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### **Abstract**

*A new landscape of adventure-based program demonstrated it linked to positive psychological aspects outcomes, including mental toughness. These benefits go beyond traditional character-building concepts of adventure-based programs. In Malaysia, there are numerous adventure-based programs conducted by many levels of organizations with aims to improve participants' mental toughness. Unfortunately, there are very limited studies conducted on how to design a specific instrument of the adventure-based mental toughness program. The conceptual issues identified as main interest in this regard is identify the need to develop adventure-based mental toughness inventory among Malaysian outdoor practitioners. The study based on the Develop and Design Research (DDR; Saedah, Muhammad & Rozaini, 2020). IBM Statistic (SPSS) utilized as the main statistical analysis software. A total of 85 respondents (N=85) among active outdoor practitioners have purposively been selected. Based on the analyses, overall, 93% of agrees was achieved for all statements in the survey (with IQR= .0 -1.99). These findings provided a platform from which to foster coherent and systematic scholarly work on adventure-based program and mental toughness development.*

**Keywords:** *Adventure-based program, mental toughness.*

## INTRODUCTION

Adventure-based programs are widely participated by peoples all corners of the globe with various intentions. To date, one of emerging aim is to develop mental toughness. In line with the issue, several studies found the intervention of adventure-based program has potentially linked towards the development of psychological aspects, including mental toughness (Nordbo & Prebensen, 2015; Clough, MacKenzie, Mallabon & Brymer, 2016). It is a believe that well-designed adventure-based program can significantly influence on mental toughness development.

In Malaysia, adventure-based programs are organized by numerous organization which includes local sports bodies, education institutions, government agencies, and commercial outdoor consultant with the aims to enhance mental toughness (Shariman & Hisyam, 2014); Md Taff, Shafie, Zakaria, A. Rahman, 2012). Despite this current trend, it is hard to see a specific instruments and model on the intervention of adventure-based program towards mental toughness improvement.

### *Adventure-based program*

To date, MacKenzie, Son, and Eitel (2018) defined adventure-based program as an experience with the risks, challenge, sensation seeking, achievement, competence, and testing one's skill. The implementation of the adventure-based program involves several characteristics, which includes an outdoor adventure activity, exposure to the open weather and in the natural environment setting. Based on the literature, participation in adventure-based program also requires strong physical, psychological, emotional and social ability (Allain, 2006; Sheard & Golby, 2006; Wang, Liu & Khalid, 2006; Gatzemann, Schweizer & Hummel, 2008; Godfrey, 2009).

In addition, intervention of adventure-based program is contributing towards positive effects on several common psychological aspects such as; (1) self-confidence, (2) motivation (3) self-actualization, (4) self-efficacy, (5.) communication, and (6) team cohesion (Nordbo & Prebensen, 2015; MacKenzie, Son, & Eitel, 2018; Muz & Muller, 2016; Lekies, Yost, & Rode, 2015; Gatzemann, Schweizer & Hummel, 2008; Godfrey, 2009). To note, there are also similarities found between common psychological constructs of mental toughness and adventure-based program psychological benefits.

However, there is lack of study specifically to focus in developing adventure-based mental toughness instrument and model. After all, the effectiveness of outdoor adventure program on participants' mental toughness development remains struggle to be verified.

### *Mental Toughness*

In general, mental toughness originates from the perspective of elite sport, where it has been first studied by a sport psychologist, James Loehr (1986). Mental toughness can be defined as a multi-dimensional construct comprising values, attitudes, emotions, and cognitions that enable people to successfully pursue their goals and perform consistently well regardless of obstacles or adversity (Coulter, Mallett, & Gucciardi, 2010; Bell, Hardy & Beattie, 2013). For that reason,

mental toughness established as a superior mental quality of an athletes and it is believed as one of the important psychological aspects in sports performance. After all, mental toughness become a popular area of investigation and practice within sport and exercise psychology.

