

Measurement of Media Coverage from the Public Perspective: An Exploratory and Confirmatory Approach

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Abstract: The aim of the study was to operationalize and validate the measure construct of media coverage as perceived from the public point of view. Media coverage was measured in connection to public awareness on environmental issues in Malaysia. This empirical work flowed from the need to recognize and fill in the gap related to media coverage measurement from the public perspective. The respondents used for this study were the university students in the Northern region of Malaysia. The measurement developed was content-validated. Statistical validation was accomplished by carrying out Exploratory Factor Analysis (EFA) and Confirmatory Factor Analyses (CFA). While EFA was conducted to identify the underlying structure of media coverage measure, CFA was carried out to validate the measurement model. The findings of validity and reliability of the scale revealed perceived media coverage as a six-factor construct, consisting dimensions of news sufficiency, news prominence, news frequency, news attractiveness, news sources and variety of media role. The operationalization and development of the media coverage scale is hopeful to benefit future research in the area of media coverage generally and those considering media user's perspective specifically in the quest of mass media communication.

Key words: Media coverage, public perspective, exploratory and confirmatory factor analyses, measurement model, Malaysia

INTRODUCTION

Media coverage of environmental issues has become a very topical issue globally, especially in communication field and social sciences, in general, given the overt and pervasive nature of environmental problems at all levels, hence its involvement as an integrated part of academic research for many decades, either as the primary focus of the study (Allen and Weber, 1983; Mikami *et al.*, 1999) or as one among other variables (Laurian, 2003).

Though most environment-media researchers have used traditional content analysis to assess the importance of environmental issue in mass media such as counting articles, measuring columns, counting the frequency of specific issues or words and measuring trends in coverage of environmental issues (Anderson and Marhadour, 2007; Antilla, 2005; Brulle *et al.*, 2012; Das *et al.*, 2009; Dudo *et al.*, 2007; Manus, 2000; Hasan and Norma, 2007; Rogala, 2011; Sampei and Aoyagi-Usui, 2009), the current study however suggests that a perception-oriented subjective measure is more appropriate. This contention is based on the

understanding that the amount of coverage, no matter how sufficiently it is planned to be, does not reflect the quality and significance of the coverage. This is also conceivable as Shanahan *et al.* (1997) argue that the "abundant amount of coverage" often does not transform automatically into changes in public attitudes (awareness) or knowledge, even when the information is successfully disseminated.

Literature review: Media coverage is a form of media effects which refers to "the influence of different media content, frequency and forms of communication on audience's attitudes, perceptions and behaviors" (Cox, 2013). For some scholars, media coverage is understood as equivalent to exposure and attention to media content (Stamm *et al.*, 2000). However, other scholars define media attention or visibility as synonym to media coverage. Herein while media visibility is referred to the amount of visibility that gatekeepers allocate to a message to increase its potential to be diffused in the public sphere (Koopmans, 2004), media attention is conceptualized as a matter of gaining coverage or not (Andrews and Caren, 2010).

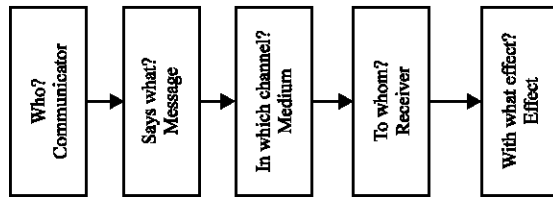


Fig. 1: Elements within communication process

However, though some communication scholars similarly refer to media attention as media coverage, they conceptualize media attention in a more nuance way by focusing on the prominence of media coverage (Clayman and Reisner, 1998). Accordingly Mazur (2009) argues that for environmental issues, the quantity and saliency of coverage matter more than the content as audiences are more influenced by media signals than by content. For this reason, Gamson and Wolfsfeld (1993) define media attention interchangeably with media coverage as “the amount and the prominence of media coverage that an actor, event or issue receive”. Therefore, the definition of media coverage in this study is equivalent to the amount and the prominence of media content on environmental issues.

Particularly, when the focal variable of interest (media coverage) is closely related to the user’s environmental public awareness, media users (audience) who have direct experience of being a paying consumer is believed to be accountable to provide appropriate answers pertaining to the influence and the extent (intensity) to which media could have on them. In essence, media users correspond to the focal element of “receiver” which is comprised within the basic communication process as depicted in Fig. 1 (Quail and Windahl, 1993).

