], event logistics can be defined as a critical coordinator to coordinates the elements, tasks and activities of an event in order to contribute an efficient flow on before, during and after events which includes transport of equipment, procurement of supplies and active communication channels. Logistics is the discipline of planning and organising the flow of goods, equipment and people to their point of use. Therefore, Logistics makes out the vital support of event planning, coordinating the flow of services between the event planner and the various vendors [6].

2.2. Accessibility

According to [7], accessibility has become the fundamental concept for characterising a fundamental principle of human activity, maximum contacts through minimum activity. The author also cited Doxiadis's claim that the principle is of very excellent and constant, perhaps biological, importance, and continues by writing that on this general level the idea about accessibility is entirely uncontroversial. However, in order to make the term, a useful tool for describing, explaining or predicting human organisation and behaviour more precise definition is needed. Another researcher found that accessibility is the inherent characteristic of a place with the operational form of distance or time, and it means the accessibility is capable of being reached, thus implying a measure of the proximity between two points [8].

Darcy and Harris (2003), state that accessible are comprised of all people including the disabled person when they come to the event [9]. She clearly defines the accessibility is to provide the access that restricts social participation as physical, sensory and communication dimensions. Those disabilities people also have the right to get a better accessible path around the event and in order to access and move around within the event or venue. The adequate definition of accessibility are the people travel from one place to another such as working, shopping, visiting in different places, another mean is the people want to have a choice among a large number and as diverse a range of activities as possible, thirdly is involve with travel costs a most important is travel time, rather than travel distance [10].

Accessibility is encompassing all infrastructure and transportation in the particular area like festivals or event. Therefore, the access to space of parking, numerous public transportations endowments and sizeable commercial place for visitors and as the proximity of attraction matters [11].

2.3. Information and Communication Technology (ICT)

ICT is the revolution of information technology (IT) that integrates the function of telecommunication with computers software and hardware to enable the transmitted information been kept, controlled and accessed. Introduction of ICT enables the interaction between human and organisation through a digital world which can make the operation of the organisation more effective and efficient [12]. The objective of the event logistics in the event management is to provide a transparent flow of goods to cope with the increasing complexity of transport chains and high customers' demand [13].

The supply chain event management (SCEM) is one of the methods developed under the ICT system which is widely used in most of the event. SCEM is suitable for various types of events because the functions of SCEM have covered the

process of registration, monitoring and evaluation of the events [13]. The SCEM can provide the real-time data to the event management team to keep the information always updated. The SCEM is the early warning systems which contribute in eliminate the inconsistency of the event management through event logistics [13]. Besides the early warning, the SCEM also helps the event authorities to calculate the potential incongruity as the early prevention of error code appeared. The significant component which relates closely to the event logistics is the transport. The accessibility of the transport network is essential to the sustainability of the event management.

2.4. Waste Management

According to [14] waste management can be defined as a set of activities that related to the collection, transport, processing, recycling and disposal of waste materials with monitoring and regulations. Most events produce mountains of waste and these wastes usually was created by the spectators or vendors with eating, drinking, site build, decorations as well as staging in an event especially more significant events like sports events. According to [15], there is almost five to ten tons of trash are generated from each match at the 2006 World Cup.

Proper waste management should be taken in consideration, plans appropriately and design in ways to prevent waste, viewing waste as a resource to be recovered in order to contribute to the overall sustainability performance of the event [16]. It is consisting of much movement in processing it, and this is where the event logistics matter and playing a pivotal role in it to smooth the flow of waste management. Without proper planning of logistics in waste management, the costs can spiral out of control [17].

To deal with the massive amount of wastes that created by events, the host organisations need to hire waste service providers for the waste removal from the venue of the event. When thinking about the waste services, cost reducing can be easily achieved by thinking on how to maximise recycling and composting, and then how to enable efficient waste separation by spectators [18]. Besides that, [16], also stated that it usually costs less to haul and dispose of recyclable materials than it does for garbage. It is because reducing waste in the first place means shorter cleaning times, fewer staff, bins, skips, trucks and transport, all leading to lower cleaning and waste disposal costs [16].