Extension of the issues, majority of mental toughness studies conducted within sport’s context, which are focus on general sport, selected sports, individual sports, and team sports. As a result, at least seven (7) common instrumentations developed and utilized with purpose to assess mental toughness. The instrumentations are; (1) Psychological Performance Inventory-PPI (Loehr, 1986), (2) Mental Toughness Questionnaire-MTQ48 (Clough, 2002), (3) Psychological Performance Inventory-A (Golby, Sheard & Van Wersch, 2007), (4) Mental, Emotional, and Bodily Toughness Inventory (Mack & Ragan, 2008), (5) Cricket Mental Toughness Inventory (Gucciardi & Gordon, 2009), (6) Sports Mental Toughness Questionnaire (Golby, Sheard & Van Wersch, 2009), and (7) Australian Football Mental Toughness Inventory (Gucciardi, Gordon & Dimmock, 2009a). To the best of the researcher’s knowledge, there is no instruments developed specifically on adventure-based setting.

## METHODS

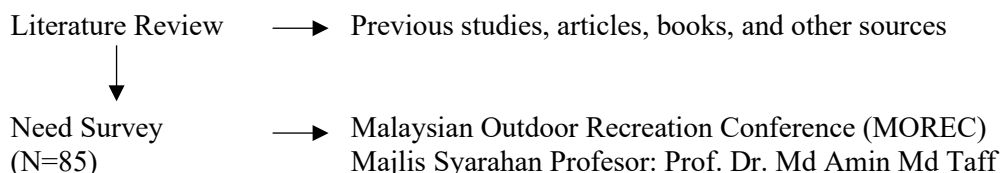
This study focused need analysis on the development of the adventure-based mental toughness inventory. For these matters, the researcher applied the modified Design and Development Research (DDR) by Saedah et. al, (2020). The modified DDR was applied in many fields of development studies (Richey & Klien, 2007; Saedah et. al., 2013).

*Table 1: Modified DDR Data Collection Method (Saedah et. al., 2013)*

Stage 1	Data Collection Method / Technique
Need Analysis	Interview
	Survey
	Content Analysis

However, to extend understanding on the study focus the researcher conducted need analysis in two (2) approaches. At first, the researcher conducted an extensive literature review on the related study area and followed by the need survey to the targeted population (Figure 1.0).

### *Need Analysis*



*Figure 1.0: Need Analysis Approaches.*

Literature review was a fundamental process in this study. A literature review defined as a comprehensive summary of previous research on area of study (Singh, Fook & Sidhu, 2008; Zainudin, 2016). The researcher conducted a literature review through several sources such as scholarly articles, books, and other sources that relevant to a particular area of study.

In addition, the literature review conducted purposely with aims to gain deeper understanding of the existing studies, models, instruments, and debates relevant to adventure-based program and mental toughness. The findings of the literature review provided the direction or angle of the problem that intended to be solved by the researcher.

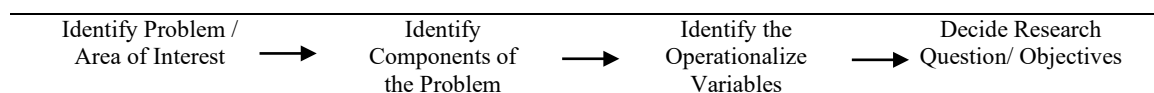


Figure 1.2: Literature Review Concept (Zainudin, 2016)

Additionally, the researcher also conducted need survey to specify focus of the study. The researcher employed need survey to narrowing the scope of the study. Needs survey was employed by many researchers purposely to defined gaps of the study (Zainudin, 2016). The researcher noted it is important to determine the area of interest in the study.

In focus with the study objectives, a Discrepancy Model (McKillip, 1987) was adapted in the process of need survey. McCillips stressed on the needs survey is a process of evaluating the problems and solutions identified for a target population. The researcher conducted need survey as a formal, systematic process of identifying and evaluating problems or specific needs of an individual or group in adventure-based industry in Malaysia. The need survey in this study followed the fundamental five (5) steps of need survey by McKillip (1987) (Figure 1.3).