In fact, every element in the communication model reflects distinct type of communication research which corresponds to their particular type of analysis. The use of direct users as appropriate respondents to provide response on issues related to environment is also found agreeable in such recent work as Wang *et al.* (2013) which examined environmental issues. Respondents in the research of Wang *et al.* (2013) had reportedly expressed their outcry of having given limited chance to communicate their perceptions regarding the environmental issues surrounding them.

On the other hand, though literature has demonstrated the broad discussion of media coverage as related to public awareness across various areas such as politics (Agbatogun, 2009) and health (Lee *et al.*, 2013), not much of these empirical works, to the knowledge of

the researcher has demonstrated empirical attempt to operationalize media coverage as perceived from the perspective of the public, the seemingly end users of the media product. In fact, different media-related measures are used to answer research questions in different settings which correspond uniquely to the research issues under investigations.

While many researchers have obtained media coverage measure by method of quantitative content analysis (Antilla, 2005; Brulle *et al.*, 2012; Manus, 2000) or qualitative content analysis (Dudo *et al.*, 2007; Mazur, 1998; Comas *et al.*, 2001), this study contributes to an alternative measure for mass media as it gauged and perceived from public perspective, the end user of mass media. Therefore, due to the methodological concern, perceived media coverage is largely operationalized as a continuous measure to allow it be captured from user’s perceptions. Important to note, the data and the measures of media as studied in the past had been one that was obtained by the researcher’s computation which involved qualitative (exploratory) works of content analysis to identify and count the number of appearance of an intended subject (Dudo *et al.*, 2007; Mazur, 1998) as in line with the quantity theory of media coverage (Mazur and Lee, 1993; Mazur, 2009).

Instances of some of these measures include the number of articles reviewing on environmental issue (Antilla, 2005; Brulle *et al.*, 2012; Manus, 2000) and the number of TV shows discussing environmental issue (Comas *et al.*, 2001). Having this noted, also equally important to note is the difference of unit of analysis used in previous studies and the current one. While the unit of analysis intended for the current study is at the individual level, those of the previous studies are dependent on the level of the content intended, for example, at the article-level (Rogala, 2011; Sampei and Aoyagi-Usui, 2009) and subject matter-level (Anderson and Marhadour, 2007; Das *et al.*, 2009).

As a result, media coverage in this study was gauged from the media reader’s (audience) perspective by means of perception. Being the end user of the media, the direct experience of being a paying consumer is believed to posit media users at good stance to provide appropriate answer pertaining to the extent to which media had made sufficient role on environmental issues.

Operationalizing media coverage construct: The development of perceived media coverage measure in this study is strictly based on its pre-determined definition. Media coverage in this study is defined as to the amount

and the prominence of media content on environmental issues. Media coverage is operationalized as the extent to which the news is informative and educational. As the measurement of media coverage from the users (receivers) perspective is not readily available, therefore the current study extracts the essence of informative and educational aspects of mass media functions from the existing media-centered measures.

The two essences are reflected by relevant criteria such as the depth of news content (Agbatogun, 2009; Lemert *et al.*, 1977; Hasan and Norma, 2007; Raouf, 2010), prominence of news (Ader, 1995; Atwater *et al.*, 1985; Hasan, 2007), frequency and appearance (Brulle *et al.*, 2012; Hill *et al.*, 2012; Lee, 2011; Mikami *et al.*, 1995) timeliness (Stryker, 2002), reliability or trustfulness of news, news varieties span (Agbatogun, 2009; Hasan and Norma, 2007) and attractiveness of news presentations (Chokriensukchai and Tamang, 2010). Several items such as timeliness and reliability or trustfulness of news are added based on literature study.

For example, items of timeliness are included considering that timeliness is one important criterion of good journalism (Stryker, 2002). Further, several items capturing people's general agreement of the role of mass media are also put forth (Chokriensukchai and Tamang, 2010). Altogether, 27 items are proposed to measure media coverage. Moreover, to check the validity of items that are generated to measure the criteria above, the items are also reviewed by academic expert in the field of environmental communication in Malaysia. According to the feedback in an email to the expert (Hassan, personal communication, November 14, 2015), all the 27 items are relevant. However, it is recommended adding a few statements to capture news sources. Therefore, in addition to the earlier 27 items, two additional items are adapted to capture the number and variety of news sources and thereby a total of 29 items are generated to measure media coverage from public perspective. The full references for the original and revised scales are attached in Appendix A.

Based on the literature foundation for the criteria discussed above, these criteria are redefined in line with the setting of media coverage for environmental issues as follow.

The depth of news content/sufficiency: The depth of news content indicates the sufficiency of articles or stories on environmental issues in terms of the depth of discussion and analysis, the inclusion of back ground and factual information, constructive critics and suggestions (Agbatogun, 2009; Chokriensukchai and Tamang, 2010; Laurian, 2003; Lemert *et al.*, 1977).