By adopted effective recycling and waste management policies in an event, it is easy to avoid pollutions through the installation of waste collection points to collect different waste separately and the uses of ecologically advantageous packaging, e.g. using recyclable and compostable food and beverage containers [19].

2.5. Sustainability

Sustainability is more than just as “green”, but it toward a better, effective to do things, an excellent achievement and creating a positive impact. A sustainable sports event can be described as an inspirational event that requires financial, natural and human resources rationally and efficiently wherein contributing to a useful tool for event organisers and hosts as well as social benefits [20]. Theories of sustainability attempt to prioritise and integrate social responses to environmental and cultural problems. An economic model looks to sustain natural and financial capital to create new opportunities of equal value, for ecological model looks to biological diversity and ecological integrity and where it focuses on the health of living world, and for a political model looks to social systems that realize human dignity where these models focus on sustaining the environmental conditions of human life. Religion has entered the debate with the representative, critical, and motivational resources for cultural change [21].

According to [22], at the level of the dictionary definition, sustainability implies merely that a given activity or action is capable of being sustained (i.e. continued indefinitely). Relative to the individual human lifespan, and indeed the cycles of corporate profit-taking, are seemingly indefinite. Another researcher state that sustainability can define much meaning and categorised it as the term ‘what’ being sustained for future generations, especially regarding natural world, and the sustainability strictly same as security, search to protect a particular civilisation and offer a range of choices to future generations [23]. According to [24], the definition of sustainability is often predictions of actions taken today that lead to sustainability. Moreover, many elements of sustainability meaning are predictions

of system characteristics, not actual elements of the definition.

The history of sustainability in two decade defines by the use of everything that can be either hyphenated or paired with for examples, sustainable cities, economies, resources management, business, livelihoods and sustainable development. With a commitment to linking environmental and economic development concerns and become a significant concern across the world [25]. According to [31], the sustainability term is not the one used when concerns rose over by abuse of surroundings in pursuit of, usually, commercial activity. The terms like greening, environmentally friendly and eco-friendly are interchangeably mixed in sustainable.

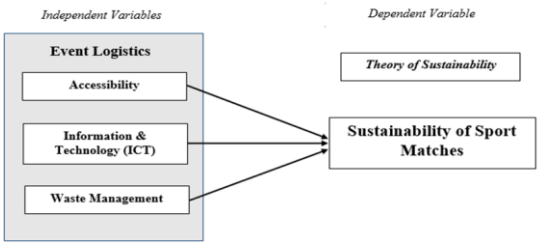

Figure 1. Theoretical Framework

3. Methodology

3.1. Sampling and Data Collection

In this research, the primary data were collected through the interview session with the president of Kedah Football Association and a set of online questionnaires that distributed to the respondents. The population in this research involves the football match audience in Malaysia to find out that the factors may influence the sustainability of sports matches. There are 400 samples has been collected from the population of football audience which under the UUM, Kedah Football Fans Club, Negeri Sembilan Football Fans Club, Kelantan Football Fans Club and Pahang Football Fans Club to represent the audience of the football matches in Malaysia. The questionnaire was designed to gather the information of the audience satisfaction towards the event management in sport based on their experiences of attending the live football match in the stadium. Seven Likert Scale was used as an instrument to indicate the degree of agreement for each criterion, with 1 (strongly disagree) as minimum and 7 (strongly agree) as the maximum.

3.2. Research Design

The research is descriptive research. A correlation study is chosen to investigate the relationship between independent variables (accessibility) and the dependent variable (sustainability of sports matches). The quantitative approach is used to collect primary and the secondary data. A non-contrived setting is used in the research where the researcher has minimal interferences to the study. The unit of analysis in the study is individual as the data is collected from individual sport event spectators. In this research, a cross-sectional study is carried out over a short period or a single point in time. Table 1 has provided a social-demographic profile of respondents.