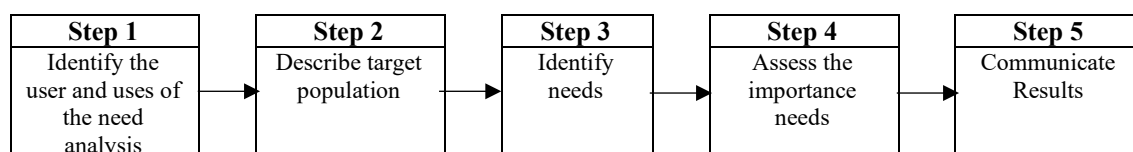


Figure 1.3: 5-Steps of Need Survey by McKillip (1987)

The total of 85 Malaysian adventure-based program practitioners was involved as a respondent. They are among active adventure-based program practitioners around Malaysia. Two (2) main events related to the industry, which are the 1) Malaysian Outdoor Recreation Conference (MOREC 2019) in December 2019 and 2) Majlis Syarahan Profesor: Profesor Dr. Md Amin Md Taff in February 2020 was selected for data collection. These two (2) events were selected because it was known as a platform to gathered many adventure-based industries players among academicians, experts, practitioners, and enthusiasts in Malaysia (Table 1.2).

Table 1.1: Need Survey

Respondents (N=85)	Events
n=44	Malaysian Outdoor Recreation Conference 2019
	Putrajaya
	December 2019
n=41	Majlis Syarahan Profesor: Prof. Dr. Md Amin Md Taff
	Universiti Pendidikan Sultan Idris
	February 2020

A set of questionnaires was developed as a survey instrument (Table 1.2). The survey instrument comprised of two (2) sections. Section A focused on the respondent's demographics profile (4 questions) and the Section B focused on the survey on the issues related to adventure-based program and mental toughness (3 questions). The results of need survey analysis used to

support the objective of the study. It is also important to identify the needs of industry player to ensure the development products (objectives) are met the demand and useful for an individual or group in the industry.

The researcher developed a need survey questionnaire. The questionnaire consisted of two (2) sections. Section A is a demographic profile and Section B, a need survey on the related issues regarded the study (Table 1.2)

*Table 1.2: Need Survey Questions*

Section A: Demographics Profile	
Question	Items
1	Gender
2	Organizational background
3	Years of Involvement
4	Adventure-based program experience
Section B: Need surveys	
1	Is it difficult to find a valid adventure-based mental toughness instrument that can be used to evaluate an adventure-based program with focus to develop mental toughness?
2	Is it difficult to find a valid adventure-based mental toughness model that can be used for planning an adventure-based program with focus to develop mental toughness?
3	Do you agree, it is a call now to develop a specific adventure-based mental toughness instrument for Malaysian adventure-based program and industry.

### *Need Survey: Sampling Method*

Non-probability sampling techniques was employed in need survey. There are several techniques in non-probability sampling such as convenience sampling, judgmental sampling, quota sampling and snowball sampling (Zainudin, 2016). In focus of the need survey requirements, the researcher applied convenience sampling.

The convenience sampling applicable to the need survey because the respondents are selected because they are among the participant of Malaysian Outdoor Recreation Conference (MOREC), in November 2019 and Majlis Syarahan Profesor Dr. Md Amin Md Taff, in February 2020.

### *Analysis Technique*

#### **Descriptive analysis**

Demographic profiles	→	Frequency & percentage
Need survey	→	Percentage of agrees / Interquartile Range (IQR)

*Figure 1.3: Need Survey Analysis Techniques.*

The need survey was statistically analyzed in descriptive analysis of percentage and frequency (Figure 1.3). The analysis assisted in defined the direction and objectives of the study. The data in the demographic profile section was analyzed using percentage as to highlight the dispersion of the respondent's profiles. Next, percentage of agree applied to analyze the level of respondents agrees towards the given statements in the survey. These data are important to support the

objectives of the study.