The prominence (placement): Prominence reflects the importance that people attach to environment-related news. The importance is recognizable in the size or length of stories, the placement of news and the use of photos for greater emphasis (e.g., newspapers, online media) and the appearance of environmental news in the headline (Ader, 1995; Atwater *et al.*, 1985).

Frequency of appearance: Frequency of appearance taps on how frequently environmental news appear in the mass media. This reflects the regularity of such news which could be captured by how easily and conveniently news can be found from time to time (Brulle *et al.*, 2012; Harring *et al.*, 2011; Hill *et al.*, 2012; Lee, 2011; Mikami *et al.*, 1995).

News sources: News sources denote to the number and type or variety of news sources that are quoted in media reporting on environmental issues.

Timeliness: Timeliness concerns about how timely news is reported in the real sense of keeping users up to date (Stryker, 2002).

Reliability: Reliability of news reflects how accurate is the information provided by the news articles. Specifically, it captures the trust ability of news in user's eyes.

News variety: News variety reflects how broadly the environmental news span in terms of the type and range of issues addressed. Some among the varieties of environmental issues are such as air and water quality, landslide, volcanoes, flood, hurricane, fire, flood, deforestation, energy, industrial or development impact on environment, waste management and recycling, etc. The news variety also denotes the reporting of news across both local and international level. This criterion is closely related to topic selection in media studies (Agbatogun, 2009).

Attractiveness of news: Attractiveness of news refers to the extent to which the issues reported managed to grasp the interest and attention of users. This can be clearly known from the fact whether users look up to or like the news (Chokriensukchai and Tamang, 2010).

General agreement on the role of mass media: General agreement on the role of mass media expresses the general attitudes of people towards the role of mass media in informing about environmental issues (Chokriensukchai and Tamang, 2010).

MATERIALS AND METHODS

Research methodology and analysis procedures: The Ministry of Education Malaysia Directory (MEM, 2014) was used to generate the sampling frame for this study. With 531,501 as the intended population of the study, the Krejcie and Morgan (Keyton, 2015) sampling table indicates that this population fall within the category of “100,000 and over” which requires a minimal sample size of 384 to claim representative. However, to ensure sufficient surveys were collected back, the current study doubled the minimum sample size required (Bartlett *et al.*, 2001). Therefore, a number of 768 surveys were distributed (384×2).

The study sampled from three universities in the Northern region of Malaysia, namely Universiti Sains Malaysia Penang (USM), Universiti Utara Malaysia Kedah (UUM) and Universiti Malaysia Perlis (UnIMAP). These three universities in the Northern region were chosen on the basis of cluster sampling to counter the impracticality of collecting data from the whole intended population (531,501 students) involving 20 public universities. It is considered a waste of the limited available resources in terms of time and money when an answer can be accurately obtained from a smaller sample (Druckman, 2005; Nayak, 2010). Further from the cluster sampling, proportionate random sampling was used to sample respondents from UUM, USM and UnIMAP.

Particularly for cluster sampling, clusters were handily recognized from the six main regions in Malaysia, covering 13 states and two federal territories. These regions are namely: Northern, Central, Southern, East Coast, Sabah and Sarawak. Using these regions as clusters for sampling was appropriate because public universities in Malaysia are scattered across all the states. The universities students in Malaysia are considered homogenous, characterized by similar multiple demographic background (e.g., age, ethnic, religion, sex, language, education level, family condition, living area, etc.) of the country (Poston and Bouvier, 2010). Further, each university receives students from the whole country. Therefore, the diversity of the university students is close to represent the population of the study. However, given that the chosen universities (UUM, USM and UnIMAP) differ in the number of students, the proportionate random sampling followed. By means of this sampling technique, about 338, 315 and 115 surveys were collected from the students of UUM, USM and UnIMAP, respectively.

Out of the 768 questionnaires distributed, 730 were returned. These questionnaires were randomly split into

two equal halves of 365 cases for the purpose of Exploratory (EFA) and Confirmatory (CFA) factor analysis (DeVellis, 2012; Hair *et al.*, 2014). Both data sets were subjected to data cleaning, detection of outliers and multivariate assumptions testing. Homoscedasticity and common method variance were also performed for the measurement model assessment. Finally, about 344 and 360 cases were retained for EFA and CFA analyses, respectively.

EFA was conducted to determine the dimensionality of the newly developed measure of media coverage. In this regards, validating the constituent's measures of the instrument would work simultaneously to define the underlying structures of the measures. Several procedures concerning EFA were carefully followed. EFA was performed using SPSS Software Version 21.