Table 1. Demographic Background (N = 401)

ITEM	N	%
GENDER		
Male	356	88.8
Female	45	11.2
STATUS OF EMPLOYMENT		
Employed	228	56.9
Unemployed	8	2
Student	148	36.9
NGO/Volunteers	17	4.2
AGE		
Below 18	7	1.7
18-22	96	23.9
23-27	101	25.2
28-32	126	31.4
Above 32	71	17.7
ETHNIC		
Malay	244	60.8
Chinese	43	10.7
India	114	28.4
Others	0	0

According to the Table 1, all the respondents are from Malaysia which is 100% of the total sample size. The table showed that the majority football match audience in Malaysia is Malay which consists of 244 respondents (60.8 per cent) and they are mainly is male respondent which consists of 356 respondents (88.8 per cent) out of 400 sample sizes. Most of the respondents are employed which consists of 228 respondents (70 per cent), and their age group is between 18 and 32 years old which is 23.9% for age group (18-22), 25.2% for age group (23-27) and 31.4% for age group (28-32).

4. Result

Firstly, the analyses have to go through the reliability test and is assessed using Cronbach's Alpha score analysis. According to Table 2 below, Cronbach's Alpha Score of the variable in this study demonstrates the value 0.80.

Table 2. Cronbach's Alpha Score for Variable (N = 401)

Cronbach's Alpha	N of Items
0.803	16

According to [26], the coefficient works because the variance of the sum of a group of independent variables is the sum of their variables. If the variables are positively correlated, the variance of the sum will be increased. A low-value alpha in the acceptable value ranging from 0.70 to 0.95 could be due to a low number of questions, poor inter-relatedness between items or several constructs. If alpha is too high, it may propose that some items are surplus as they are testing the same questions but with another appearance [27]. In the study of the current usage of alpha, [28] stated that alpha is a function of the number of items in a scale. Although most who use alpha pay-lip service to this face, it seems to be forgotten when interpreting alpha. Most recent used alpha given level, greater than 0.7 is adequate or inadequate without comparing it with the number of item in the scale. In this study, the independent variable of sustainability of football matches event will affect the dependent variable which is accessibility that direct influence positively.

Table 3. Frequency and Distribution on Gender

Gender	Frequency (Percentage)
Male	356 (88.8%)
Female	45 (11.2%)
Total	401 (100%)

Table 3 shows the descriptive analysis from SPSS for gender in the research. We can find that about 356 out of 401 respondents are male while female only 45 persons. That means the male has more than female at a very significant number which is 311 persons. The ratio of male to female is 7.9: 1.

Table 4. Chi Square Test for Gender and Independent Variables

Variables / Asymp. Sig. (2-sided)	Accessibility	Waste Management	ICT
Gender	0.000	0.000	0.000

In table 4, we found out that gender has the relationship with all the independent variables. This is because the p-value for these three independent variables is 0.000 which is smaller than the significant level that we set which is 0.05. So, null hypothesis has been rejected in this analysis. Pearson Correlation was used as the correlation coefficient to measure the strength of the linear relationship of between independent variable (accessibility, ICT and waste management) and the dependent variable (sustainability of sports matches). In other words, the correlation coefficient is to test the positive or negative relationship between independent variable and dependent variable which means that changes in the value of one variable are correlated to changes in the value of the other.

Table 4. Correlation between Independent Variables and Dependent Variable (n = 401)

Item Pearson Correlation (sig.)	Sustainability Of Football matches event
Accessibility	0.724 (0.000)
ICT	-0.164 (0.001)
Waste Management	0.703 (0.000)

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

Based on Table 3, the p-value for all the accessibility and waste management is equal to 0.000 and ICT at which it is less than α value of 0.01. Thus, it indicates a statistically significant correlation between independent variables (accessibility, ICT and waste management) and the dependent variable (sustainability of sports matches). There is a positive relationship between IV (accessibility and waste management) and DV. However, the relationship between ICT and sustainability of football matches event is weak negative due to the Pearson's value r = -0.164.

Table 5. One-Way ANOVA Analysis

	F	Sig.
Accessibility	85.069	.000
Waste Management	76.144	.000

Table 5 shows the One-way ANOVA analysis for accessibility and waste management to test the significant difference in means. The p-value for both variables show is 0.000 which is less than significant level, 0.05. This means that both variables are significant differences in means.