## RESULTS

### *Socio Demographic Variables*

The socio-demographic variables were comprised of: (1) organizational background; (2) years of involvement; and (3) experience in organizing or participating in adventure-based mental toughness program.

*Table 1.4: Organizational Background*

Organization	Descriptive Analysis	
	<i>N</i>	%
Government	49	57.6
Private	23	27.1
Own Company	13	15.3

(N=85)

Referred to Table 1.4, out of 85 participants there are three (3) group of organization. The highest respondent group are those worked in the government sector with  $n=49$  (57.6 %), followed by private sector with  $n=23$  respondents (27.1%), and those who owned a company with  $n=13$  (15.3%).

*Table 1.5: Years of Involvement (N=85)*

Years of Involvement	Descriptive analysis	
	<i>n</i>	%
Below 5 years	17	20.0
5 to 9 years	22	25.9
10 years and above	46	54.1

Table 1.5 shown majority of the respondents experienced more than 10 years involvement in adventure-based program with  $n=46$  (54.1%), followed by 5 years and above involvement with  $n=22$  (25.9%) and below than 5 years involvement with  $n=17$  (20%).

*Table 1.6: Adventure-Based Program Experience (N=85)*

Experiences	Descriptive analysis	
	<i>n</i>	%
Yes	81	95.3
No	4	4.7

Results in Table 1.6 showed  $n = 81$  (95.3%) respondents experienced organizing or participating in adventure-based program with purpose to develop mental toughness. Out of the total, only  $n=4$  (4.7%) was not aware or did not participate in any adventure-based mental toughness program with purpose to develop mental toughness.

*Analysis of Statement (1-3)*

The second section in need analysis is the analysis of the statement regards adventure-based mental toughness inventory. Each respondent showed their opinion for the statement by selecting given scale in the questionnaire. The questionnaire utilized 5-Likert scale. The respondent only allowed to choose one (1) scale for each statement to represent their opinion. Each of scale (from 1-5) represented different values.

Three (3) main statements were highlighted in the survey. The statements also been translated in Bahasa Malaysia as to foster deeper understanding among respondents. The statement was developed by the researcher with focus to identify the main issues regards the study. All respondents received the same statements. There were also comment section provided to all respondents.

*Table 1.7: Statement 1-3*

<b>Statement 3:</b> <i>"It is difficult to find a valid adventure-based mental toughness instrument that can be used to evaluate an adventure-based program with focus to develop mental toughness."</i>
<b>Statement 4:</b> <i>"It is difficult to find a valid adventure-based mental toughness model that can be used for planning an adventure-based program with focus to develop mental toughness."</i>
<b>Statement 5:</b> <i>"It is a call now to develop a specific adventure-based mental toughness instrument'."</i>

In this section, two (2) descriptive analysis was utilized. The researcher employed percentage of agrees ( $\geq 70\%$ ) and Interquartile Range ( $\geq .0 - 1.99$ ). The first analysis was descriptive analysis on the percentage of agrees. The total percentage described the level of consensus among the respondents.

*Table 1.8: Overall percentage of agrees*

Descriptive analysis (N=85)	Percentage of agrees	
	% Agree (Statement)	% Agree (Overall)
Statement 1	94.2	93
Statement 2	91.8	
Statement 3	93	

*Consensus achieved ( $\geq 70\%$ )*

Table 1.8 shown the overall percentage of agrees for Statement 1, 2 and 3. In details, Statement 1 was scored the highest percentage of agrees with 94.2 percentage, followed by the Statement 3 with 93 percentage and the lowest was Statement 2 (91.8%). In sum, the overall percentage of agrees recorded 93 percentage. The analysis strongly suggested respondents' consensus on the statement are achieved ( $\geq 70\%$ ). In further analysis, the researcher conducted the analysis on percentage of agrees based on each statement. The analysis shown the details frequency of responses for each value.