Principal component analysis was performed with Promax rotation method. The outcomes of correlation matrix, the Bartlett test of sphericity and measure of sampling adequacy Kaiser-Meyer-Olkin (KMO) were observed to determine the factorability of the measure. For this purpose, correlation >0.30 (Tabachnick and Fidell, 2013), Bartlett test of sphericity at a statistical significance of at least p-value of <0.05 and minimal KMO of 0.60 (Pallant, 2011) were used. Further, factor loading of 0.50 was used as the threshold for retaining items (Hair *et al.*, 2006). However, items <0.50 was also given case-to-case consideration, considering the content validity of the construct and the fact that the items proposed had been subjected to careful content validity assessment by academic experts. The number of factors (dimensions) to be retained were determined on the basis of scree-plot test, eigenvalue of >1 and the total variance explained table (Pallant, 2011).

Having identified the factor structure of media coverage in the EFA stage, internal consistency reliability test of Cronbach's alpha (α) was performed on each factor obtained from EFA to verify if the proposed reflective measurement was appropriate before proceeding to the assessment of confirmatory measurement model. This measurement model assessment assured the validity of the discovered underlying structure. Smart PLS 2.0 M3 Software developed by Ringle, Wende and Will was used for this purpose. The use of PLS-SEM analysis (versus the covariance-based approach) is suitable for the newly developed measure of media coverage. According to Chin (1998), Hair *et al.* (2014) and Reinartz *et al.* (2009), PLS analysis works better for newness involving theory development.

For measurement model validation, the guidelines of Henseler *et al.* (2009) for assessing reflective measurement model was followed. Correspondingly, the indicator reliability, internal consistency reliability, convergent validity, discriminant validity at the construct and indicator-level were assessed. While results of composite reliability (ρ_c) were interpreted for internal consistency reliability, Cronbach's alpha values (α) were also reported as the matter of convention. The indicator reliability was assessed on the basis of loadings between 0.40-0.70 (Hair *et al.*, 2014). According to Hulland (1999), loading as low as 0.40 is considered as acceptable particular for a study of exploratory design. Further, this study followed the recommendation of Nunnally (1978)'s minimum 0.70 threshold to claim reliable for a construct. Average Variance Extracted (AVE) >0.50 was used as the cut-off to determine the convergent validity of constructs (Fornell and Larcker, 1981). Discriminant validity at the indicator level was determined using the cross loading approach, where an indicator's loading is the highest for its designated construct when compared with other constructs (Chin, 1998). Discriminant validity at the construct level was assessed using Fornell and Larcker (1981)'s criterion whereby square root of AVE for one construct should be greater than its correlation to all other constructs.

Profile of respondents: Among the 344 cases used for EFA purposes, 24.4% ($n = 84$) were males and 75.6% ($n = 260$) were females. The majority of them (58.4%, $n = 201$) fell within the age group of 18-22 years old. This was followed by respondents of the age groups 23-27 (32.6%, $n = 112$), 28-32 (4.71%, $n = 16$), 33-37 (2.3%, $n = 8$) and 38-52 (0.21%, $n = 7$). About 68% of the respondents were Malay ($n = 234$). The Chinese, Indian and Bumiputra respondents constituted about 24.1%, 4.7 and 2.32%, respectively. A percentage of 0.9% was respondents identified as others. Further, a respective percentage of 45.3, 40.7 and 14% of the sample were respondents from UUM ($n = 156$), USM ($n = 140$) and UniMAP ($n = 48$). Majority of the respondents (97.4%) were full-time students. The respondents covered students undertaking courses at the levels of Ph.D (6.1%), Masters degree (12.2%), Bachelor degree (81.4%) and diploma (0.3%). The most respondents were from Kedah (19.8%) followed by Perak (16.6%), Penang (13.4%), Kelantan (11.9%), Selangor (7.8%), Johor (7.6%), Pahang (6.1%), Terengganu (4.4%) and Negeri Sembilan (4.4%). The remaining respondents were from Sarawak (2.3%), Sabah (2.0%), Federal Territory of Putrajaya (1.7%), Perlis (1.2%)

and Melacca (0.9%). With regards to respondent's exposure to media, most of them (84 %, $n = 289$) read both newspapers and online news media. About 12.8% ($n = 44$) and 3.2% read only newspapers and only online news media, respectively.