Table 6. Independent Samples T-test

		Levene's Test for Equality of Variances	t-test for Equality of Means	
		Sig.	Sig. (2-tailed)	Mean Difference
Accessibility	Equal variances assumed	0.000	0.000	12.45995
	Equal variances not assumed		0.000	12.45995
Waste Management	Equal variances assumed	0.000	0.000	6.45139
	Equal variances not assumed		0.000	6.45139

According to Table 6, Levene's Test for equality of variances shows the p-value is smaller than the significant level, α, 0.05. So, the equal variances are not assumed for both accessibility and waste management through the sample T-test. The t-test for "Equal variances not assumed" row less than our chosen significance level $\alpha = 0.05$, we conclude that the mean for accessibility and waste management is significantly different.

Table 7. Factors of Event Logistics That Affect the Sustainability of Football Matches

Factors Of Event Logistics	Percentage
Waste Management	30
Accessibility	60
ICT	80

Further analyse the result of the research, NVivo has been applied to analyse the interview transcript which we carried out with Kedah Football Association's (Kedah FA) president and the affiliated members. Through the analysis, the ICT with the percentage of 80 is considered as the most critical factor for the sustainability of football matches according to Kedah FA. While the waste management is the least important with only cover 30% of the whole themes. The accessibility has covered about 60% from the whole iteration.

5. Discussion

The study was conducted to test the relationship of one of the variables in three variables in the study which are accessibility, waste management and Information and Communication Technology (ICT) with the sustainability of sports matches. This study provided finding on the relationship between the independent variables which is the accessibility, ICT and waste management with the dependent variables which is the sustainability of sports matches. According to General Assembly resolution (2017), "access to economic opportunities and social services and pursuing sustained, inclusive and equitable economic growth and sustainable development." the study has shown that any policies that help improve the accessibility has a positive relationship with the sustainability of event management [21]. Kwok (2004) in the study state that they include the land-use pattern and the transportation infrastructure, as the population can move to areas of excellent public transport accessibility [29]. In the line of the study, [30] also found that the accessibility has a positive association with the sustainable football matches event. Accessibility helps explore a wide range of possible transport options to balance and maintaining accessibility to ensure connectivity of residential areas and a more comprehensive sustainability goal in reducing emission.

As for the second logistics indicators which are waste management relatively significant and positive toward the sustainability of Event Management. This finding is consistent with the literature by [16], the waste management operations should be used with the proper way to eliminate or reduces the waste. An increase of proper waste management will increase the sustainability of Event Management, as the Pearson correlation resulted $r = 0.703$. Hence, it will create a significant positive relationship between waste management and sustainability of event management.

Besides, the result of this study has shown that the third logistics indicator which is ICT was significant with a weak negative relationship with

the sustainability of Event Management. It is not compatible for the literature in the previous study, and this is because this study does not provide better and substantial evidence and with constraints of time to gather more evidence to support the variables in the study. In this study, the research has used Chi-Square to find if there is a significant association between the two variables. Given the null hypothesis in this study, there is a significant relationship between the gender and independent variables. As for the result, both variables indicate have a strong relationship between gender and independent variables (accessibility, waste management and ICT). However, the result from the Pearson correlation indicates the ICT shows a weak relationship where the p-value of 0.001 which is smaller than p-value of 0.01 due to the insignificant of the materials and strong evidence while researching with the short time.

The sample T-test is conducted in the study to find the difference between the means of the variables. From the t-test result, the independent variables (accessibility and waste management) have different mean since the test is 'Equal variance not assume'. To further analysis, the research use the NVivo, the test shows that the most critical factors are the ICT and the second most important is accessibility with are 80 and 60 accordingly. The least important based on the test is the waste management which has the lowest percentage of 30%.

6. Conclusion

The study has revealed that the accessibility and waste management have a strong positive relationship with the sustainability of football matches. Besides, it is proven (ANOVA &T-Test result) the factors are predictor variables. This study has revealed the significant role of situational factors affecting the accessibility and waste management concerning the sustainability of sports matches. The study outcome can assist the related team and event management in designing, planning and operating a suitable sustainable logistics process in the future. Therefore, sustainable of sports matches success will only cover with the better implementation and proper planning of resource to reduce waste and enhance the accessibility of transportation in the sporting event. Further research is advisable for any event that contributes to any event organisers and the game player in any event as well as across the nation with the sporting event such as Olympic 2020.

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