*Table 1.9: Hard to Find Adventure-Based Mental Toughness Instrument. (N=85)*

**Statement 1:**

*“It is difficult to find a valid adventure-based mental toughness instrument that can be used to evaluate an adventure-based program with focus to develop mental toughness.”*

**Descriptive analysis**

<b>Statement 1: Hardly to find instrument</b>	<b>n</b>	<b>%</b>	<b>% Agree</b>
Strongly disagree	-	-	
Disagree	5	5.9	
Moderately Agree	14	16.5	94.2
Agree	40	47.1	
Strongly Agree	26	30.6	

*Consensus achieved (≥70%)*

Table 1.9 presented the statistically data of Statement 1. The highest percentage was ‘Agree’ with 47.1 percentage ( $n=40$ ) and followed by ‘Strongly Agree’ with 30.6 percentage ( $n=26$ ), ‘Moderately Agree’ with 16.5 percentage ( $n=14$ ) responses and the lowest ‘Disagree’ with 5.9 percentage ( $n=5$ ) responses for the Statement 3. The overall score for Statement 1 was 94.2 percentage of agrees. The analysis strongly recommended consensus was achieved for Statement 1.

*Table 1.10: Hard to Find Adventure-Based Mental Toughness Model (N=85)*

**Statement 2:**

*“It is difficult to find a valid adventure-based mental toughness model that can be used for planning an adventure-based program with focus to develop mental toughness.”*

**Descriptive analysis**

<b>Statement 2: Hardly to find model</b>	<b>n</b>	<b>%</b>	<b>% Agree</b>
Strongly disagree	-	-	
Disagree	7	8.2	
Moderately Agree	14	16.5	
Agree	41	48.2	91.8
Strongly Agree	23	27.1	

*Consensus achieved ≥70%*

Table 1.10 presented the statistically data of Statement 2. The highest percentage was ‘Agree’ with 48.2 percentage ( $n=41$ ) and followed by ‘Strongly Agree’ with 27.1 percentage ( $n=23$ ), ‘Moderately Agree’ with 16.5 percentage ( $n=14$ ) responses and the lowest ‘Disagree’ with 8.2 percentage ( $n=7$ ) responses for the Statement 2.

The overall score for Statement 2 was 91.8 percentage of agrees. The analysis recommended consensus was achieved for Statement 2.

Table 1.11: Develop AbMTI (N=85)

**Statement 3:**

*“It is a call now to develop a specific adventure-based mental toughness instrument”.*

**Descriptive analysis**

Statement 3: Develop an instrument	n	%	% Agree (Value 4-5)
Strongly disagree	-	-	
Disagree	6	7.1	
Moderately Agree	11	12.9	93
Agree	27	31.8	
Strongly agree	41	48.2	

Consensus achieved  $\geq 70\%$

Table 1.12 presented the statistically data of Statement 3. The highest frequency was ‘Strongly Agree’ with 48.2 percentage ( $n=41$ ) and followed by ‘Agree’ with 31.8 percentage ( $n=27$ ), ‘Moderately Agree’ with 12.9 percentage ( $n=11$ ) responses and the lowest ‘Disagree’ with 7.1 percentage ( $n=6$ ) responses for the Statement 3. The overall score for Statement 3 was 93 percentage of agrees. The analysis recommended consensus was achieved for Statement 3.

## CONCLUSION

The result showed how critical demand on the instrument to assess mental toughness among active practitioners in Malaysia. Over decades, they have been organized numerous of adventure-based programs and strongly claimed that the program can increased participant’s mental toughness. However, the fact is they do not have an instrument to produce the statistical evidence to assess mental toughness in adventure-based program setting. This scenario at high possibly to contribute towards misconception in designing appropriate adventure-based program. There is a called now to a researcher to further work on this matter. The development of adventure-based mental toughness inventory will surely be expanding the area of recreational studies as well as contributed towards greater adventure-based program implementation in Malaysia.

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