For the confirmatory measurement model assessment, 78.3% out of 360 cases were females. The age group of 18-22 years old constituted about 58.9% of the respondents. This was followed by those of the age groups of 23-27 (31.1%), 28-32 (4.7%), 33-37 (2.8%), 43-47 (6%), 38-42 (1.4 %) and below 18 years old (3%). This data set had a similar composition like that of the EFA. About 65% of respondents were Malay ($n = 234$). The Chinese, Indian and Bumiputra of Sabah and Sarawak respondents constituted about 25, 6.4 and 2.2%, respectively. There were 45.8, 40 and 4.2% respondents from UUM, USM and UniMAP, respectively. Majority of the respondents (98.3%) were full time students. The respondents were students undertaking courses at various levels (Bachelor degree, 81.9%; Master Degree, 10.3%; Ph.D, 7.5% and diploma, 0.3%); they were originated from Kedah (17.2%), Perak (16.4 %), Penang (12.5%), Kelantan (10.8%), Selangor (10.3%), Johor (6.1%), Negeri Sembilan (5.8%), Pahang (5.6%), Perlis (1.4%), Melacca (2.2%), Sabah (2.5%) and Federal Territory of Putrajaya (2.5%). Finally, about 84% respondents self-reported as reading both newspapers and online news media. About 13.1 and 2.5% read from only newspapers and only online news media, respectively.

RESULTS AND DISCUSSION

Exploratory factor analysis results of media coverage: Presented in Table 1 is the result of the EFA. The inspection for items suitability for EFA revealed that inter-items correlations were at 0.30 and above (Tabachnick and Fidell, 2013). The Kaiser-Meyer Olkin Measure of Sampling Adequacy (KMO) was 0.900. The Bartlett test of sphericity was also significant ($\chi^2 = 308.387$, $df = 300$, $p < 0.001$). Further, items communalities were all above 0.50.

The scale was validated to be a multidimensional construct of six factors with 25 items, reduced from the initially proposed 29 items. The six factors with eigenvalues >1 explained a total variance extracted of nearly 58%. The scree plot which showed a clear break after the sixth component before straightening out was another indication to confirm the six-factor structure of media coverage.

Table 1: Exploratory factor analysis results of media coverage (n = 344)

		Components					
Items code	Items (25 items; $\alpha = 0.908$)	1	2	3	4	5	6
News sufficiency ($\alpha = 0.784$)							
mc1	Mass media reports useful information about environmental issues	0.762					
mc2	The environmental news is always reported in full-length story in the mass media	0.688					
mc3	Malaysian mass media has taught me a lot about the environmental issues	0.666					
mc4	Environmental issues reported often provide background information	0.649					
mc5	Environmental issues are often reported with constructive critics	0.575					
mc6	Mass media provides adequate reporting on environmental news	0.495					
News prominence ($\alpha = 0.736$)							
mc9	The news related to environment is easily found in mass media in Malaysia		0.495				
mc10	Environmental news often has its own full page		0.632				
mc11	Environmental news often comes with sufficient photos.		0.910				
mc12	It is common to see environmental issues appear as big headline in mass media		0.585				
News frequency ($\alpha = 0.704$)							
mc14	I often see messages about environmental protection in mass media				0.420		
mc15	Whenever I need to look for information about the environmental preservation in Malaysia, I will try to locate it from the Malaysian mass media				0.746		
mc16	I can easily find reports of companies's misconducts which spoil the environment in mass media				0.815		
mc17	It is easy for me to access and read about news on natural environment in mass media				0.495		
News sources ($\alpha = 0.721$)							
mc7	Through the mass media, I know about the NGOs and associations that concern about environment					0.503	
mc18	Mass media use number of news sources to validate the reports					0.905	
mc19	Mass media use a variety of news sources in their reporting on environment issues					0.853	
News attractiveness ($\alpha = 0.787$)							
mc21	Environment information provided by the Malaysian media is often accurate						0.589
mc22	Environmental news reported in the Malaysian mass media attracts my attention						0.834
mc23	I like the way environmental issues is reported in the mass media						0.708
mc24	The environmental news often triggers interesting discussions among me and my friends						0.803
mc28	I can find environmental news happening all around the world in the Malaysian mass media						0.441
Variety of media role ($\alpha = 0.717$)							
mc25	Mass media plays important role to remind people on environmental consequences						0.937
mc26	Environmental news in the mass media is effective to influence people						0.854
mc27	There is a wide variety of environmental issues reported in mass media of Malaysia (such as air quality, water quality and land slide, etc.)						0.439
	Eigenvalue	7.940	1.04	1.19	1.40	1.90	1.120
	Percentage of variance explained (58.244%)	31.75	4.17	4.75	5.59	7.52	4.470
	Kaiser-Meyer Olkin measure of sampling adequacy (KMO)	0.900					
	Bartlett test of sphericity approx. Chi-square	3089.387					
	df	300					
	Sig.	0.000					

The six-factor media coverage structure found in this study was rather similar to the initially proposed dimensions. The remaining 25 items still captured the essence of the six dimensions proposed. Of the 25 items, six were items reflecting news sufficiency (mc1-6), four were items reflecting news prominence (mc9-12), four were items representing news frequency (mc14-17), three were items encapsulating news sources (mc7, mc18, mc19), five were items reflecting news attractiveness (mc21-25) and three were items reflecting variety of media role (mc25-27).

Further, majority of the items exhibited sufficient loadings, ranging from 0.937-0.503. Several items which were below the 0.50 threshold (mc6, 0.495; mc9, 0.495; mc14, 0.420; mc17, 0.495; mc28, 0.441; mc27, 0.439) were

retained considering the content validity of these items. Further, these items were also further scrutinized in the later measurement stage.

In addition, the Cronbach's alpha (α) of all components were also high, ranging from $\alpha = 0.787$ -0.704. The high loadings demonstrated that the retained 25 items were interchangeable and sufficiently correlated to each other, even after the elimination of items. These results provided some preliminary confirmation as to the reflective measurement of media coverage construct.

Measurement model results of media coverage (CFA):

Depicted in Fig. 2 is the measurement model of media coverage, a second-order construct with six first-order

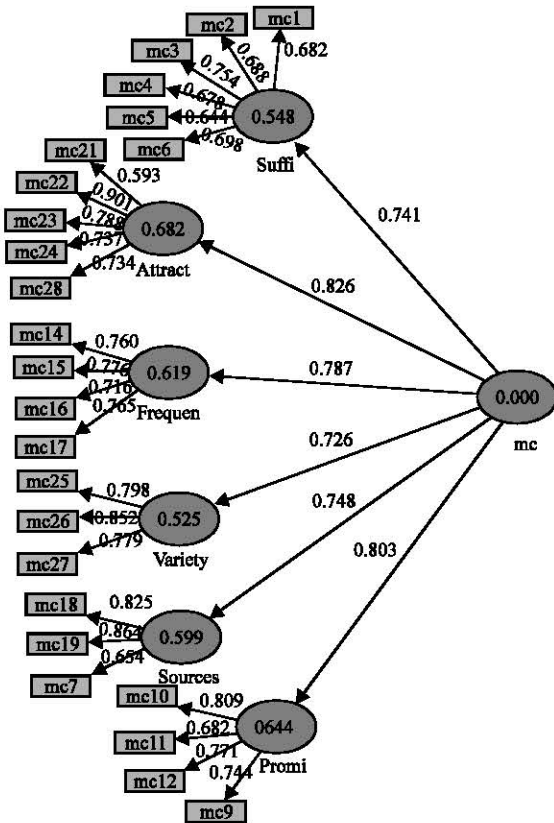


Fig. 2: Measurement model of media coverage

constructs. The 25 items brought forward from the previous EFA stage were all retained. All evidence of reliability and validity of media coverage, at the first and second-order constructs, are tabulated in Table 2. In particular, the results showed that all the items of the first-order constructs were found reliable, carrying loadings between 0.593 and 0.864 with many loaded above 0.70 and some approached 0.70. Likewise, sufficient internal consistency reliability were also attained in all the first-order constructs namely, news sufficiency ($\rho_c = 0.846$; $\alpha = 0.846$), prominence ($\rho_c = 0.839$; $\alpha = 0.744$), frequency ($\rho_c = 0.841$; $\alpha = 0.748$), news sources ($\rho_c = 0.828$; $\alpha = 0.681$), attractiveness ($\rho_c = 0.853$; $\alpha = 0.783$) and variety of media role ($\rho_c = 0.851$; $\alpha = 0.739$).

Correspondingly, at second-order, while reliability of the indicators was evident (standardized loadings between 0.725 and 0.826), media coverage was also found reliable at the construct level (composite reliability: 0.925). Thus, media coverage construct was concluded as sufficiently reliable. Further, all constructs of first and second-order of media coverage attained satisfactory

Table 2: Media coverage: item standardized loadings, AVE, composite reliability and cronbach's alpha

Constructs/Items	Standardized loadings	AVE	Composite reliability	Cronbach's alpha
Sufficiency (suffi)				
mc1	0.682	0.478	0.846	0.781
mc2	0.686			
mc3	0.754			
mc4	0.678			
mc5	0.644			
mc6	0.698			
Prominence (promi)				
mc9	0.744	0.567	0.839	0.744
mc10	0.809			
mc11	0.682			
mc12	0.771			
Frequency (frequen)				
mc14	0.760	0.570	0.841	0.748
mc15	0.776			
mc16	0.716			
mc17	0.765			
News sources (sources)				
mc18	0.825	0.619	0.828	0.681
mc19	0.864			
mc7	0.654			
Attractiveness (attract)				
mc21	0.593	0.539	0.853	0.783
mc22	0.801			
mc23	0.788			
mc24	0.737			
mc28	0.734			
Variety of media role (variety)				
mc25	0.798	0.656	0.851	0.739
mc26	0.852			
mc27	0.779			
Media coverage				
Suff.	0.741	0.597	0.925	0.915
Promi.	0.803			
Freq.	0.787			
Sources	0.748			
Attract	0.826			
Variety	0.725			

Table 3: Media coverage: correlations and square root of AVE

Variables	Attract	Frequ.	Promi.	Sources	Suffi.	Variety
Attract	0.734					
Frequen	0.588	0.755				
Promi	0.560	0.588	0.753			
Sources	0.529	0.543	0.531	0.787		
Suffi	0.463	0.424	0.590	0.475	0.691	
Variety	0.619	0.513	0.420	0.499	0.404	0.810

Values in parentheses along the diagonals are square root of AVE for each construct. Off-diagonal elements are correlations amongst the constructs

convergent validity (AVE values between 0.539 and 0.656), except news frequency construct (AVE = 0.478). This AVE value was slightly below the threshold of 0.50. However, it was still considered adequate given its composite reliability >0.60 (Fornell and Larcker, 1981).

Table 3 and 4 indicate that discriminant validity at the construct and indicator-level were evident. In the former, the square root of AVE for each construct was found

Table 4: Media coverage: cross loadings and loading's significance

Items	Suffi.	Promi.	Freq.	Sources	Attract	Variety	t-values	p-values	Sig. level of p
mc1	0.682	0.385	0.253	0.354	0.341	0.346	19.254	0.0000	<0.001
mc2	0.686	0.392	0.227	0.244	0.238	0.150	17.953	0.0000	<0.001
mc3	0.754	0.428	0.358	0.336	0.366	0.322	28.123	0.0000	<0.001
mc4	0.678	0.391	0.255	0.254	0.279	0.254	17.248	0.0000	<0.001
mc5	0.644	0.376	0.265	0.280	0.290	0.228	15.421	0.0000	<0.001
mc6	0.698	0.464	0.370	0.462	0.378	0.337	25.575	0.0000	<0.001
mc9	0.519	0.744	0.378	0.410	0.419	0.315	23.582	0.0000	<0.001
mc10	0.496	0.809	0.478	0.423	0.423	0.279	33.948	0.0000	<0.001
mc11	0.372	0.682	0.431	0.373	0.392	0.325	18.084	0.0000	<0.001
mc12	0.385	0.771	0.484	0.391	0.451	0.350	29.453	0.0000	<0.001
mc14	0.319	0.484	0.760	0.405	0.485	0.353	30.295	0.0000	<0.001
mc15	0.321	0.455	0.776	0.391	0.496	0.438	32.140	0.0000	<0.001
mc16	0.317	0.366	0.716	0.345	0.326	0.318	18.161	0.0000	<0.001
mc17	0.324	0.461	0.765	0.489	0.452	0.430	25.659	0.0000	<0.001
mc18	0.365	0.403	0.415	0.825	0.388	0.356	36.791	0.0000	<0.001
mc19	0.354	0.428	0.448	0.864	0.487	0.395	50.323	0.0000	<0.001
mc7	0.402	0.417	0.412	0.654	0.361	0.423	16.290	0.0000	<0.001
mc21	0.293	0.325	0.340	0.312	0.593	0.336	10.742	0.0000	<0.001
mc22	0.323	0.407	0.464	0.406	0.801	0.512	35.222	0.0000	<0.001
mc23	0.388	0.431	0.468	0.453	0.788	0.447	28.881	0.0000	<0.001
mc24	0.295	0.396	0.380	0.340	0.737	0.446	21.016	0.0000	<0.001
mc28	0.390	0.481	0.488	0.414	0.734	0.511	26.649	0.0000	<0.001
mc25	0.250	0.248	0.328	0.341	0.436	0.798	24.966	0.0000	<0.001
mc26	0.305	0.336	0.445	0.406	0.518	0.852	46.752	0.0000	<0.001
mc27	0.406	0.415	0.455	0.450	0.536	0.779	32.863	0.0000	<0.001

greater than its correlation with other constructs. The latter shows that the loading for each indicator was the highest on its designated construct compared to its other cross loadings. In addition, all the loadings were significant at the level of $p < 0.0001$ as demonstrated in Table 4.

CONCLUSION

The current study had developed the measure of media coverage to address the absence of an appropriate instrument to measure media coverage from public perspective brought to the need to develop an appropriate instrument. Although, there has been numerous past literature discussing about media coverage related to public awareness across various areas such as politics (Agbatogun, 2009) and health (Lee *et al.*, 2013), there was none noticeable empirical works to the knowledge of the researcher which had made the attempt to operationalize media coverage as perceived from perspective of the public who are the end users of the media product. In fact, past studies had used different media-related measures to address research questions of various settings which corresponded distinctively to their very research issues under investigations.

In particular while many researchers have measured media coverage using the method of quantitative content analysis (Antilla, 2005; Brulle *et al.*, 2012; Manus, 2000) and qualitative content analysis (Dudo *et al.*, 2007; Mazur, 1998; Comas *et al.*, 2001), this study contributed to an alternative measure of media coverage which is gauged (and perceived) from the public perspective, the end user of mass media. Notably, the data and the measures of media coverage in past studies had been those that was obtained through the researcher's computation which involved qualitative (exploratory) works of content analysis to identify and count the number of appearance of an intended subject (Dudo *et al.*, 2007; Mazur, 1998; Harring *et al.*, 2011).

The items developed had been carefully evaluated through content validity and statistical assessment of reliability and validity. Media coverage was found to be a six-dimensional construct through EFA and CFA. The construct consists of dimensions of news sufficiency, news prominence, news frequency, news attractiveness, news sources and variety of media role. The operationalization and development of this new measure of media coverage would provide a foundation for future researches which aim at investigating media coverage from the perspective of the public.

APPENDIX

Appendix A: Revised scale of media coverage measure

Revised items	Adaptation sources
The depth of news content/sufficiency/adequacy	
Mass media reports useful information about environmental issues	Agbatogun (2009) and Lemert <i>et al.</i> (1977)
The environmental news is always reported in full-length story in the mass media	Hasan (2007) and Laurian (2003)
Malaysian mass media has taught me a lot about the environmental issues	Chokriensukchai and Tamang (2010)
Environmental issues reported often provides background information	Hasan (2007)
Environmental issues are often reported with constructive critics	
Mass media provide adequate reporting on environmental news	Lemert <i>et al.</i> (1977)
Through the mass media, I know about the NGOs and associations that concern about environment	Agbatogun (2009)
Environmental issues are often deeply discussed with analytical information	Raouf (2010) and Agbatogun (2009)
The prominence/placement	
The news related to environment is easily found in mass media in Malaysia	Hasan and Norma (2007) and Atwater <i>et al.</i> (1985)
Environmental news often has its own full page	
Environmental news often comes with sufficient photos	
It is common to see environmental issues appear as big headline in mass media	Ader (1995)
Frequency of appearance	
I can always see environmental issues (air pollution, water pollution, forest burning, etc.) being reported in the mass media from time to time	Mikami <i>et al.</i> (1995)
I often see messages about environmental protection in mass media	Lee (2011)
Whenever I need to look for information about the environmental preservation in Malaysia, I will try to locate it from the media	Brulle <i>et al.</i> (2012)
I can easily find the reports on any misconduct of company which spoil the environment in mass media	Harring <i>et al.</i> (2011)
It is easy for me to access and read about news on natural environment in mass media	Hill <i>et al.</i> (2012)
News sources	
Mass media use number of news sources to validate the reports	Hasan and Norma (2007)
Mass media use a variety of news sources in their reporting on environment issues	Hasan and Norma (2007)
Timeliness/ up-to-date	
The information on environmental issues provided by mass media is well sufficient to keep me up to date	Stryker (2002)
Reliability/accuracy	
Environment information provided by the Malaysian media is often accurate	
Attractiveness of news	
Environmental news reported in the Malaysian mass media attracts my attention	Chokriensukchai and Tamang (2010)
I like the way environmental issues is reported in the mass media	
The environmental news often triggers interesting discussions among me and my friends	
General agreement on the role of mass media	
Mass media plays important role to remind people on environmental consequences	Chokriensukchai and Tamang (2010)
Environmental news in the mass media is effective to influence people	
News variety	
There is a wide variety of environmental issues reported in mass media of Malaysia (such as air quality, water quality, and land slide, etc.)	Agbatogun (2009) and Hasan and Norma (2007)
I can find environmental news happening all around the world in Malaysia mass media	
The mass media covers a wide range of environmental issue happening within Malaysia	

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